



# Article Mechanism Linking AR-Based Presentation Mode and Consumers' Responses: A Moderated Serial Mediation Model

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**Abstract:** The technological development of online product presentation modes (e.g., augmented reality, virtual reality) will greatly impact the future of e-retailing. The potential benefits of applying these new technologies for e-retailers need further investigation. Based upon the stimulus-organism-response (S-O-R) model, this study examines the effect of AR-based presentation modes on consumer patronage intention, with the mediating role of immersion, enjoyment, perceived product risk and attractiveness of the online store. Furthermore, it explores the moderating effect of technophilia that reflects consumers' positive attitude towards technology. A single factor between-subject experiment study was conducted with a sample of 420 university students. Results suggest that the serial indirect effects of AR presentation on patronage intention through immersion/enjoyment/perceived product risk and attractiveness of online store are conditional upon the level of technophilia. Technophilia is a critical factor that explains consumers' psychological and behavioral responses when they are using new technologies. The study provides new knowledge for e-marketing practitioners, as well as AR literature by indicating how and when new technology-based presentation works in evoking consumers' patronage intention.

Keywords: patronage intention; product presentation mode; argument reality

# 1. Introduction

Product information plays an important role in determining consumers' purchase choices [1]. It can be presented in different modes, ranging from text to multimedia to product trials [2]. Previous research focusing on the offline purchase context indicated different presentation modes could impact consumers' attitudes and product evaluations distinctly [3]. With the popularity of e-commerce worldwide, digital product presentation is more crucial in the online context [4] as consumers can not physically feel or touch the real products [5]. Thus, how consumers respond to different digital presentation modes attracts researchers' attention.

Text, pictures and videos are the most widely used digital presentation modes and they are used to convey visual information. Consumers make a judgment of the product by browsing the presented visual information on e-commerce platforms [2]. However, visual messages alone are not enough to decrease consumers' perceived risk or support their final purchase decisions [6]. Therefore, some consumers are inclined to experience products and make the final purchase in an offline store [7]. For e-retailers, providing a more realistic environment is essential to retain consumers throughout the e-shopping process and increase final transactions. Due to the development of technology, augmented reality (AR) and virtual reality (VR) create a sense of telepresence and greatly make up for the defect of merely visual information presented in online stores. In particular, consumers can use their own smartphones to conveniently experience AR when surfing e-commerce websites, while experiencing VR still requires additional equipment. Many e-retailers on



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**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). Amazon, Alibaba and Jingdong, have been implementing AR presentation mode that goes beyond photos and videos, to create outstanding experiences for consumers [8].

Prior studies have demonstrated that AR increases consumers' satisfaction [9,10], intention to buy [11,12], intention to visit the store [13-15] and reuse the APP [16,17]. The influence of AR on consumer response is mediated by affective factors and cognitive factors. Affective factors include utilitarian experiences [11,15], informativeness [18], hedonic experience [19], enjoyment [17,20], engagement [10], flow [21], telepresence [22], perceived product risk [19], interactivity [23], spatial presence, personalization and intrusiveness [24]. Cognitive factors include choice confidence [17], visually appeal [25] and attractiveness of the online store [19]. The moderating effects of familiarity with AR [19], product type [20], shopping motivation [26] and body image [16] on the relationship between AR use and consumer behavioral intention were also examined. However, research focusing on the sequential influence path of AR use on consumers' affective and the subsequent cognitive and behavioral responses is still limited. Particularly the attractiveness of online stores, which captures the potential effect of AR on online store image, is overlooked by prior studies. Furthermore, AR is a relatively new but not widely adopted technology [19]. Previous research indicated people had two opposite attitudes towards new technology, including technophobia (rejection and/or avoidance of technology) and technophilia (attraction and enthusiastic adoption of technology) [27]. Whether and how consumers' attitude towards new technology influence the effect of AR presentation needs further investigation.

Therefore, in order to reduce e-retailers' concerns (e.g., whether AR brings benefits, drives traffic, improves online store image and is still effective for consumers insensitive to new technology) and provide scientific evidence for retail managers before investing in AR for their online stores, we conducted this research to investigate the mechanism sequentially connected AR presentation and consumer responses, as well as the boundary conditions. More specifically, the study aimed to examine the mediating role of immersion, enjoyment, perceived product risk, attractiveness of online the store, and the moderating role of technophilia pertaining to the influence of AR on online consumers. The next section includes the theoretical background and hypotheses. The experimental design, procedure and results are then presented and explained in Sections 3 and 4. Finally, the last two sections discuss the implications, as well as the limitations of the study.

## 2. Theoretical Background and Hypotheses

#### 2.1. S-O-R Model

The Stimulus-Organism-Reaction (SOR) model has been widely used to study consumer behavior in the e-commerce environment [28–30]. It uses three steps to describe how individuals react to stimuli in the environment. In this model, stimuli (S) in the environment influence an individual's internal states (O), and then these internal states of emotion and cognition cause two contrasting responses (R) in the consumer: approach or avoidance [28,31,32]. The model was originally designed for general environmental psychology but has been verified to work effectively in retail settings [33], including e-commerce [29,30,34,35]. For retailers who want to increase the number of customers' approach behaviors, the model can be used to identify how different stimuli affect consumers' responses. Thus, it is critical to find out what environmental factors generate targeted consumer pleasure, and finally, induce consumers to spend more time and money. As it becomes increasingly difficult for online stores to gain advantages from price, convenience, range and transactional efficiency, presentation modes applying new technology provide an additional advantage for some stores to trigger consumers' shopping arousal during the purchase process. As for AR presentation mode on e-commerce websites, it allows consumers' physical body parts and virtual products to reside simultaneously in consumers' mobile screens, and it greatly enriches consumers' online shopping experiences. AR is particularly suitable for wearable products (e.g., glasses, shoes, rings, watches, clothes, earrings, etc.), as it provides consumers with the enjoyment of viewing themselves wearing

diverse products without physically going to a store [11]. Applying the S-O-R model to the present study, product presentations in picture and AR forms (S) are posited to stimulate different affective and cognitive states (O) in consumers, which in turn induce positive or negative behavioral intentions (R) as responses. In addition, technophilia as a personal trait is posited to moderate the effect of digital presentation mode on consumer responses.

# 2.2. The Mediating Effect of Immersion and Enjoyment

Compared to the picture mode, AR allows users to interact with the real product images in a seamless way [36]. In e-retailing settings, AR embeds a virtual wearable product (e.g., glasses, a shoe) into consumers' real body, and improves consumers' understanding of the products. This presentation mode induces interactivity and vividness [37] and further helps to augment online stores' services [9].

