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The role of augmented reality in halal beauty shopping experience

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Abstract
Augmented Reality (AR) is rapidly evolving and being integrated into various business sectors, including the halal cosmetics industry. Additionally, AR helps prevent contamination from non-halal ingredients and reduces the spread of diseases associated with shared testers. Despite these advantages, consumer adoption of AR in online cosmetic selection remains low. Many shoppers still cannot use AR, despite its vividness, interactivity, and customizable features, which can significantly enhance product exploration and foster a positive perception of the technology. This study investigates the key factors influencing consumers' intentions to use AR when purchasing halal cosmetics, employing the SOR theory as a framework. Through a quantitative approach and SEM-PLS analysis, the findings reveal that AR attributes play a crucial role in creating a more immersive and compelling halal shopping experience. These insights offer valuable guidance for businesses seeking to develop AR-driven marketing strategies—an approach that remains underutilized in the halal cosmetics industry. By leveraging AR technology, companies can bridge the gap between online and offline shopping, enhance consumer confidence, and drive greater engagement in the halal beauty market.

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Introduction

Augmented Reality (AR) is an interactive technology that integrates virtual 3D models with the physical environment, allowing users to manipulate objects dynamically, such as rotating, zooming, and repositioning them (Poushneh & Vasquez-Parraga, 2017). This technology enhances the online shopping experience by providing more accurate product visualization and a more intuitive and consistent interaction for consumers (Huang & Liao, 2015). Currently, AR has been widely integrated into smartphone applications, enabling users to scan product images and access additional virtual information (Nikhashemi et al., 2021). With the aid of smartphone cameras, consumers can virtually try on products, visualize furniture placement in their living spaces, or even test how a product would look before making a purchase (Smink et al., 2020). In addition to making product exploration more convenient, AR enables consumers to make more informed purchasing decisions by providing a more realistic online shopping experience. The adoption of AR in e-commerce also fosters a more engaging and interactive shopping journey, ultimately enhancing customer satisfaction and promoting brand loyalty (Holdack et al., 2022). As AR technology continues to evolve, its application in online retail is expected to influence and shape consumer behavior, driving business growth significantly.

Currently, Indonesia ranks fourth globally in internet usage, following the United States, with 212.9 million users, accounting for 77% of the country's population (Yonatan, 2023). According to data from KenResearch.com (2024), the adoption of virtual and AR technologies in Indonesia has increased by 32.6% from 2018 to 2023, and this growth is projected to continue until 2028. This trend highlights the high potential of AR in the Indonesian market, offering significant opportunities for businesses to integrate it into their operations. In online shopping, consumers often perceive risks related to the accuracy and suitability of the products they purchase (Kim & Forsythe, 2008). Prior research suggests that the uncertainty associated with online and mobile shopping leads to a higher perceived risk compared to traditional offline purchases (Forsythe et al., 2006; Schröder & Zaharia, 2008). AR technology is expected to enhance the online shopping experience by providing realistic product visualizations and sufficient information. This improvement allows consumers to evaluate their desired products more effectively, ultimately facilitating more confident purchase decisions (Oh et al., 2012).

Several studies have explored the application of AR technology in various business sectors, including its use in the beauty industry (Whang et al., 2021), online retailing through mobile applications (Heller et al., 2019; Nikhashemi et al., 2021), and the retail food sector (Chiu et al., 2021). However, research on AR adoption specifically in the halal cosmetic industry remains limited. In the context of cosmetic shopping, consumers usually want to try products before purchasing to ensure compatibility. However, concerns about hygiene and contamination risks associated with shared testers pose significant barriers, particularly in the beauty industry, where many products are applied directly to the skin. AR offers a practical solution to this issue by allowing consumers to virtually test cosmetic products without any physical contact, thereby minimizing contamination risks.

This study was conducted in Indonesia, a country with a significant Islamic population (Hasanah et al., 2023), where halal compliance is a critical concern (HDCGlobal, 2023). In halal cosmetics, products that come into direct contact with the skin raise concerns about halal integrity and potential contamination with impure or non-halal substances (Kurniawati et al., 2023; Monoarfa et al., 2023). The use of AR technology in the beauty industry plays a crucial role. According to the Indonesian government's halal certification, it is crucial to prevent contamination risks that may render a product non-halal during the testing process. Any equipment used for both halal and non-halal products—particularly those involving pork derivatives—must not be shared, even after thorough cleaning, to prevent cross-contamination (MUI Fatwa No. 4 of 2003). Additionally, research by Qolbi et al., (2024) emphasizes that halal

products must remain completely separate from non-halal products to maintain their halal status. AR technology enables consumers to visualize how specific cosmetic products would look on their faces using cosmetic try-on applications, without physically interacting with the products. This approach reduces contamination risks and ensures adherence to halal principles, making AR a highly relevant innovation for the Indonesian halal cosmetic industry.

Despite the numerous benefits of AR, only a limited number of halal cosmetic brands have adopted AR applications to facilitate virtual product trials for consumers. In reality, AR technology has the potential to significantly reduce consumer errors when making product selections during online purchases. However, further research is needed to explore the practical benefits of AR, as existing studies on halal cosmetics have largely overlooked its technological applications (Isa et al., 2023; Liew & Karia, 2024; Shawtari et al., 2016). The enjoyment derived from interactive experiences can elicit both positive and negative emotions, ultimately influencing attitudes and behavioral intentions toward AR adoption (Holdack et al., 2022). According to the Stimulus-Organism-Response (S-O-R) theory, an individual's responses are shaped by internal processing mechanisms (Mursid, 2021; Song et al., 2021). Users' experiences influence the repeated use of technology throughout interactions. Therefore, it is essential to examine how enjoyment during product searches and attitudes toward AR contribute to the continued adoption of AR applications.

According to Kotler & Keller (2021), a stimulus is an external factor that influences an individual's information processing and behavioral responses. In this study, technological stimuli refer to various AR features that shape user perceptions and influence technology adoption behaviors. Key technological stimuli include visual quality and interactivity, which enhance the realism of product usage, even in online shopping contexts. Since consumers have different conditions and preferences, these stimuli help to create a more tailored shopping experience. By engaging with these stimuli, consumers process information, form perceptions, and ultimately make purchase decisions.

This study examines three essential AR attributes—vividness, interactivity, and customization—that are fundamental to AR technology. Vividness refers to the clarity and accuracy of a product's visual representation. Interactivity reflects the system's ability to respond to user actions and provide real-time feedback. Customization enables the application to personalize experiences based on individual user preferences (Nikhashemi et al., 2021; Whang et al., 2021). These AR attributes influence whether users continue to engage with AR technology (Nikhashemi et al., 2021; Whang et al., 2021). Additionally, they are linked to enjoyment in product search, which is a critical factor in online shopping (Holdack et al., 2022). A seamless and enjoyable product search experience is essential when using AR, especially for matching products to consumers' preferences (Balog & Pribeanu, 2010; Sylaiou et al., 2010). A positive experience with AR technology fosters favorable attitudes toward AR, which in turn encourages users to continue its use (Holdack et al., 2022).

