[1]Baiying Qian

Chonlavit Sutunyarak

Factors Affecting Virtual Reality Interior Design Products Acceptance Behavior of Consumer from Shenzhen City, China

Abstract: - This study aims to determine the key attributes that impact client acceptance of the interior design industry (VRIDP). The researchers employed the purposive sampling strategy to select a total of 614 individuals who possess previous experience with VRIDP. Furthermore, the researchers utilized structural equation modeling (SEM) to examine the connections between crucial factors that impact client acceptance of VRIDP. The findings suggest that customer perceptions of VRIDP are significantly influenced by their evaluation of its usability and value. Trust is crucial in mitigating the adverse effects of perceived risk on acceptance.Moreover, it has been found that subjective criteria indirectly influence the desire to accept something by affecting perceived usefulness and trust. This emphasizes the significance of social factors in the process of adopting technology. The results of this study offer valuable insights for developers, marketers, and lawmakers who aim to enhance the acceptance of VRIDP.

Keywords: Virtual reality, Interior design product, Consumer acceptance, Perceived ease of use, Trust, Subjective norms

1. Introduction

The advent of Virtual Reality (VR) technology has inaugurated a novel epoch in digital innovation, profoundly influencing a multitude of sectors, with the realm of interior design standing out as a particularly transformative domain (Pavithra et al., 2020). This technological upheaval, as chronicled by Vara (2016) and further expounded upon by Kalantari and Neo (2020), has fundamentally altered the interaction paradigms between interior designers and their clients. By utilizing virtual visualizations of design concepts, VR technology provides improved customer service capabilities and a competitive edge in the industry. The progression of VR technology, marked by its affordability, enriched content experiences, and superior interactive features, is a manifestation of the global trend towards digitalization Lui and Lamb (2018). These advancements have broadened the scope of VR's application, transcending its original entertainment and gaming boundaries to demonstrate its efficacy in sectors such as education, healthcare, real estate, and notably, interior design. These fields derive substantial

[1] [1]Chakrabongse Bhuvanarth International Institute for Interdisciplinary Studies, Rajamangala University of Technology Tawan-Ok, Bangkok, 10400, Thailand

Emall: baiying.qia@rmutto.ac.th

[*2]Chakrabongse Bhuvanarth International Institute for Interdisciplinary Studies, Rajamangala University of Technology Tawan-Ok, Bangkok, 10400, Thailand

Emall: chonlavit_su@rmutto.ac.th (Corresponding author)

benefits from VR's capacity to engender immersive user experiences, thereby augmenting user engagement, comprehension, and satisfaction (Asad et al., 2021; Lv, 2020)

Particularly in China, the VR industry has exhibited remarkable expansion, driven by conducive governmental policies, substantial capital investments, and innovations in critical technologies like 5G, artificial intelligence, and cloud computing (Shan, 2019). This expansion is mirrored in the Chinese interior design sector, which has experienced a surge in demand for personalized and superior-quality living spaces. This burgeoning demand is attributed to the nation's economic growth, urbanization phenomena, and a consumer shift towards more bespoke and quality-centric living environments (National Bureau of Statistics, 2022). The incorporation of VR into interior design practices has not merely enhanced the design process through more immersive and interactive experiences but has also paved new pathways for creativity and innovation. By empowering designers and clients to visualize and amend design elements in real-time, VR technology has effectively bridged the conceptualization-to-realization divide, thus enriching the design experience and enabling more informed decision-making (Juan et al., 2021; Liao et al., 2020). This integration represents a significant divergence from traditional design techniques, establishing VR as a crucial tool in the future of interior design and architecture.

Although VR technology has been introduced into the interior design sector, various obstacles hinder its widespread use and full potential (Alkhattabi, 2017). The primary obstacle is the elevated cost associated with VR technology, which may limit its accessibility to a broader spectrum of home decor enterprises and consumers (Baniasadi et al., 2020). Moreover, the industry is at an embryonic stage in terms of the awareness and acceptance of VR technology, necessitating deliberate educational and promotional endeavors to foster a more profound understanding and valuation among stakeholders (Palermos, 2017). Alongside the evolving consumer market trends favoring diversity, personalization, and quality in home decoration, these challenges highlight the imperative for the interior design industry to strategically innovate and adapt. To fully exploit the promise of VR technology and transform the interior design process, addressing these obstacles and improving the client's design experience is essential.