To account for the influence of AR, immersion and enjoyment are often considered to be important factors that affect consumers' judgments. In the context of digital product presentation, immersion measures consumers' feelings of being temporarily absorbed by virtual presentations [11], and it plays a mediating role in many virtual experiences [37]. Enjoyment reflects consumers' affective responses to interactivity, and it measures the extent to which the AR experience is perceived as enjoyable [11]. Researches have shown that AR-based service makes consumers perceive a higher level of immersion and enjoyment, and these affective feelings increase consumers' positive attitudes and behavioral intentions [11,17,18,38]. Since AR allows consumers to view themselves actually wearing the product, it can result in higher immersion and enjoyment than the pure picture presentation, it is expected that AR mode can further increase consumers' patronage intentions as compared to the pure picture mode. Put shortly, AR has an indirect positive influence on patronage intention via increased immersion and enjoyment evaluation towards the online store. Thus, we propose the following hypotheses:

**H1a.** Immersion mediates the relationship between AR presentation and patronage intention. (AR  $\rightarrow$  + immersion  $\rightarrow$  + patronage intention)

**H2a.** Enjoyment mediates the relationship between AR presentation and patronage intention. (AR  $\rightarrow$  + enjoyment  $\rightarrow$  + patronage intention)

Technological innovation often induces consumers' positive attitudes towards stores [39,40]. AR is a new but not widely adopted technology in society. Thus, some retailers use it to gain attractiveness among so many stores on e-commerce platforms [41]. The attractiveness is an important store asset and can predict consumers' shopping behavior [40,42]. In the current study, we define the attractiveness of the online store as the perceived superiority of one store against other competing stores. As most online stores have not provided AR services, the AR-adopted online stores can easily attract consumers' attention and show the difference with other online stores that merely provide picture and text information [19]. Thus, the construct 'attractiveness' can appropriately capture the influence of AR for online stores.

Previous research indicates that the application of new technology can better meet customers' experience needs and then affect their perception of the online store [39]. In this regard, consumers in AR settings could experience increased immersion and enjoyment [17], which consequently enhances their positive perception of the online store and their purchase intention. AR mode presentation was found to have a positive influence on hedonic evaluations, which in turn has a positive influence on store perception [43] and patronage intention [19]. Immersion, enjoyment and hedonic evaluation are all affective feelings induced by AR experience [17]. Thus, we can reasonably infer from the above literature that AR also has an indirect positive influence on patronage intention via the serial mediation of immersion/enjoyment and attractiveness. As such, the following hypotheses are proposed:

**H1b.** *The relationship between AR presentation and patronage intention is serially mediated by immersion and attractiveness of the online store.* ( $AR \rightarrow + immersion \rightarrow + attractiveness \rightarrow + patronage intention$ )

**H2b.** The relationship between AR presentation and patronage intention is serially mediated by the enjoyment and attractiveness of the online store. (AR  $\rightarrow$  + enjoyment  $\rightarrow$  + attractiveness  $\rightarrow$  + patronage intention)

### 2.3. The Mediating Effect of Perceived Product Risk

Perceived risk is defined as a person's perception of the uncertain and adverse consequences of engaging in an activity [44,45]. In the e-commerce context, consumers want to purchase a product that best meets their needs with the least potential risk [46]. Generally, ecommerce consumers are mainly confronted with three categories of risk facing consumers, including (1) product risk (failure to gain product benefit); (2) information misuse risk (loss of privacy); (3) functionality inefficiency risk (waste time, money or effort) [46,47]. Among these dimensions of risk, product risk exerts the most important impact on consumer behavior [48,49]. Even though there is also product risk in offline purchase settings, the risk is exacerbated in online settings because consumers cannot touch or feel the product in a virtual environment [46].

In order to promote transactions, e-retailers need to develop more suitable communication strategies to reduce the potential buyers' perceived risk and minimize the likelihood of a purchase being canceled. A previous study indicates that retailers often use extrinsic cues (not directly related to website design, service or assortment) and intrinsic cues (part of the offering) to dimmish perceived risk [50]. However, extrinsic cues cannot function well in online settings [49]. E-retailers have to choose more intrinsic cues to decrease consumers' risk perception. Presentation information is a potential choice that plays a role as an intrinsic cue. In the traditional text and picture presentation mode, consumers cannot interact with the product and evaluate product performance immediately. This induces consumers' uncertainty and perceived risk in the e-commerce context [50,51]. Particularly for wearable products, consumers always perceive more product risk as the picture presentation mode does not allow them to see their own image when wearing the virtual products. With the application of AR technology, consumers can use their own smartphones to experience product features, reduce risk perception and be more confident of their online choices [15,29]. Furthermore, many studies confirmed that perceived risk always brings negative outcomes, including decreasing long-term profits [52], patronage intention [19,49], purchase attitude [53] and purchase intention [54,55]. Therefore, it is hypothesized that:

**H3a.** Perceived purchase risk mediates the relationship between AR presentation and patronage intention. ( $AR \rightarrow -$  perceived risk  $\rightarrow -$  patronage intention)

Moreover, consumers' perception of product risk also decreases the attractiveness of the online store, which increases consumers' patronage intention in turn [19]. Based on the above reasoning, the following hypothesis is proposed:

**H3b.** The relationship between AR presentation and patronage intention is serially mediated by perceived purchase risk and the attractiveness of online store. (AR  $\rightarrow$  – perceived risk  $\rightarrow$  – attractiveness  $\rightarrow$  + patronage intention)

#### 2.4. The Moderating Effect of Technophilia

Technophilia is defined as "a strong attraction and enthusiasm for new technology" [56]. The concept reflects an individual's positive orientation toward new technologies and measures the pleasure feelings that accompany the adoption of new technologies [57]. People with "technophilia" always view technologies positively, adopt new technology enthusiastically and consider this as beneficial to improve their life [56]. Many studies indicate that a higher level of technophilia was positively associated with new technologybased product adoption or usage, including photovoltaics [58], electronic cigarettes [59,60], electric vehicles [61] and new transit information APPs [62]. However, these studies have not examined how technophilia influences consumers' perceptions when using new technologies. Since people with technophilia traits have positive attitudes towards new technology, we can reasonably infer that people with higher technophilia are not only more likely to adopt new technologies but also have more positive perceptions while using new technologies. In the present study, AR is such a relatively new technology for most people that participants with a higher level of technophilia will show a stronger relationship between AR and consumers' responses. Thus, technophilia would play a moderating role in the indirect effects of AR presentation mode on patronage intentions. In sum, the following hypotheses are proposed:

**H4a.** Technophilia positively moderates the indirect effect of AR presentation on patronage intention through immersion.