The findings of this study provide valuable insights for business practitioners and technology developers seeking to create more effective AR-based marketing strategies. Implementing AR in halal cosmetics can help reduce consumer errors in online purchases and minimize the risks of contamination from physical testers. By leveraging AR technology, businesses can enhance consumer confidence, improve product trial experiences, and strengthen brand trust in the halal cosmetic industry.

Literature Review

S-O-R (Stimulus-Organism-Response) theory

The Stimulus–Organism–Response (S–O–R) theory provides a psychological framework for understanding how external environmental stimuli influence individuals' internal states and

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subsequent behavioral responses (Mehrabian & Russell, 1974). The S–O–R theory has been widely applied in various contexts, including the use of m-payment for donation activities (Elsotouhy et al., 2023), halal verification (Ling et al., 2025), and halal food (Begum et al., 2025), among others.

In the context of Augmented Reality (AR) adoption for halal cosmetics, the S-O-R theory can be used to explain how interactive experiences provided by AR influence consumer perceptions of product halal and their purchase decisions. AR technology enables consumers to virtually try on cosmetic products, offering a richer, more realistic experience when evaluating product suitability before making a purchase. Within the S-O-R model, AR in halal cosmetics serves as a stimulus, comprising three key attributes: vividness, interactivity, and customization (Nikhashemi et al., 2021; Whang et al., 2021). These attributes enhance visual quality, interactive engagement, and personalization, thereby improving consumer confidence when evaluating halal cosmetic products. With these features, consumers can feel more confident that the products they choose align with their preferences and halal standards.

The organism aspect in the S-O-R theory refers to how consumers process the information provided by AR. Factors such as enjoyment derived from product search play a crucial role in shaping users' emotional responses when exploring halal cosmetic products through AR (Holdack et al., 2022). A seamless and enjoyable product exploration experience can strengthen consumer trust in the halal status of these products, ultimately fostering a positive attitude toward AR technology in the halal cosmetics industry.

As a result, the response in this model can manifest as a positive attitude toward AR and an increased purchase intention for halal cosmetic products (Holdack et al., 2022; Peukert et al., 2019). If the AR experience is enjoyable and instills confidence in verifying a product's halal status, consumers are more likely to purchase the product they have virtually tested.

By applying the S-O-R theory, this study establishes a robust framework for analyzing how AR, as a marketing technology, influences consumer purchasing decisions in the halal cosmetics industry. By identifying factors that affect perceived enjoyment and attitudes toward AR, this research provides valuable insights for technology developers and business practitioners. These insights can help them design more optimized digital experiences for Muslim consumers.

AR attributes

The Telepresence Theory proposes that media structure influences consumer presence (telepresence) in mediated environments, as well as their engagement with the media (Steuer, 1992). Specifically, Steuer & Reeves (1992) define telepresence as the extent to which consumers feel immersed in a virtual environment, even when they are not physically present. This concept is particularly relevant in contexts such as mobile shopping experiences or the use of digital technology.

Two key elements in Telepresence Theory are vividness and interactivity, which are widely recognized as the primary factors shaping consumer perceptions of new media environments (Chen & Yen, 2004). AR is directly linked to Telepresence Theory, as it enables users to experience a digital environment that features high vividness and responsive interactivity. This immersive experience enables users to feel present in the virtual world, even when they are not physically present (Hilty et al., 2020).

Vividness in the context of AR refers to the technology's ability to create a sensor-rich mediated environment (Kim & Hyun, 2016). This aspect is often explored in digital media, particularly to enhance product display quality and make it appear more realistic (Li et al., 2003). Meanwhile, interactivity refers to the extent to which users can communicate with and interact with virtual elements, as well as the system's responsiveness to user input (Liu et al.,

2023). In digital shopping, interactivity is defined as the degree to which consumers perceive product presentations as two-way, controllable, and responsive to their inputs (Mollen & Wilson, 2010).

In addition to vividness and interactivity, customization is another crucial factor that enhances AR experiences, particularly in relation to Telepresence Theory. Customization in AR enhances value co-creation between customers and brands by offering a personalized experience that actively engages users (Trivedi & Trivedi, 2018). This feature enables users to adjust product information according to their preferences, providing more relevant and personalized content. Within Telepresence Theory, customization enhances vividness, as greater content personalization leads to a greater perceived presence in the virtual environment. Additionally, customization enhances interactivity by allowing consumers to have greater control over their engagement with products or services in digital spaces.

Thus, Telepresence Theory helps to explain the effectiveness of AR technology in creating immersive digital experiences for users. By combining vividness, interactivity, and customization, AR not only enhances consumer engagement but also boosts satisfaction and increases the intention to reuse the technology.

Perceived enjoyment

Perceived enjoyment is defined as the extent to which using technology is considered enjoyable in itself, regardless of any anticipated performance consequences (Davis, 1989). In other words, it reflects intrinsic motivation, focusing on the satisfaction and pleasure derived from a particular activity. Previous studies have found that perceived usefulness significantly influences users' intentions to adopt technology, with its impact further enhanced when combined with perceived enjoyment (Govindan et al., 2019; Venkatesh et al., 2002, 2003).

In the context of immersive technology such as AR, the enjoyable experience it provides aims to create a holistic shopping experience. Both utilitarian factors and hedonic benefits play a crucial role in influencing consumer behavior. However, empirical evidence on the role of enjoyment remains inconsistent and ambiguous (Peukert et al., 2019; Rauschnabel et al., 2017).

AR delivers a realistic experience with detailed and rich information product visualization (Whang et al., 2021). Consumers who utilize AR often find it easier to make purchasing decisions, as AR allows them to explore products in greater detail, providing strong informational support for their purchase consideration (Hilken et al., 2018; Javornik, 2016a, 2016b).

The evaluation of AR technology experiences is often linked to three key attributes: vividness, interactivity, and customization (Nikhashemi et al., 2021; Whang et al., 2021). Vividness refers to AR's ability to deliver clear, realistic visuals, thereby enhances consumers' perceptions of the product. Interactivity reflects AR's ability to enable two-way interaction, enabling real-time responses to user inputs and creating a more engaging experience. Meanwhile, customization enables AR applications to deliver personalized experiences based on user preferences, thereby increasing their relevance and engaging consumers more effectively.

Among these attributes, customization plays a crucial role in enhancing user engagement with AR. Whang et al., (2021) assert that personalization features in AR can lead to improved engagement and increased user satisfaction, ultimately driving purchase intentions. Similarly, Trivedi & Trivedi (2018) highlight that customization in AR contributes to value co-creation between customers and brands, as it provides experiences tailored to individual preferences. Consumers who use AR also tend to experience greater convenience in shopping, which, in turn, enhances their overall perceived enjoyment. Holdack et al., (2022) explain that the availability of accurate information and ease of use in technology improve users' comfort

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during online shopping. This statement suggests that the easier and more enjoyable an AR experience is, the higher the level of perceived enjoyment consumers will experience. Based on this theoretical foundation, the hypotheses proposed in this study are as follows:

H1: Vividness positively influences perceived enjoyment.
H2: Interactivity positively influences perceived enjoyment.
H3: Customization positively influences perceived enjoyment.

Attitude to Use AR

Consumers' acceptance of new technology, particularly their attitude toward it, is a critical variable influencing their decision to adopt innovations (Pantano & Viassone, 2014). According to Venkatesh et al., (2002), attitude toward technology use refers to an individual's tendency to accept or reject a technology based on their perceptions of its benefits and ease of use.

In the context of AR, a positive attitude toward this technology arises when users perceive significant benefits, such as an enhanced shopping experience and easier access to product information (Holdack et al., 2022). This positive attitude encourages users to continue using AR in their shopping and digital interactions.

Studies have shown that perceived enjoyment is closely linked to attitude toward technology. Users who feel comfortable and enjoy their experience while using AR tend to develop a more positive attitude toward the technology (Davis, 1989; Kim et al., 2016). In offline shopping environments, enjoyable shopping experiences influence purchase decisions (Kim & Forsythe, 2008; Pantano & Servidio, 2012). In contrast, online shopping enjoyment encompasses not only about entertainment but also includes interactivity, convenience, personalization, and visual aesthetics.

In AR-based shopping, a high level of enjoyment allows consumers to feel more engaged and in control of their shopping experience (Mollen & Wilson, 2010). Previous research has found that perceived enjoyment during AR shopping fosters a positive attitude toward using the technology, as users view AR as both beneficial and enjoyable (Holdack et al., 2022). Moreover, AR contributes to hedonic shopping experiences, further strengthening consumers' positive attitudes toward its use (Pantano et al., 2017; Pantano & Servidio, 2012; Pantano & Viassone, 2014; Rese et al., 2017). Based on these concepts, the hypothesis proposed is:

H4: Perceived enjoyment positively influences attitude to use AR.

Intention to Reuse AR

The adoption of new technology influences behavioral intentions, particularly regarding reuse of the technology (Pantano & Viassone, 2014). According to Rese et al., (2017), intention to reuse refers to an individual's behavioral intention to continue using a technology in the future because it is found to be useful or valuable and would recommend it to others. Holdack et al. (2022) further explain that consumers who enjoy and have a positive perception of AR are more likely to continue using it. A positive attitude toward AR use encourages users to continue engaging with the technology (Balog & Pribeanu, 2010; Holdack et al., 2022).

Recent studies support this hypothesis. Daassi & Debbabi (2021) found that a positive attitude toward AR applications—driven by factors such as sense of immersion, product presence, and perceived realism—significantly increases user's intention to reuse the application. Similarly, Iranmanesh et al. (2024) demonstrated that attitudes toward AR applications strongly influence users' intention to reuse them. These attitudes are shaped by both affective and cognitive factors. Additionally, Foroughi et al. (2024) highlighted that a positive attitude toward AR plays a crucial role in encouraging users to continue utilizing the technology. Overall, the existing literature supports the hypothesis that a positive attitude toward AR usage has a significant positive impact on users' intention to reuse the technology.

Therefore, the following hypothesis can be proposed:

H5: Attitude to use AR has a positive effect on Intention to Reuse AR.

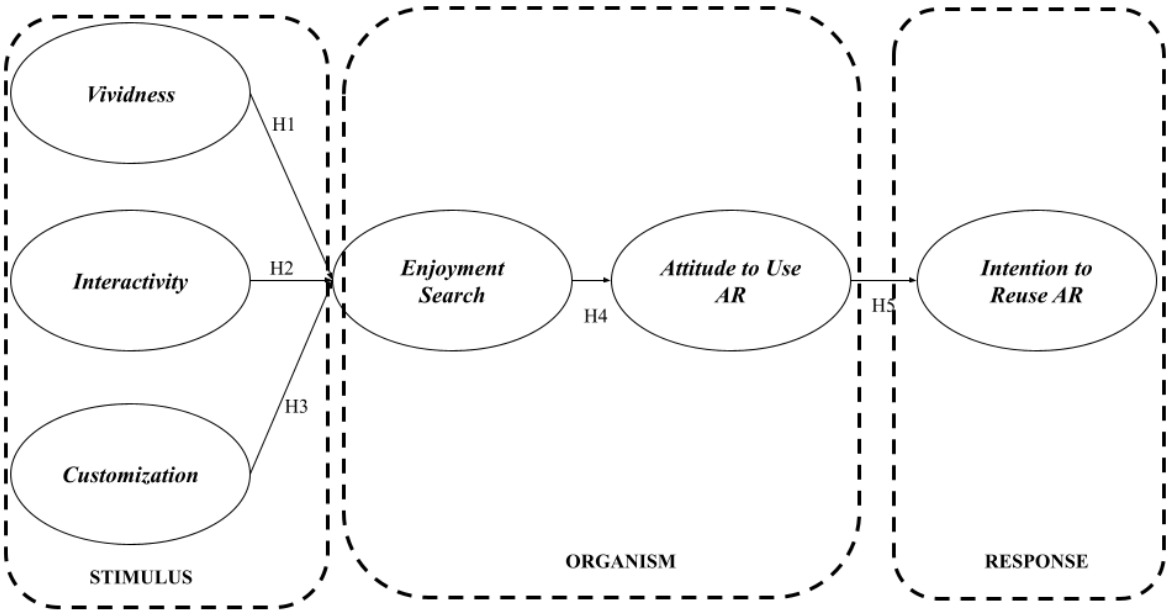

Figure 1. Research Model

Methodology

This study employs a quantitative research method that emphasizes testing of theories through the measurement of research variables using numerical data and statistical analysis procedures (Hair et al., 2018). The population in this study consists of female cosmetic users. As the population is considered infinite (i.e., the exact number of individuals cannot be determined), there is no defined population frame. A non-probability purposive sampling method was used to select respondents. Purposive sampling was deemed appropriate because the study targeted a specific group of consumers—female users of cosmetic products who have experience with augmented reality (AR) technology and possess relevant knowledge regarding the research topic.

Following the recommendations of Malhotra (2019), which suggest having 5–10 respondents for each estimated parameter and a minimum sample size of 200, this study obtained a total of 241 valid responses. Data were collected through an online questionnaire distributed via Google Forms over a one-month period in June 2024. Out of 272 questionnaires received, only 241 were retained for analysis, as the remaining submissions either failed to meet the inclusion criteria or were incomplete. The model evaluation in SEM-PLS included tests of reliability, validity, and goodness-of-fit using indices such as SRMR, NFI, and RMS_theta to ensure methodological transparency.

Result and Discussion

The majority of respondents were between the ages of 22 and <27 years old, and most were pursuing or had completed their education at the undergraduate level. Additionally, these respondents reported a monthly income of less than IDR 4,000,000, lived with their parents, and engaged in online shopping approximately once every one to less than two months.