**H4b.** *Technophilia positively moderates the indirect effect of AR presentation on patronage intention through serial mediation of immersion and attractiveness of the online store.* 

**H5a.** Technophilia positively moderates the indirect effect of AR presentation on patronage intention through enjoyment.

**H5b.** *Technophilia positively moderates the indirect effect of AR presentation on patronage intention through serial mediation of enjoyment and attractiveness of the online store.* 

**H6a.** Technophilia positively moderates the indirect effect of AR presentation on patronage intention through perceived product risk.

**H6b.** Technophilia positively moderates the indirect effect of AR presentation on patronage intention through serial mediation of perceived product risk and attractiveness of the online store.

Base on the hypotheses above, the research model explaining how AR/picture presentation mode applied by online wearable products stores affects consumer responses is summarized in Figure 1.



Figure 1. Research model.

#### 3. Methodology

### 3.1. Design and Procedure

Following the design of prior studies on the influence of presentation mode on consumer choice [2,19,21,63,64], we adopted a single factor between-subject design, with presentation mode as the independent variable (picture vs. AR). A one-month web-based experiment was conducted in China. At the beginning of the experiment, participants were shown a scenario that they need to purchase a pair of sunglasses for the coming summer vacation. Then, they were randomly and equally assigned sunglasses presentation modes on an e-commerce website (Jingdong.com, JD, accessed on 16 July 2020). Finally, they finished questions about their feelings and patronage intention according to their experience. The two product presentation modes were picture mode and AR mode. In condition 1 (picture mode), participants were shown many sunglasses pictures on an online store. In condition 2 (AR mode), participants were shown the website of the same product and were reminded to open the JD application and try the AR function of the product.

We took a web-based survey approach to collect data. University students in Guangzhou in China were invited to participate in our experiment. Two academic professionals were asked to evaluate the content validity and improve the questionnaire quality. After gathering feedback, we refined the structure, logic and wordings of the questionnaire items for better presentation and readability. We then conducted a pre-test with 10 students to confirm their comprehension. We verified the clarity of the wordings and formatting of the questionnaire. Except for some minor amendments in wordings, there were no major problems. Finally, 210 valid participants were recruited for condition 1 and the other 210 participants for condition 2. As for age, participants were rather young and 80% were between 18 and 25. 47.9% of participants were male and 52.1% female. There was no difference in gender distribution across conditions (p = 0.626)

#### 3.2. Measurement Development

The measurement items for each construct were adapted from previously validated items by carefully revising them to fit our research context. Three items (e.g., I felt completely immersed) measuring immersion were adapted from [11,65,66]. Items (e.g., I found the product presentation mode interesting) used by [67,68] were adapted to measure enjoyment. Perceived risk was measured using three items (e.g., I have confidence in my choice if I buy a product at this online store.) adapted from [69,70]. Items (e.g., This online store is superior to competitor) the measurement of the attractiveness of the online store was adapted from [19,41]. Patronage intention was measured with three items (e.g., I would purchase the sunglass at this online store) adapted from [71]. Technophilia was assessed using three items (e.g., I enjoy using new equipment or technology) adapted from [27]. A seven-Likert scale ranging from "Strongly disagree" to "Strongly agree" was used to measure all of the items.

## 3.3. Data Analysis

We used SmartPLS3 and applied PLS-SEM to test our research model for two reasons. First, PLS-SEM can maximize the variance explained by the latent variables, while CB-SEM centers on theory testing and confirmation [72]. As our objective was to predict the factors influencing consumers' patronage intention, PLS was more suitable. Second, PLS allows the simultaneous testing of mediation with minimum bias, resulting in a greater appreciation of complete effects. This method is better than simple linear regression, in which each mediation pathway is tested individually. Following a two-step analytical procedure approach, measurement and structural models were assessed. As the PLS calculation does not generate formal significance test results for each parameter, a bootstrap technique was adopted to obtain the t-statistics and standard errors [73]. For the present study, we conducted bootstrapping with 5000 re-samples.

## 3.4. Common Method Bias

Following recommendations [74], procedural design and post-hoc analysis were used to mitigate common method bias (CMB) arising from single-source and self-reported data.

For procedural design, we consulted senior academics and conducted a pilot study to develop the final questionnaire. These steps ensured that the questionnaire was concise and clear. In addition, a counter-balancing of question order by separating the measurement questions was implemented [74].

The post-hoc analysis employed two statistical techniques to alleviate CMB [75]. First, we used the Harman single-factor test to investigate whether a single factor emerging from the factor analysis accounted for the majority of covariance among all constructs. Six constructs with eigenvalues greater than 1.0 emerged from the unrotated factor analysis,

accounting for 68.87% of the total variance. The first factor explained 32.85% of the variance, less than the 40% threshold. Second, we performed a full collinearity test to determine whether any constructs contained the VIF values equal to or greater than 3.3 [76]. Results showed that pathological VIFs for all constructs ranged from 1.625 to 2.477, confirming that CMB is not a threat in our study.

# 4. Results

#### 4.1. Measurement Model Assessment

We used internal consistency reliability, convergent validity and discriminant validity to examine reflective measures. As Table 1 shows, composite reliability (CR) values are all above the lower limit of 0.70 [77], indicating internal consistency reliability. As the standardized factor loadings are higher than 0.70 at the significance level of 0.001 [77] and the average variance extracted (AVE) values are well above the 0.50 threshold [78]. Convergent validity is supported.

Table 1. Assessment of reliability and convergent validity.

	Item	Mean	S.D.	S.E.	Loadings	AVE	CR
Immersion (IMM)	IMM1				0.882		
	IMM2	4.228	1.060	0.052	0.913	0.730	0.890
	IMM3				0.760		
Enjoyment (ENJ)	ENJ 1				0.902		
	ENJ 2	5.000	1.101	0.054	0.880	0.788	0.918
	ENJ 3				0.881		
Demosione d Due des et minte	PPR1				0.714		
(PPR)	PPR2	3.759	0.817	0.040	0.848	0.667	0.857
	PPR3				0.880		
Attractiveness (ATT)	ATT1				0.868		
	ATT2	4.561	1.031	0.050	0.814	0.729	0.889
	ATT3				0.878		
Purchase Intention (PI)	PI1				0.856		
	PI2	4.460	1.099	0.054	0.880	0.763	0.906
	PI3				0.884		
Technophilia (TEC)	TEC1				0.837		
	TEC2	4.644	1.100	0.054	0.796	0.642	0.842
	TEC3				0.867		

Notes: CR, composite reliability; AVE, average variance explained.