To ensure the reliability of the data, the measurement undergoes validity and reliability tests before the hypothesis test is performed. As presented in Table 1, the cross-loadings for

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discriminant validity, along with the Average Variance Extracted (AVE) for all constructs exceeding 0.5 and the indicator loadings exceeding 0.5 for each indicator, confirm the validity of all indicators. Additionally, all composite reliability scores were above 0.7, indicating that the model is acceptable and demonstrates consistent internal reliability.

Table 1. Validity and Reliability Results

Variable	Indicator	Cross Loading	VIF	Composite Reliability	Cronbach's Alpha	AVE
Vividness (Nikhashemi et al., 2021)	ARV1: The visual display provided through this augmented reality app was clear.	0.811	1,766	0,849	0,764	0,587
	ARV2: The visual display provided through this augmented reality app was detailed.	0.68	1,282			
	ARV3: The visual display provided through this augmented reality app was sharp.	0.726	1,45			
	ARV4: The visual display provided through this augmented reality app was well-defined.	0.837	1,713			
Interactivity (Nikhashemi et al., 2021)	ARI1: I prefer using augmented reality apps that include two-way communication.	0.756	1,519	0,806	0,701	0,457
	ARI2: I prefer using augmented reality apps that talk back to me.	0.544	1,176			
	ARI3: I prefer using augmented reality apps that make me feel like they want to listen to me.	0.687	1,396			
	ARI4: I prefer using augmented reality apps that are effective in gathering users' feedback.	0.708	1,323			
	ARI5: I was in control of my navigation through this augmented reality app.	0.667	1,332			
Customization (Nikhashemi et al., 2021)	ARC1: It feels like the augmented reality app is talking to me personally.	0.69	1,253	0,799	0,66	0,51
	ARC2: It is important to me to feel like the augmented reality app is	0.454	1,063			

Variable	Indicator	Cross Loading	VIF	Composite Reliability	Cronbach's Alpha	AVE
	my personal area when I use it.					
	ARC3: Adding customized information, such as notification services, to the augmented reality app attracts my attention.	0.814	1,659			
	ARC4: An augmented reality app can offer customized information that is tailored to my needs.	0.834	1,693			
Attitude to Use AR (Venkatesh et al., 2003)	ATU1: In my opinion, using AR is a good idea.	0.792	1,726	0,837	0,755	0,509
	ATU2: Altogether, I like shopping with AR.	0.692	1,741			
	ATU3: It is a bright idea to use AR apps.	0.604	1,526			
	ATU4: It is a pleasant idea to use AR apps.	0.7	1,54			
	ATU5: My professional life will benefit from the AR apps.	0.762	1,643			
Intention to Reuse AR (Balog & Pribeanu, 2010)	ITU1: I will use the AR app in my next cosmetic purchase.	0.731	1,231	0,804	0,68	0,507
	ITU2: I intend to use the AR app again.	0.706	1,39			
	ITU3: I will continue to use the AR app.	0.734	1,261			
	ITU4: If I make a cosmetic purchase, I will use the AR app again.	0.676	1,347			
Perceived Enjoyment (Holdack et al., 2022)	PE1: Shopping with AR apps makes me happy.	0.706	1,476	0,847	0,772	0,526
	PE2: The shopping process with the AR app makes me feel comfortable.	0.628	1,321			
	PE3: The shopping process with the AR app makes me excited to use it.	0.702	1,401			
	PE4: I can enjoy the shopping process with the AR app.	0.8	1,686			

Variable	Indicator	Cross Loading	VIF	Composite Reliability	Cronbach's Alpha	AVE
	PE5: The shopping process with the AR app is interesting to me.	0.779	1,599			

Source: Processed data by authors

The overall model fit was assessed using several indices, including SRMR, NFI, and RMS_theta (Hair et al., 2018). The SRMR values for the saturated and estimated models were 0.084 and 0.104, respectively, indicating an acceptable fit between the observed and predicted correlations. The NFI values were 0.662 and 0.633, both of which fall below the ideal threshold of 0.90, commonly found in PLS-SEM-estimated complex models. Meanwhile, the RMS_theta value of 0.153 slightly exceeds the recommended cut-off of 0.12, suggesting minor residual covariances but still reflecting adequate model specification. The d_ULS and d_G values further confirm that the model provides an acceptable overall fit, supporting the adequacy of the structural model for hypothesis testing. Detailed information about the model fit indices is presented in Table 2.

Table 2. Model Fit Indices

	Saturated Model	Estimated Model	Results
SRMR	0.084	0.104	Acceptable
d_ULS	2.670	4.051	Acceptable
d_G	0.675	0.776	Acceptable
Chi-Square	953.985	1034.110	Acceptable
NFI	0.662	0.633	Low but Acceptable
rms Theta	0.153		Acceptable

Source: Processed data by authors

Hypothesis testing was conducted using bootstrapping to evaluate significance using t-statistics and p-values from the internal model. A hypothesis is considered significant if the t-statistic value exceeds 1.96 and the p-value is less than 0.05. All measurements related to the internal model are presented in Table 3.

Table 3. Path Coefficient Results

H	Relationship	Original Sample	T statistic	P Values	Results
H1	ARV > PE	0,179	2,144	0,033	Supported
H2	ARI > PE	0,349	4,332	0,000	Supported
H3	ARC > PE	0,310	3,320	0,001	Supported
H4	PE >ATU	0,785	23,997	0,000	Supported
H5	ATU > ITU	0,697	17,059	0,000	Supported

Source: Processed data by authors

The relationship between vividness and enjoyment search

Vividness can significantly enhance a person's comfort when searching for products. In AR, vividness stimulates multiple senses, making interactions feel more immersive and enjoyable (Liu et al., 2023). Vividness refers to clear visuals that accurately depict displayed objects (Nikhashemi et al., 2021). The level of vividness in an AR presentation system is crucial, as it can highlight key features and provide a rich customer experience. To evaluate cosmetics, the

clarity of suitability on the user's skin is essential. This accuracy also influences the information search experience. When customers receive depth and breadth of information in a virtual environment, they experience sensory, spatial, and social engagement (Vazquez et al., 2023). The more vividly a product appears on a user's skin, the more enjoyable the AR technology experience will be. This distinctness enhances the information-seeking experience. Products with high vividness can emotionally attract customers and, as a result, retain consumer attention (Liu et al., 2023). This statement aligns with the findings of Rakhmawati et al. (2025), who suggest that the design of augmented reality can enhance user engagement. In the context of trying cosmetics using AR, high vividness can provide a rich sensory experience that mimics physical trials, thereby enhancing overall enjoyment.

The relationship between ınteractivity and enjoyment search

Based on the findings, interactivity has the most decisive influence on the enjoyment of searching among the three attributes, making it a critical factor to consider. Using AR can enhance the comfort of the search process by increasing interactivity between the user and the technology. A high level of interactivity allows users to have greater control over their experience (Nikhashemi et al., 2021). AR reduces virtual object manipulation while allowing users to try or adjust product features, giving them a sense of ownership over their experience. This interactivity facilitates exploration within an AR environment, allowing users to learn about products more directly. Active participation not only enhances the overall experience, making it more enjoyable (Chen et al., 2023), but also further strengthens user engagement by facilitating more natural and realistic interactions with virtual objects. This finding is consistent with previous studies, which have shown that interactivity enhances users' perceived playfulness and engagement, thereby increasing enjoyment during AR experiences (Jiang et al., 2022). Additionally, according to Lim & Ayyagari (2018), interactivity is an essential environmental stimulus that allows customers to actively experience, manipulate, or adjust product information according to their preferences. Research on virtual product trials suggests that interactivity significantly facilitates perceived ease of use and consumer enjoyment (Pantano et al., 2017). In the context of AR for cosmetic products, interactivity enables customers to select products in real-time, catering to their specific needs and preferences.

The relationship between customization and enjoyment in product search

Customization helps customers engage more and reduces uncertainty when shopping online using AR. Customers find that customization in AR makes shopping easier and create a more comfortable experience. For instance, AR customization allows consumers to virtually try various cosmetic products based on their personal preferences, such as skin tone, face shape, or makeup style (Nikhashemi et al., 2021). This personalized experience gives consumers a greater sense of control, thereby enhancing the enjoyment of the search process by making it more enjoyable and efficient.

Research has shown that personalization in technology use, such as AR, significantly enhances user satisfaction. This result is because the features of these technologies align better with individual needs, leading to increased engagement and enjoyment during product searches (Jung et al., 2020). For example, consumers can easily adjust cosmetic products to suit their preferences, considering the diverse range of skin types. This aspect makes the shopping experience more enjoyable and interactive.

Additionally, customization features allow consumers to filter products based on ingredients and specific needs, such as skin sensitivity to certain ingredients. This convenience and ease of use help consumers confidently find the right products without the risk of adverse reactions. A more personalized shopping experience that tailors to individual consumer

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preferences enhances engagement and enjoyment throughout the entire search process. These findings are supported by a prior study, which shows that customization not only reduces uncertainty but also builds confidence in selecting products that meet individual needs (Rakhmawati et al., 2025). Consequently, the enjoyment of product searching increases, as consumers feel more engaged and comfortable while exploring cosmetic options through AR (Balaji & Roy, 2017).

The relationship between enjoyment search and attitude to use AR

The use of technology has a significant impact on users' attitudes toward using AR. According to studies by Davis (1989) and Kim et al. (2016), users who feel comfortable and accustomed to technology tend to have a more positive attitude toward its use. In an offline shopping environment, shopping comfort—particularly through entertainment—strongly influences purchasing behavior (Kim & Forsythe, 2008; Pantano & Servidio, 2012). This sense of satisfaction is also evident in online shopping. The more memorable the experience of using AR technology, the more positive the user's attitude toward it becomes, which in turn increases the likelihood of their continued use. Consistent with prior research, the sense of presence has a significant impact on attitude (Kim et al., 2023). At the same time, vividness was a significant antecedent to a sense of presence.

Studies on AR suggest that the enjoyment experienced while shopping with this technology fosters a positive attitude toward it, as users perceive AR as valuable and beneficial (Holdack et al., 2022). The adoption of AR in shopping is also known to create a hedonic experience, which positively impacts users' attitudes toward the technology (Pantano et al., 2017; Pantano & Servidio, 2012; Pantano & Viassone, 2014; Rese et al., 2017). Furthermore, a significant relationship exists between perceived enjoyment and users' attitudes toward technology. Research by Kujala et al. (2017), Nysveen et al. (2005), and Venkatesh et al. (2003) suggests that the higher the perceived enjoyment, the more likely users are to develop a positive attitude toward using the technology or service.

The relationship between attitude to use ar and intention to reuse AR

For efficiency, people tend to choose the options that they find good, beneficial, and useful (Mothersbaugh et al., 2018). When consumers enjoy using it and have a positive perception of AR, they are more likely to continue using it. A positive attitude toward technology use encourages users to adopt AR in the future (Balog & Pribeanu, 2010; Holdack et al., 2022). Consumers' positive attitudes toward AR usage influence their intention to reuse the technology in the future.

In the context of AR, a positive experience provided by interactive features—such as visual product simulations or the ability to try on cosmetics virtually—reinforces users' intention to reuse AR in the future (Balog & Pribeanu, 2010). Halal cosmetic consumers, in particular, often require detailed information about product ingredients to ensure compliance with halal standards. AR technology enables these consumers to access more transparent visual and interactive information about halal product contents, allowing them to virtually try on cosmetics without physical contact. In line with previous studies, a positive attitude has been found to significantly influence behavioral intention (Kim et al., 2023). This beneficial experience enhances consumer trust and comfort with halal products, encouraging them to continue using AR when shopping for halal cosmetics. Thus, a positive consumer attitude toward using AR in halal cosmetics—especially those from a renowned halal brand—will drive their intention to continue using AR in the future.

This study contributes to the existing literature on technology adoption in marketing, particularly in the context of halal cosmetics and AR technology. The findings indicate that

factors such as vividness, interactivity, and customization play a crucial role in influencing enjoyment. Furthermore, these factors support the S-O-R theory in understanding how technology can stimulate sensory experiences and interactions that shape consumer attitudes. Additionally, this study offers a new perspective on the technology attributes of how enjoyment search enhances positive attitudes and increases the likelihood of repeated use of AR technology. This research contributes to consumer behavior theories related to technology usage.

This study provides valuable insights for halal cosmetic companies aiming to optimize AR-based marketing strategies. By enhancing the vividness, interactivity, and customization in AR applications, brands can create a more engaging and personalized shopping experience for consumers. The act ultimately increases loyalty and encourages repeated use of the technology. The use of AR in online cosmetic purchases is expected to assist consumers in making informed purchasing decisions, as it reduces doubts about the product's suitability for their skin without requiring direct trials. Companies should focus on ensuring that their AR applications offer rich sensory experiences, realistic interactions, and extensive personalization options to enhance consumer comfort and confidence when trying cosmetic products virtually. Additionally, this study examines the use of AR to enhance consumers' purchase intentions for halal products. This purpose aligns with Sustainable Development Goal (SDG) 9: Industry, Innovation, and Infrastructure. The adoption of AR can also help reduce product waste by minimizing the use of physical testers that often go unused or are discarded, thereby supporting SDG 12: Responsible Consumption and Production. Finally, this research advocates for more sustainable and environmentally responsible business practices in the cosmetic industry.

Although this study provides insights into the role of vividness, interactivity, and customization in enhancing enjoyment during product search and the intention to reuse AR technology within the context of halal cosmetics, several limitations should be noted. Firstly, this research focuses solely on one product category—halal cosmetics—so the results may not apply to other product categories that also utilize AR. Future studies could expand the scope by examining various industries that use AR to determine whether the same factors have consistent effects.