Furthermore, as the heterotrait-monotrait (HTMT) ratios of the correlations are lower than the conservative threshold of 0.85 and HTMT confidence intervals (CI = 0.017-0.812) do not include 1.0 (See Table 2), all constructs exhibit discriminant validity. Taken together, the results provide supportive evidence for the constructs' reliability and validity.

Table 2. Assessment of discriminant validity using the	ie HTMT.
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	IMM	ENJ	PPR	ATT
ENJ	0.71			
PPR	0.691	0.615		
ATT	0.663	0.644	0.694	
PI	0.676	0.644	0.657	0.689
TEC	0.733	0.718	0.469	0.456

#### 4.2. Structural Model Assessment: Testing for Moderated Mediating Effects

Besides the collinearity test mentioned above, a bootstrapping procedure with 5000 subsamples was conducted to examine the main effects. As depicted in Figure 2, all paths are significant at 0.01 levels, except for the direct relationship between product presentation mode and patronage intention. The Stone-Geisser  $Q^2$  values obtained through

the blindfolding procedures for immersion ( $Q^2 = 0.290$ ), enjoyment ( $Q^2 = 0.308$ ), perceived product risk ( $Q^2 = 0.121$ ), online store attractiveness ( $Q^2 = 0.326$ ) and purchase intention ( $Q^2 = 0.354$ ) were larger than zero, supporting the predictive relevance of the model. Additionally, the standardized root mean square residual value for the structural model was <0.08 (0.061 for our model), which indicated a good model fit [77].



Figure 2. Main effects of the structural model.

Following the standard procedure applied in previous studies [79–81], we use the latent variable scores generated in the PLS-SEM as input for mediation, moderation and conditional indirect effect (serial moderated mediation analysis).

Table 3 shows that the four significant indirect effects. Immersion (p < 0.001), enjoyment (p < 0.01) and perceived product risk (p < 0.01) significantly mediated the relationship between AR presentation mode and patronage intention. H1a, H2a and H3a are supported. In addition, the results indicated that the serial mediations are in play, whereby AR presentation mode influences immersion, enjoyment and perceived product risk, which affected the attractiveness of the online store, and in turn, influences patronage intention. Hence, H1b, H2b and H3b are supported. Furthermore, the presence of AR also increased the attractiveness of the online store, which increased the purchase intention in turn (p < 0.01,  $\beta = 0.043$ , 95% CI [0.019, 0.072]). The total indirect effect size of product presentation mode on purchase intention is 0.212 (95% CI [0.159, 0.268], p < 0.001), and the four mediators completely mediate the relationship.

Hypotheses	Parameters	Effect	95% CI	p
H1a	$\mathrm{PPM} \to \mathrm{IM} \to \mathrm{PI}$	0.060	[0.030, 0.095]	0.000
H1b	$\text{PPM} \rightarrow \text{IM} \rightarrow \text{ATT} \rightarrow \text{PI}$	0.014	[0.004, 0.026]	0.015
H2a	$\text{PPM} \rightarrow \text{ENJ} \rightarrow \text{PI}$	0.033	[0.012, 0.061]	0.010
H2b	$\text{PPM} \rightarrow \text{ENJ} \rightarrow \text{ATT} \rightarrow \text{PI}$	0.011	[0.004, 0.021]	0.011
H3a	$\mathrm{PPM} \to \mathrm{PPR} \to \mathrm{PI}$	0.037	[0.011, 0.066]	0.009
H3b	$\text{PPM} \rightarrow \text{PPR} \rightarrow \text{ATT} \rightarrow \text{PI}$	0.015	[0.005, 0.030]	0.024

Table 3. Indirect effect of product presentation mode on patronage intention.

Note: Results were based on bootstrapping with 5000 subsamples (two-tailed).

The moderating effects of technophilia on the relationship between product presentation mode and immersion ( $\beta = 0.117$ , p < 0.01, 95% CI = [0.046, 0.195], R<sup>2</sup> change = 31.5%), enjoyment ( $\beta = 0.168$ , p < 0.001, 95% CI = [0.083, 0.252], R<sup>2</sup> change = 35.5%) and perceived product risk ( $\beta = -0.191$ , p < 0.001, 95% CI = [-0.284, -0.118], R<sup>2</sup> change = 14.6%) are significant. The significant moderating effect permits the subsequent examination of serial indirect effects. A bootstrapping with 5000 resamples reveals that technophilia plays a significantly positive moderating role on all the indirect relationship of AR presence on patronage intention (Table 4), with no 0 straddle in between 95% confidence interval. As the moderator increases, all the indirect effect increases. Thus, H4a, H4b, H5a, H5b, H6a and H6b are supported.

Hypotheses	Parameters	Effect	95% CI	р
H4a	$\text{TEC}^* \rightarrow (\text{PPM} \rightarrow \text{IM} \rightarrow \text{PI})$	0.025	[0.008, 0.051]	0.024
H4b	$\text{TEC*} \rightarrow (\text{PPM} \rightarrow \text{IM} \rightarrow \text{ATT} \rightarrow \text{PI})$	0.006	[0.001, 0.013]	0.048
H5a	$\text{TEC}^* \rightarrow (\text{PPM} \rightarrow \text{ENJ} \rightarrow \text{PI})$	0.032	[0.010, 0.064]	0.019
H5b	$\text{TEC*} \rightarrow (\text{PPM} \rightarrow \text{ENJ} \rightarrow \text{ATT} \rightarrow \text{PI})$	0.011	[0.004, 0.021]	0.012
H6a	$\text{TEC}^* \rightarrow (\text{PPM} \rightarrow \text{PPR} \rightarrow \text{PI})$	0.036	[0.010 <i>,</i> 0.075]	0.032
H6b	$\text{TEC*} \rightarrow (\text{PPM} \rightarrow \text{PPR} \rightarrow \text{ATT} \rightarrow \text{PI})$	0.014	[0.005, 0.029]	0.022

Table 4. Moderating effect of technophilia.

Note: TEC\* the moderating effect of Technophilia.

## 5. Discussion and Implications

# 5.1. Discussion

So should online stores embrace cutting-edge technology to present their product? With the proliferation of new technologies (e.g., AR, VR and live streaming) available within e-commerce settings, this question attracts attention from both practitioners and academicians in recent years. The purpose of the present study is to examine the relationship between new technology-based product presentation and patronage intention, and more specifically, on its underlying mechanisms and potential boundary conditions. In addition, we have to note that the present study is mainly based on the perspective of young people.

The results suggest that consumers' patronage intention is indirectly driven by the ARbased product presentation in online stores. The supported serial mediation model infers that AR presentation stimulates patronage intention by psychological response (immersion, enjoyment and perceived product risk), and subsequent cognitive evaluation (attractiveness of online store). While immersion, enjoyment and perceived product risk partially mediate the effect of AR on the attractiveness of online the store, the four variables mentioned above completely mediate the effect of AR on patronage intention. Thus, cutting-edge technology helps to increase the attractiveness of online stores. Furthermore, the greatly improved model by adding technophilia as moderator indicates that the effect of new technology-based presentation mode on patronage intention is stronger for consumers with a higher level of technophilia traits. The findings of this study provide important theoretical and practical implications for e-marketing study.

# 5.2. Theoretical Implications

The study explains the link between new technology-based presentation and consumer behavior by investigating three sequential mediating impact paths. This is an important addition to the previous literature on digital product presentation. Past studies have confirmed that the media characteristics of AR bring the perceptions of immersion, enjoyment, hedonic value, which subsequently increases reuse intention [14,17]. AR-based immersion, enjoyment and hedonic perception can also increase consumers' purchase intention by the mediating role of media usefulness [11,16], user satisfaction [64] and choice confidence [17]. The present study mainly focuses on online store image and examined its antecedents. As indicated by our results, AR-based presentation indeed increases the attractiveness of online stores through the mediating role of immersion, enjoyment and perceived product risk, and ultimately increases consumers' patronage intention. Our finding is consistent with previous findings suggesting AR positively influences patronage intention by the mediator of perceived risk and attractiveness [19]. The serial mediating effects also help to explain the prosperity of live streaming in e-commerce context. By adding immersion, enjoyment and perceived product risk as mediators in the first stage, and attractiveness of online store as a mediator in the second stage, the current study contributes to the AR literature by offering a deep understanding of consumers' responses to cutting-edge technology-based product presentation.

The other contribution is that we find technophilia moderates the indirect effect of AR on patronage intention. Technophilia is a personality trait and it reflects the person's positive attitude towards new technologies. Past researchers mainly focused on the direct

effects of technophilia and confirmed its positive association with new technology adoption [59–61]. However, the role of technophilia in the process of applying new technologies is overlooked by previous research. In the current study, we confirmed that technophilia played an important moderating role. Higher levels of technophilia enhanced the effect of AR usage on consumer perceptions (i.e., immersion, enjoyment and perceived product risk), which increased attractiveness and in turn patronage intention. More importantly, the moderator of technophilia greatly improved the R<sup>2</sup> of immersion, enjoyment and perceived product risk by 31.5%, 35.5% and 14.6%. This study provides insight for future studies concerning the effect of new technology usage by adding the moderating role of technophilia.

#### 5.3. Managerial Implications

Our results offer two main managerial implications for practitioners. First, AR presentation is recommended as an effective marketing strategy for wearable products. E-retailers will benefit from using AR to present their product as AR indeed brings positive psychological responses and increases the attractiveness of the online store. AR presentation mode could be an effective communication strategy in e-commerce settings. It reduces uncertainty and helps consumers to make more confident decisions when purchasing online. In this regard, the online stores that applying AR can attract consumers to patronize and gain advantages over their competitors. Online platforms can incorporate the AR features into their system and educate e-retailers to use AR mode to increase product sales. The conclusion may also be applicable to other new technology-based product presentation modes, for example, VR and live streaming.

Second, marketers should underline the playful character of AR in their advertisements on their websites or social media campaigns. Our results indicate AR enhances the consumer experience by reinforcing consumers' perception of immersion and enjoyment. Online stores should attract consumers to try the AR mode and fulfill their hedonic needs. In addition, e-retailers should also focus on the utilitarian aspect of AR as AR experience helps to reduce product risk, enhance consumers' choice confidence and increase the attractiveness of the online store.

Third, online platforms and e-retailers should consider targeting consumers with technophilia traits when implementing new technology-based presentation modes, as technophilia plays an extremely important moderating role on the effect of AR-based presentation. AR outperforms picture presentations on mobile e-commerce websites in terms of affective and cognitive responses, and the effect is greater for consumers who have a more positive attitude towards using new technology. E-commerce platforms could consider consumers' technology preferences and intelligently recommend online stores with AR-based product presentations to technology-sensitive consumers. This method can benefit consumers, online retailers and platforms.

# 6. Conclusions

Based on the increasing use of cutting-edge technologies within the e-marketing context, this study employed an experimental design to explore the mechanism linking AR-based product presentation and consumer patronage intention through a moderated mediating model. The results of this study demonstrated that AR presentation of wearable products had a significant positive effect on patronage intention via several serial mediating paths. The mediators include immersion, enjoyment, perceived product risk and attractiveness of the online store. Additionally, the study also indicated that technophilia played a significant positive moderating role on the serial mediating effects of AR mode on patronage intention. Our results provide scientific evidence for e-retailers, particularly those focusing on wearable products, to implement new technology-based presentation modes to enhance consumers' experience, reduce product risk perception, increase online store attractiveness and finally promote patronage rate. We also provide some managerial implications for e-commerce platforms and e-retailers.

Even though the study was conducted with methodological rigor, there are still some limitations. First, this study examined three variables that mediated the effect of product presentation mode on the attractiveness of online the store. As the three variables only had a partially mediating effect on the attractiveness of online the store, other psychological variables should also be considered as potential mediators in future research. Second, we only investigated the moderating effect of technophilia on the relationship between presentation mode and consumers' responses. Individual and product variables, such as gender, age, product type and product involvement could also be considered in future studies. Third, this study only selected one product, so caution is required when attempting to generalize the findings to other product types.