Secondly, this study employs a quantitative survey-based approach, which may limit its ability to capture the depth of consumer experiences with AR. Future research could incorporate experimental behavioral analysis to compare AR and non-AR use, thereby providing a more detailed understanding of how and why consumers interact with AR in their purchasing decisions. Additionally, future studies could explore other technological elements—such as processing speed, AI integration in AR, and user-friendly interfaces—that contribute to a more optimal shopping experience, and examine how advancements in AR (e.g., AI-based AR) further enhance consumer experience and the intention to reuse AR.

Finally, this study was conducted within a specific population in Indonesia. As online shopping continues to grow, future research could include samples from other countries (e.g., Malaysia) to enable cross-country comparisons in AR usage. This diverse representation would help generate more representative results and broaden generalizations regarding AR adoption in halal product shopping across different countries, providing valuable insights for companies aiming to expand into international markets.

Conclusion

This study found that vividness, interactivity, and customization in AR technology influence consumer enjoyment in searching for halal cosmetic products. Vividness enhances realistic sensory experiences, interactivity allows users to control their product experience, and customization enables personalization based on preferences. Users need high-quality images

(vividness) to help them determine the right product for their skin. Moreover, ease of use, demonstrated through effective interaction between the user and the technology, also creates a pleasant user experience and facilitates access to the necessary information. With needs inevitably differing from one consumer to another, customization is essential for catering to these differences. Overall, these elements contribute to a positive AR user experience related to information retrieval. A high level of enjoyment in the search process contributes to a positive consumer attitude towards AR usage, which subsequently increases the intention to reuse AR. These findings suggest that user experience and the quality of AR technology play a more significant role in driving repeated use than simply an awareness of the halal aspect of cosmetics.

Author Contribution

Dien Mardhiyah: Conceptualization and Formal Analysis
Ali Imaduddin Futuwwah: Methodology and Investigation
Fitriah Dwi Susilowati: Data Curation and Project Administration
Syuhaily Osman: Translate and Review Overall Paper
Nidia Artanti Gozali: Methodology and Formal Analysis
Nadia Ramadhani Nugroho Putri: Data Collecting

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Declaration of Competing Interest

There is no conflict of interest in the preparation of this paper.

Ethical Statement

All respondents provided informed consent prior to the start of the study. Their identities and personal information were kept confidential, and all data were used solely for research purposes without revealing any identifying details.

References

Balaji, M. S., & Roy, S. K. (2017). Value co-creation with Internet of things technology in the retail industry. *Journal of Marketing Management*, *33*(1–2), 7–31. https://doi.org/10.1080/0267257X.2016.1217914

Balog, A., & Pribeanu, C. (2010). The Role of Perceived Enjoyment in the Students' Acceptance of an Augmented Reality Teaching Platform: a Structural Equation Modelling Approach. *Studies in Informatics and Control*, *19*(3). https://doi.org/10.24846/v19i3y201011

Begum, S., Alamgir, M., & Sharmin, T. (2025). Understanding Consumer Perception of halal foods : A Conceptual Framework Using the Stimulus-Organism- Response Model. *Journal of Business Strategy Finance and Management*, *07*(1). https://doi.org/http://dx.doi.org/10.12944/JBSFM.07.01.02

Chen, J. V., Ha, Q.-A., & Vu, M. T. (2023). The Influences of Virtual Reality Shopping Characteristics on Consumers' Impulse Buying Behavior. *International Journal of Human–Computer Interaction*, *39*(17), 3473–3491. https://doi.org/10.1080/10447318.2022.2098566

Chen, K., & Yen, D. C. (2004). Improving the quality of online presence through interactivity. *Information & Management*, *42*(1), 217–226. https://doi.org/10.1016/j.im.2004.01.005

Chiu, C. L., Ho, H.-C., Yu, T., Liu, Y., & Mo, Y. (2021). Exploring information technology success of Augmented Reality Retail Applications in retail food chain. *Journal of Retailing and Consumer Services*, *61*, 102561. https://doi.org/10.1016/j.jretconser.2021.102561

Daassi, M., & Debbabi, S. (2021). Intention to reuse AR-based apps: The combined role of the sense of immersion, product presence and perceived realism. *Information & Management*, *58*(4), 103453. https://doi.org/10.1016/j.im.2021.103453

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems*, *13*(3), 319–339. https://doi.org/10.2307/249008

Elsotouhy, M., Mobarak, A., Dakrory, M., Ghonim, M., & Khashan, M. (2023). Integrating ISS and SOR models to investigate the determinants of continuance intention toward using m-payment for donations (Sadaqah): the moderating role of Islamic religiosity. *International Journal of Bank Marketing*, *41*(7), 1640–1670. https://doi.org/https://doi.org/10.1108/IJBM-11-2022-0498

Foroughi, B., Hongsachart, H., Asadi, S., Iranmanesh, M., Ghobakhloo, M., & Babaee Tirkolaee, E. (2024). Reuse intention of augmented reality apps: recreational consciousness as moderator. *The Service Industries Journal*, *44*(7–8), 480–521. https://doi.org/10.1080/02642069.2023.2259313

Forsythe, S., Liu, C., Shannon, D., & Gardner, L. C. (2006). Development of a scale to measure the perceived benefits and risks of online shopping. *Journal of Interactive Marketing*, *20*(2), 55–75. https://doi.org/10.1002/dir.20061

Govindan, K., Jha, P. C., Agarwal, V., & Darbari, J. D. (2019). Environmental management partner selection for reverse supply chain collaboration: A sustainable approach. *Journal of Environmental Management*, *236*(August 2018), 784–797. https://doi.org/10.1016/j.jenvman.2018.11.088

Hair, J., Black, W., Babin, B., & Anderson, R. (2018). on Multivariate Data Analysis Joseph F . Hair Jr . William C . Black Eight Edition. In *International Journal of Multivariate Data Analysis* (Vol. 1, Issue 2).

Hasanah, H., Sarma, M., & Munandar, J. M. (2023). The Effect of Halal Certification and Entrepreneurial Marketing on the Successful Small and Medium-sized Enterprises of Food Products. *Journal of Economics, Business, & Accountancy Ventura*, *26*(1), 26–36. https://doi.org/10.14414/jebav.v26i1.3216

HDCGlobal. (2023). *Malaysia, Indonesia should go beyond halal certification to lead global halal industry — Indonesian envoy*. HDCGlobal.

Heller, J., Chylinski, M., de Ruyter, K., Mahr, D., & Keeling, D. I. (2019). Touching the Untouchable: Exploring Multi-Sensory Augmented Reality in the Context of Online Retailing. *Journal of Retailing*, *95*(4), 219–234. https://doi.org/10.1016/j.jretai.2019.10.008

Hilken, T., Heller, J., Chylinski, M., Keeling, D. I., Mahr, D., & de Ruyter, K. (2018). Making omnichannel an augmented reality: the current and future state of the art. *Journal of Research in Interactive Marketing*, *12*(4), 509–523. https://doi.org/10.1108/JRIM-01-2018-0023

Hilty, D. M., Randhawa, K., Maheu, M. M., McKean, A. J. S., Pantera, R., Mishkind, M. C., & Rizzo, A. "Skip." (2020). A Review of Telepresence, Virtual Reality, and Augmented Reality Applied to Clinical Care. *Journal of Technology in Behavioral Science*, *5*(2), 178–205. https://doi.org/10.1007/s41347-020-00126-x

Holdack, E., Lurie-Stoyanov, K., & Fromme, H. F. (2022). The role of perceived enjoyment and perceived informativeness in assessing the acceptance of AR wearables. *Journal of Retailing and Consumer Services*, *65*, 102259. https://doi.org/10.1016/j.jretconser.2020.102259

Huang, T.-L., & Liao, S. (2015). A model of acceptance of augmented-reality interactive technology: the moderating role of cognitive innovativeness. *Electronic Commerce Research*, *15*(2), 269–295. https://doi.org/10.1007/s10660-014-9163-2

Iranmanesh, M., Senali, M. G., Foroughi, B., Ghobakhloo, M., Asadi, S., & Babaee Tirkolaee, E. (2024). Effect of augmented reality applications on attitude and behaviours of customers: cognitive and affective perspectives. *Asia-Pacific Journal of Business Administration*, *16*(5), 1067–1092. https://doi.org/10.1108/APJBA-07-2023-0292

Isa, R. M., Man, S., Rahman, N. N. A., & Aziz, A. (2023). Determinants of consumer adoption of halal cosmetics: A systematic literature review. *Journal of Cosmetic Dermatology*, *22*(3), 752–762. https://doi.org/10.1111/jocd.15486

Javornik, A. (2016a). Augmented reality: Research agenda for studying the impact of its media characteristics on consumer behaviour. *Journal of Retailing and Consumer Services*, *30*, 252–261. https://doi.org/10.1016/j.jretconser.2016.02.004

Javornik, A. (2016b). 'It's an illusion, but it looks real!' Consumer affective, cognitive and behavioural responses to augmented reality applications. *Journal of Marketing Management*, *32*(9–10), 987–1011. https://doi.org/10.1080/0267257X.2016.1174726

Jiang, Q., Sun, J., & Yang, C. (2022). The Impact of Perceived Interactivity and Intrinsic Value on Users ' Continuance Intention in Using Mobile Augmented. *Systems*, *10*(1), 3.

Jung, T., Tom Dieck, M. C., Lee, H., & Chung, N. (2020). Moderating Role of Long-Term Orientation on Augmented Reality Adoption. *International Journal of Human–Computer Interaction*, *36*(3), 239–250. https://doi.org/10.1080/10447318.2019.1630933

KenResearch.com. (2024). *Indonesia Virtual Reality and Augmented Reality Market Outlook to 2028*. Ken Research. https://www.kenresearch.com/industry-reports/indonesia-virtual-reality-and-augmented-reality-market

Kim, H. C., & Hyun, M. Y. (2016). Predicting the use of smartphone-based Augmented Reality (AR): Does telepresence really help? *Computers in Human Behavior*, *59*, 28–38. https://doi.org/10.1016/j.chb.2016.01.001

Kim, Jiyeon, & Forsythe, S. (2008). Adoption of Virtual Try-on technology for online apparel shopping. *Journal of Interactive Marketing*, *22*(2), 45–59. https://doi.org/10.1002/dir.20113

Kim, Jung-hwan, Kim, M., Park, M., & Yoo, J. (2023). Immersive interactive technologies and virtual shopping experiences : Differences in consumer perceptions between augmented reality (AR) and virtual reality (VR). *Telematics and Informatics*, *77*(June 2022), 101936. https://doi.org/10.1016/j.tele.2022.101936

Kim, K., Hwang, J., Zo, H., & Lee, H. (2016). Understanding users' continuance intention toward smartphone augmented reality applications. *Information Development*, *32*(2), 161–174. https://doi.org/10.1177/0266666914535119

Kotler, P., Keller, K., & Chernev, A. (2021). Marketing Management. In *Pearson* (16th ed.). https://doi.org/10.2307/1250781

Kujala, S., Mugge, R., & Miron-Shatz, T. (2017). The role of expectations in service evaluation: A longitudinal study of a proximity mobile payment service. *International Journal of Human-Computer Studies*, *98*, 51–61. https://doi.org/10.1016/j.ijhcs.2016.09.011

Kurniawati, S., Juniarti, R. P., Omar, A., & Ridlwan, A. A. (2023). Revealing well-educated millenials' purchase intention on halal cosmetics: The role of knowledge, religiosity, and

attitude. *Al-Uqud : Journal of Islamic Economics*, *7*(1), 95–109. https://doi.org/10.26740/aluqud.v7n1.p95-109

Li, H., Daugherty, T., & Biocca, F. (2003). The Role of Virtual Experience in Consumer Learning. *Journal of Consumer Psychology*, *13*(4), 395–407. https://doi.org/10.1207/S15327663JCP1304_07

Liew, C. W. S., & Karia, N. (2024). Halal cosmetics: a technology-empowered systematic literature review. *Journal of Islamic Marketing*, *15*(7), 1722–1742. https://doi.org/10.1108/JIMA-09-2023-0295

Lim, J., & Ayyagari, R. (2018). Investigating the determinants of telepresence in the e-commerce setting. *Computers in Human Behavior*, *85*, 360–371. https://doi.org/10.1016/j.chb.2018.04.024

Ling, P.-S., Yusof, F., Wahab, A., & Bohari, S. (2025). Use intention on the Halal verification applications: the moderating role of religiosity in an S-O-R framework. *Journal of Islamic Marketing*. https://doi.org/https://doi.org/10.1108/JIMA-10-2024-0483

Liu, Z., Li, J., Wang, X., & Guo, Y. (2023). How search and evaluation cues influence consumers' continuous watching and purchase intentions: An investigation of live-stream shopping from an information foraging perspective. *Journal of Business Research*, *168*, 114233. https://doi.org/10.1016/j.jbusres.2023.114233

Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. The MIT Press.

Mollen, A., & Wilson, H. (2010). Engagement, telepresence and interactivity in online consumer experience: Reconciling scholastic and managerial perspectives. *Journal of Business Research*, *63*(9–10), 919–925. https://doi.org/10.1016/j.jbusres.2009.05.014

Monoarfa, H., Rosida, R., Juliana, J., Sintiyawati, S., & Abu Karim, R. (2023). Halal awareness can't improved purchase intention imported skincare. *Al-Uqud : Journal of Islamic Economics*, *7*(1), 54–66. https://doi.org/10.26740/aluqud.v7n1.p54-66

Mothersbaugh, D., Hawkins, D., & Kleiser, S. (2018). *Consumer Behavior Consumer behavior* (Vol. 27, Issue 23).