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#### References

- 1. Brown, J.R.; Dant, R.P. The Theoretical domains of retailing research: A retrospective. J. Retail. 2009, 85, 113–128. [CrossRef]
- Wang, Y.-S.; Yeh, C.-H.; Wang, Y.-M.; Tseng, T.H.; Lin, H.-H.; Lin, S.; Xie, M.-Q. Investigating online consumers' responses to product presentation modes. *Internet Res.* 2019, 29, 1233–1255. [CrossRef]
- 3. Li, M.; Tan, C.-H.; Teo, H.-H.; Wei, K.-K. Effects of product learning aids on the breadth and depth of recall. *Decis. Support Syst.* **2012**, *53*, 793–801. [CrossRef]
- 4. Tseng, F.-C.; Cheng, T.; Li, K.; Teng, C.-I.; Cheng, E. How does media richness contribute to customer loyalty to mobile instant messaging? *Internet Res.* 2017, 27, 520–537. [CrossRef]
- 5. Naegelein, P.; Spann, M.; Molitor, D. The value of product presentation technologies on mobile vs. non-mobile devices: A randomized field experiment. *Decis. Support Syst.* **2019**, *121*, 109–120. [CrossRef]
- 6. Kim, M.; Lennon, S. The effects of visual and verbal information on attitudes and purchase intentions in internet shopping. *Psychol. Mark.* **2008**, *25*, 146–178. [CrossRef]
- Rapp, A.; Baker, T.L.; Bachrach, D.G.; Ogilvie, J.; Beitelspacher, L.S. Perceived customer showrooming behavior and the effect on retail salesperson self-efficacy and performance. J. Retail. 2015, 91, 358–369. [CrossRef]
- 8. Heller, J.; Chylinski, M.; de Ruyter, K.; Mahr, D.; Keeling, D.I. Let me imagine that for you: Transforming the retail frontline through augmenting customer mental imagery ability. *J. Retail.* **2019**, *95*, 94–114. [CrossRef]
- 9. Poushneh, A. Augmented reality in retail: A trade-off between user's control of access to personal information and augmentation quality. *J. Retail. Consum. Serv.* 2018, 41, 169–176. [CrossRef]
- 10. Jessen, A.; Hilken, T.; Chylinski, M.; Mahr, D.; Heller, J.; Keeling, D.I.; de Ruyter, K. The playground effect: How augmented reality drives creative customer engagement. *J. Bus. Res.* **2020**, *116*, 85–98. [CrossRef]
- 11. Yim, M.Y.-C.; Chu, S.-C.; Sauer, P.L. Is Augmented reality technology an effective tool for e-commerce? An interactivity and vividness perspective. *J. Interact. Mark.* **2017**, *39*, 89–103. [CrossRef]
- 12. Mishra, A.; Shukla, A.; Rana, N.P.; Dwivedi, Y.K. From "touch" to a "multisensory" experience: The impact of technology interface and product type on consumer responses. *Psychol. Mark.* **2021**, *38*, 385–396. [CrossRef]
- 13. Hilken, T.; De Ruyter, K.; Chylinski, M.; Mahr, D.; Keeling, D.I. Augmenting the eye of the beholder: Exploring the strategic potential of augmented reality to enhance online service experiences. *J. Acad. Mark. Sci.* **2017**, *45*, 884–905. [CrossRef]
- 14. Pantano, E.; Rese, A.; Baier, D. Enhancing the online decision-making process by using augmented reality: A two country comparison of youth markets. *J. Retail. Consum. Serv.* 2017, *38*, 81–95. [CrossRef]

- 15. Beck, M.; Crié, D. I virtually try it ... I want it! Virtual fitting room: A tool to increase on-line and off-line exploratory behavior, patronage and purchase intentions. *J. Retail. Consum. Serv.* **2018**, *40*, 279–286. [CrossRef]
- 16. Yim, M.Y.-C.; Park, S.-Y. "I am not satisfied with my body, so I like augmented reality (AR)". Consumer responses to AR-based product presentations. *J. Bus. Res.* **2019**, *100*, 581–589. [CrossRef]
- Kowalczuk, P.; Siepmann, C.; Adler, J. Cognitive, affective, and behavioral consumer responses to augmented reality in ecommerce: A comparative study. J. Bus. Res. 2021, 124, 357–373. [CrossRef]
- 18. Smink, A.R.; Frowijn, S.; van Reijmersdal, E.A.; van Noort, G.; Neijens, P.C. Try online before you buy: How does shopping with augmented reality affect brand responses and personal data disclosure. *Electron. Commer. Res. Appl.* **2019**, *35*, 100854. [CrossRef]
- 19. Bonnin, G. The roles of perceived risk, attractiveness of the online store and familiarity with AR in the influence of AR on patronage intention. *J. Retail. Consum. Serv.* **2020**, *52*, 101938. [CrossRef]
- 20. Choi, U.; Choi, B. The effect of augmented reality on consumer learning for search and experience products in mobile commerce. *Cyberpsychology Behav. Soc. Netw.* **2020**, *23*, 800–805. [CrossRef] [PubMed]
- Javornik, A. 'It's an illusion, but it looks real!' Consumer affective, cognitive and behavioural responses to augmented reality applications. J. Mark. Manag. 2016, 32, 987–1011. [CrossRef]
- 22. Baytar, F.; Chung, T.; Shin, E. Evaluating garments in augmented reality when shopping online. *J. Fash. Mark. Manag. Int. J.* **2020**, 24, 667–683. [CrossRef]
- 23. Park, M.; Yoo, J. Effects of perceived interactivity of augmented reality on consumer responses: A mental imagery perspective. *J. Retail. Consum. Serv.* **2020**, *52*, 101912. [CrossRef]
- 24. Smink, A.R.; van Reijmersdal, E.A.; van Noort, G.; Neijens, P.C. Shopping in augmented reality: The effects of spatial presence, personalization and intrusiveness on app and brand responses. *J. Bus. Res.* **2020**, *118*, 474–485. [CrossRef]
- 25. Goebert, C.; Greenhalgh, G.P. A new reality: Fan perceptions of augmented reality readiness in sport marketing. *Comput. Hum. Behav.* **2020**, *106*, 106231. [CrossRef]
- 26. Watson, A.; Alexander, B.; Salavati, L. The impact of experiential augmented reality applications on fashion purchase intention. *Int. J. Retail. Distrib. Manag.* 2020, *48*, 433–451. [CrossRef]
- Martínez-Córcoles, M.; Teichmann, M.; Murdvee, M. Assessing technophobia and technophilia: Development and validation of a questionnaire. *Technol. Soc.* 2017, 51, 183–188. [CrossRef]
- 28. Mehrabian, A.; Russell, J.A. An Approach to Environmental Psychology. An Approach to Environmental Psychology; The MIT Press: Cambridge, MA, USA, 1974.
- 29. Kim, M. Digital product presentation, information processing, need for cognition and behavioral intent in digital commerce. *J. Retail. Consum. Serv.* **2019**, *50*, 362–370. [CrossRef]
- Chang, H.-J.; Eckman, M.; Yan, R.-N. Application of the stimulus-organism-response model to the retail environment: The role of hedonic motivation in impulse buying behavior. *Int. Rev. Retail. Distrib. Consum. Res.* 2011, 21, 233–249. [CrossRef]
- 31. Bitner, M.J. Servicescapes: The impact of physical surroundings on customers and employees. J. Mark. 1992, 56, 57. [CrossRef]
- 32. Kim, J.; Lennon, S.J. Effects of reputation and website quality on online consumers' emotion, perceived risk and purchase intention. *J. Res. Interact. Mark.* 2013, 7, 33–56. [CrossRef]
- Nelson, C.R. Policy robustness: Specification and simulation of a monthly money market model: Comment. J. Money Credit Bank. 1982, 14, 877. [CrossRef]
- 34. Kim, J.; Kim, M.; Lennon, S.J. Effects of web site atmospherics on consumer responses: Music and product presentation. *Direct Mark. Int. J.* 2009, *3*, 4–19. [CrossRef]
- 35. Richard, M.-O.; Chebat, J.-C. Modeling online consumer behavior: Preeminence of emotions and moderating influences of need for cognition and optimal stimulation level. *J. Bus. Res.* **2016**, *69*, 541–553. [CrossRef]
- Zhou, F.; Duh, H.B.-L.; Billinghurst, M. Trends in augmented reality tracking, interaction and display: A review of ten years of ISMAR. In Proceedings of the 2008 7th IEEE/ACM International Symposium on Mixed and Augmented Reality, Cambridge, UK, 15–18 September 2008; pp. 193–202.
- 37. Schuemie, M.J.; Van Der Straaten, P.; Krijn, M.; Van Der Mast, C.A. Research on presence in virtual reality: A survey. *CyberPsychol. Behav.* **2001**, *4*, 183–201. [CrossRef]
- 38. Rese, A.; Schreiber, S.; Baier, D. Technology acceptance modeling of augmented reality at the point of sale: Can surveys be replaced by an analysis of online reviews? *J. Retail. Consum. Serv.* **2014**, *21*, 869–876. [CrossRef]
- 39. Beuckels, E.; Hudders, L. An experimental study to investigate the impact of image interactivity on the perception of luxury in an online shopping context. *J. Retail. Consum. Serv.* 2016, *33*, 135–142. [CrossRef]
- Gil-Saura, I.; Molina, M.E.R.; Berenguer-Contri, G. Store equity and behavioral intentions: The moderating role of the retailer's technology. J. Prod. Brand Manag. 2016, 25, 642–650. [CrossRef]
- 41. Bansal, H.S.; Taylor, S.F.; James, Y.S. "Migrating" to new service providers: Toward a unifying framework of consumers' switching behaviors. *J. Acad. Mark. Sci.* 2005, 33, 96–115. [CrossRef]
- 42. Goedertier, F.; Dawar, N.; Geuens, M.; Weijters, B. Brand typicality and distant novel extension acceptance: How risk-reduction counters low category fit. *J. Bus. Res.* **2015**, *68*, 157–165. [CrossRef]
- 43. Lee, M.-Y.; Kim, Y.-K.; Fairhurst, A. Shopping value in online auctions: Their antecedents and outcomes. *J. Retail. Consum. Serv.* **2009**, *16*, 75–82. [CrossRef]
- 44. Gefen, D.; Karahanna, E.; Straub, D. Trust and TAM in online shopping: An integrated model. MIS Q. 2003, 27, 51–90. [CrossRef]