Mursid, A. (2021). Effects of Sentiment on Impulsive Buying Behavior: Evidence of COVID-19 in Indonesia. *Journal of Economics, Business, & Accountancy Ventura*, *23*(3), 452–465. https://doi.org/10.14414/jebav.v23i3.2459

Nikhashemi, S. R., Knight, H. H., Nusair, K., & Liat, C. B. (2021). Augmented reality in smart retailing: A (n) (A) Symmetric Approach to continuous intention to use retail brands' mobile AR apps. *Journal of Retailing and Consumer Services*, *60*, 102464. https://doi.org/10.1016/j.jretconser.2021.102464

Nysveen, H., Pedersen, P. E., & Thorbjørnsen, H. (2005). Explaining intention to use mobile chat services: moderating effects of gender. *Journal of Consumer Marketing*, *22*(5), 247–256. https://doi.org/10.1108/07363760510611671

Oh, L., Teo, H., & Sambamurthy, V. (2012). The effects of retail channel integration through the use of information technologies on firm performance. *Journal of Operations Management*, *30*(5), 368–381. https://doi.org/10.1016/j.jom.2012.03.001

Pantano, E., Rese, A., & Baier, D. (2017). Enhancing the online decision-making process by using augmented reality: A two country comparison of youth markets. *Journal of Retailing and Consumer Services*, *38*, 81–95. https://doi.org/10.1016/j.jretconser.2017.05.011

Pantano, E., & Servidio, R. (2012). Modeling innovative points of sales through virtual and immersive technologies. *Journal of Retailing and Consumer Services*, *19*(3), 279–286. https://doi.org/10.1016/j.jretconser.2012.02.002

Pantano, E., & Viassone, M. (2014). Demand pull and technology push perspective in technology-based innovations for the points of sale: The retailers evaluation. *Journal of Retailing and Consumer Services*, *21*(1), 43–47. https://doi.org/10.1016/j.jretconser.2013.06.007

Peukert, C., Pfeiffer, J., Meißner, M., Pfeiffer, T., & Weinhardt, C. (2019). Shopping in Virtual Reality Stores: The Influence of Immersion on System Adoption. *Journal of Management Information Systems*, *36*(3), 755–788. https://doi.org/10.1080/07421222.2019.1628889

Poushneh, A., & Vasquez-Parraga, A. Z. (2017). Discernible impact of augmented reality on retail customer's experience, satisfaction and willingness to buy. *Journal of Retailing and Consumer Services*, *34*, 229–234. https://doi.org/10.1016/j.jretconser.2016.10.005

Qolbi, A., Atiya, N., & Rustanti, E. (2024). Tren Penelitian Konsumsi Produk Halal di Dunia; dengan pendekatan Bibliomteric. *Jurnal Ilmiah Ekonomi Islam*, *10*(1), 911. https://doi.org/10.29040/jiei.v10i1.12342

Rakhmawati, N. A., Fabroyir, H., Hafidz, I., & Arifiani, S. (2025). Impact of an Augmented Reality App and Gamification on Public Visibility of Halal Certification in Indonesia. *International Journal on Food System Dynamics*, *6945*, 1–18. https://doi.org/10.1163/18696945-bja00019

Rauschnabel, P. A., Rossmann, A., & tom Dieck, M. C. (2017). An adoption framework for mobile augmented reality games: The case of Pokémon Go. *Computers in Human Behavior*, *76*, 276–286. https://doi.org/10.1016/j.chb.2017.07.030

Rese, A., Baier, D., Geyer-Schulz, A., & Schreiber, S. (2017). How augmented reality apps are accepted by consumers: A comparative analysis using scales and opinions. *Technological Forecasting and Social Change*, *124*, 306–319. https://doi.org/10.1016/j.techfore.2016.10.010

Schröder, H., & Zaharia, S. (2008). Linking multi-channel customer behavior with shopping motives: An empirical investigation of a German retailer. *Journal of Retailing and Consumer Services*, *15*(6), 452–468. https://doi.org/10.1016/j.jretconser.2008.01.001

Shawtari, F. A., Salem, M. A., Hussain, H. I., Alaeddin, O., & Thabit, O. Bin. (2016). Características y valoración del gobierno corporativo: inferencias de la regresión de cuantiles. *Journal of Economics, Finance and Administrative Science*, *21*(41), 81–88. https://doi.org/10.1016/j.jefas.2016.06.004

Smink, A. R., van Reijmersdal, E. A., van Noort, G., & Neijens, P. C. (2020). Shopping in augmented reality: The effects of spatial presence, personalization and intrusiveness on app and brand responses. *Journal of Business Research*, *118*, 474–485. https://doi.org/10.1016/j.jbusres.2020.07.018

Song, S., Yao, X., & Wen, N. (2021). What motivates Chinese consumers to avoid information about the COVID-19 pandemic?: The perspective of the stimulus-organism-response model. *Information Processing & Management*, *58*(1), 102407. https://doi.org/10.1016/j.ipm.2020.102407

Steuer, J. (1992). Defining Virtual Reality: Dimensions Determining Telepresence. *Journal of Communication*, *42*(4), 73–93. https://doi.org/10.1111/j.1460-2466.1992.tb00812.x

Sylaiou, S., Mania, K., Karoulis, A., & White, M. (2010). Exploring the relationship between presence and enjoyment in a virtual museum. *International Journal of Human-Computer Studies*, *68*(5), 243–253. https://doi.org/10.1016/j.ijhcs.2009.11.002

Trivedi, J. P., & Trivedi, H. (2018). Investigating the Factors That Make a Fashion App Successful: The Moderating Role of Personalization. *Journal of Internet Commerce*, *17*(2), 170–187. https://doi.org/10.1080/15332861.2018.1433908

Vazquez, E. E., Patel, C., Alvidrez, S., & Siliceo, L. (2023). Images, reviews, and purchase intention on social commerce: The role of mental imagery vividness, cognitive and

affective social presence. *Journal of Retailing and Consumer Services*, *74*, 103415. https://doi.org/10.1016/j.jretconser.2023.103415

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). Quarterly. *MIS Quarterly*, *27*(3), 425–478.

Venkatesh, V., Speier, C., & Morris, M. G. (2002). User Acceptance Enablers in Individual Decision Making About Technology: Toward an Integrated Model. *Decision Sciences*, *33*(2), 297–316. https://doi.org/10.1111/j.1540-5915.2002.tb01646.x

Whang, J. Bin, Song, J. H., Choi, B., & Lee, J.-H. (2021). The effect of Augmented Reality on purchase intention of beauty products: The roles of consumers' control. *Journal of Business Research*, *133*, 275–284. https://doi.org/10.1016/j.jbusres.2021.04.057

Yonatan, A. (2023). *Indonesia Peringkat 4, Ini Dia 7 Negara Pengguna Internet Terbesar di Dunia*. GoodStats. https://data.goodstats.id/statistic/indonesia-peringkat-4-ini-dia-7-negara-pengguna-internet-terbesar-di-dunia-FLw6V