- 45. Dowling, G.R.; Staelin, R. A model of perceived risk and intended risk-handling activity. *J. Consum. Res.* **1994**, *21*, 119–134. [CrossRef]
- 46. Glover, S.; Benbasat, I. A comprehensive model of perceived risk of E-commerce transactions. *Int. J. Electron. Commer.* **2010**, *15*, 47–78. [CrossRef]
- 47. Featherman, M.S.; Pavlou, P.A. Predicting e-services adoption: A perceived risk facets perspective. *Int. J. Hum.-Comput. Stud.* **2003**, *59*, 451–474. [CrossRef]
- 48. Suki, N.M. Modeling the determinants of consumers' attitudes toward online group buying: Do risks and trusts matters? *J. Retail. Consum. Serv.* **2017**, *36*, 180–188. [CrossRef]
- 49. Aghekyan-Simonian, M.; Forsythe, S.; Kwon, W.S.; Chattaraman, V. The role of product brand image and online store image on perceived risks and online purchase intentions for apparel. *J. Retail. Consum. Serv.* **2012**, *19*, 325–331. [CrossRef]
- 50. Cheng, J.M.-S.; Wang, E.S.-T.; Lin, J.Y.-C.; Chen, L.S.; Huang, W.H. Do extrinsic cues affect purchase risk at international e-tailers: The mediating effect of perceived e-tailer service quality. *J. Retail. Consum. Serv.* **2008**, *15*, 420–428. [CrossRef]
- 51. Nepomuceno, M.V.; Laroche, M.; Richard, M.-O. How to reduce perceived risk when buying online: The interactions between intangibility, product knowledge, brand familiarity, privacy and security concerns. *J. Retail. Consum. Serv.* 2014, 21, 619–629. [CrossRef]
- 52. Petersen, J.A.; Kumar, V. Perceived risk, product returns, and optimal resource allocation: Evidence from a field experiment. *J. Mark. Res.* **2015**, *52*, 268–285. [CrossRef]
- 53. Ariffin, S.K.; Mohan, T.; Goh, Y.-N. Influence of consumers' perceived risk on consumers' online purchase intention. *J. Res. Interact. Mark.* **2018**, *12*, 309–327. [CrossRef]
- 54. Mortimer, G.; Fazal-e-Hasan, S.M.; Grimmer, M.; Grimmer, L. Explaining the impact of consumer religiosity, perceived risk and moral potency on purchase intentions. *J. Retail. Consum. Serv.* **2020**, *55*, 102115. [CrossRef]
- 55. Marriott, H.R.; Williams, M.D. Exploring consumers perceived risk and trust for mobile shopping: A theoretical framework and empirical study. *J. Retail. Consum. Serv.* **2018**, *42*, 133–146. [CrossRef]
- 56. Osiceanu, M.-E. Psychological implications of modern technologies: "Technofobia" versus "Technophilia". *Procedia-Soc. Behav. Sci.* **2015**, *180*, 1137–1144. [CrossRef]
- 57. Thrasher, J.F.; Abad-Vivero, E.N.; Barrientos-Gutíerrez, I.; Pérez-Hernández, R.; Reynales-Shigematsu, L.M.; Mejía, R.; Arillo-Santillán, E.; Hernández-Ávila, M.; Sargent, J.D. Prevalence and correlates of e-cigarette perceptions and trial among early adolescents in Mexico. J. Adolesc. Health 2016, 58, 358–365. [CrossRef]
- 58. Palm, A. Early adopters and their motives: Differences between earlier and later adopters of residential solar photovoltaics. *Renew. Sustain. Energy Rev.* 2020, 133, 110142. [CrossRef]
- Rodríguez-Bolaños, R.; Arillo-Santillán, E.; Barrientos-Gutiérrez, I.; Zavala-Arciniega, L.; Ntansah, C.A.; Thrasher, J.F. Sex differences in becoming a current electronic cigarette user, current smoker and current dual user of both products: A longitudinal Study among mexican adolescents. *Int. J. Environ. Res. Public Health* 2019, *17*, 196. [CrossRef]
- Zavala-Arciniega, L.; Lozano, P.; Kollath-Cattano, C.; Gutierrez-Torres, D.S.; Arillo-Santillán, E.; Barrientos-Gutiérrez, I.; Hardin, J.W.; Thrasher, J.F. E-cigarette use frequency and motivations among current users in middle school. *Drug Alcohol Depend.* 2019, 204, 107585. [CrossRef]
- 61. Schlüter, J.; Weyer, J. Car sharing as a means to raise acceptance of electric vehicles: An empirical study on regime change in automobility. *Transp. Res. Part F Traffic Psychol. Behav.* **2019**, *60*, 185–201. [CrossRef]
- 62. Velazquez, G.; Kaplan, S.; Monzon, A. Ex-ante and ex-post evaluation of a new transit information app: Modeling use intentions and actual use. *Transp. Res. Rec. J. Transp. Res. Board* **2018**, 2672, 56–65. [CrossRef]
- 63. Zhang, T.; Wang, W.Y.C.; Cao, L.; Wang, Y. The role of virtual try-on technology in online purchase decision from consumers' aspect. *Internet Res.* 2019, *29*, 529–551. [CrossRef]
- 64. Poushneh, A.; Vasquez-Parraga, A.Z. Discernible impact of augmented reality on retail customer's experience, satisfaction and willingness to buy. *J. Retail. Consum. Serv.* 2017, 34, 229–234. [CrossRef]
- 65. Jennett, C.; Cox, A.; Cairns, P.A.; Dhoparee, S.; Epps, A.; Tijs, T.; Walton, A. Measuring and defining the experience of immersion in games. *Int. J. Hum.-Comput. Stud.* 2008, *66*, 641–661. [CrossRef]
- 66. Peukert, C.; Pfeiffer, J.; Meißner, M.; Pfeiffer, T.; Weinhardt, C. Shopping in virtual reality stores: The influence of immersion on system adoption. *J. Manag. Inf. Syst.* 2019, *36*, 755–788. [CrossRef]
- 67. Yi, M.Y.; Hwang, Y. Predicting the use of web-based information systems: Self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *Int. J. Hum.-Comput. Stud.* **2003**, *59*, 431–449. [CrossRef]
- 68. Venkatesh, V.; Bala, H. Technology acceptance model 3 and a research agenda on interventions. *Decis. Sci.* 2008, 39, 273–315. [CrossRef]
- 69. Darke, P.R.; Brady, M.K.; Benedicktus, R.L.; Wilson, A. Feeling close from afar: The role of psychological distance in offsetting distrust in unfamiliar online retailers. *J. Retail.* 2016, *92*, 287–299. [CrossRef]
- 70. Sultan, F.; Urban, G.L.; Shankar, V.; Bart, I.Y. *Determinants and Role of Trust in E-Business: A Large Scale Empirical Study*; MIT Sloan School of Management Working Paper No. 4282-02; MIT Sloan: Cambridge, MA, USA, 2002.
- 71. Bart, Y.; Shankar, V.; Sultan, F.; Urban, G.L. Are the drivers and role of online trust the same for all web sites and consumers? A large-scale exploratory empirical study. *J. Mark.* 2005, *69*, 133–152. [CrossRef]
- 72. Hair, J.F.; Ringle, C.M.; Sarstedt, M. PLS-SEM: Indeed a silver bullet. J. Mark. Theory Pract. 2011, 19, 139–152. [CrossRef]

- 73. Rasoolimanesh, S.M.; Ringle, C.M.; Jaafar, M.; Ramayah, T. Urban vs. rural destinations: Residents' perceptions, community participation and support for tourism development. *Tour. Manag.* **2017**, *60*, 147–158. [CrossRef]
- Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.-Y.; Podsakoff, N.P. Common method biases in behavioral research: A critical review of the literature and recommended remedies. J. Appl. Psychol. 2003, 88, 879–903. [CrossRef] [PubMed]
- 75. Podsakoff, P.M.; MacKenzie, S.B.; Podsakoff, N.P. Sources of method bias in social science research and recommendations on how to control it. *Annu. Rev. Psychol.* **2012**, *63*, 539–569. [CrossRef] [PubMed]
- 76. Kock, N.; Lynn, G. Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations. *J. Assoc. Inf. Syst.* **2012**, *13*, 546–580. [CrossRef]
- 77. Hair, J.F.; Hult, G.T.M.; Ringle, C.M.; Sarstedt, M. *Primer on Partial Least Squares Structural Equation Modeling*, 2nd ed.; SAGE: Thousand Oaks, CA, USA, 2017.
- Fornell, C.; Larcker, D.F. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* 1981, 18, 39–50. [CrossRef]
- 79. Nel, J.; Boshoff, C. Online customers' habit-inertia nexus as a conditional effect of mobile-service experience: A moderatedmediation and moderated serial-mediation investigation of mobile-service use resistance. *J. Retail. Consum. Serv.* 2019, 47, 282–292. [CrossRef]
- 80. Leal-Rodríguez, A.L.; Eldridge, S.; Roldán, J.L.; Leal-Millán, A.G.; Ortega-Gutiérrez, J. Organizational unlearning, innovation outcomes, and performance: The moderating effect of firm size. J. Bus. Res. 2015, 68, 803–809. [CrossRef]
- Aw, E.C.-X.; Chuah, S.H.-W.; Sabri, M.F.; Basha, N.K. Go loud or go home? How power distance belief influences the effect of brand prominence on luxury goods purchase intention. J. Retail. Consum. Serv. 2020, 58, 102288. [CrossRef]