Incorporating virtual reality (VR) technology into interior design has brought about a notable transformation in the industry, providing users with immersive and interactive experiences that improve their level of involvement and facilitate their decision-making processes.Despite the evident potential and growing interest in this area, as demonstrated by studies from Xu et al. (2019), Kalantari and Neo (2020), and Juan et al. (2021), which highlight the benefits of VR in providing realistic design experiences and aiding in spatial perception and material selection, the exploration of VR within interior design remains limited compared to its application in other sectors such as the military, tourism, and healthcare. This discrepancy underscores a notable research gap, particularly in the development of objective criteria for evaluating user experiences and the application of quantitative methods like structural equation modeling to assess VR technology's acceptance.

Moreover, there needs to be moreof complete comprehension regarding the cumulative impact of virtual reality on consumer experiences, attitudes, and intentions to embrace it. Additionally, the variation in experiences and needs among different user groups has not been fully addressed, indicating a need for further research that considers the diverse demands of these groups. Addressing these gaps is essential for leveraging VR technology's

full potential in interior design, thereby meeting modern consumers' demands for personalized and engaging interiors and fostering innovation within the industry.

This study aims to identify the key factors that impact consumer acceptance of virtual reality (VR) interior design products, acknowledging the necessity to comprehend the dynamics of technology adoption in this innovative context, 2) examine the role of individual characteristics, including age, gender, education, economic status, and prior virtual technology experience, in shaping the acceptance of VR interior design solutions and 3) to encourage stakeholders, such as designers, marketing executives, and design firms, to leverage these insights in creating competitive VR interior design products.

Systematically, this study examines the factors that influence consumer adoption of VRIDP. It starts with an introduction that places VRIDP in the context of current technological advancements and changes in consumer behavior. The literature evaluation combines the Technology Acceptance Model (TAM) and Perceived Risk Theory to offer a theoretical basis for the study's hypotheses. The methodology section concisely elucidates the quantitative strategy employed, particularly emphasizing data collection and using structural equation modeling (SEM) for analysis. The Findings section provides a clear and detailed explanation of the critical results, highlighting the role of trust as a mediator and the impact of subjective criteria on acceptance. The end of the work brings together the theoretical contributions and practical consequences, acknowledges its limits, and propose suggestions for future direction, offering a thorough summary of the dynamics of VRIDP adoption.

2. Literature review

2.1 Theoretical approach

The Technology Acceptance Model (TAM), formulated by Davis et al. (1989), expands upon the Theory of Reasoned Action (TRA) to explore the relationship between users' attitudes, behaviors, and intents in connection to the adoption of technology. This paradigm has been prominent in interior design, becoming more closely connected with information technology (IT) and information systems (IS). It has attracted significant attention from both academia and industry.The Technology Acceptance Model (TAM) is recognized for its straightforwardness and flexibility. It has been widely used to comprehend user acceptance in various technological settings, contexts, and demographic groups. The model incorporates components from other models and external factors like demographic characteristics and computer self-efficacy (Venkatesh & Davis, 2000).Research has confirmed that the Technology Acceptance Model (TAM) is relevant in Virtual Reality (VR) technologies. Studies have demonstrated that users' intents to utilize virtual reality (VR) have a substantial impact on their assessment of its utility and ease of use (Bertrand & Bouchard, 2008; Fetscherin & Lattemann, 2008; Tokel et al., 2013). The TAM has been expanded to incorporate trust, subjective norms, and perceived risk, resulting in the ETAM model. This extension has provided a more comprehensive understanding of the various factors influencing consumers' acceptance of VR interior design products. Consequently, it has enabled the development of specific strategies to promote the adoption of VR in interior design.

The concept of perceived risk, introduced by Bauer (1967), is instrumental in dissecting consumer behavior and decision-making, emphasizing the subjective perception of risks and uncertainties tied to products, services,

or technologies. This framework highlights how perceived risks, covering financial, performance, safety, and social aspects, significantly sway consumer attitudes and decisions. Extensive research in fields such as online shopping, technology adoption, and tourism has delved into the ramifications of perceived risk. In online shopping contexts, concerns over transaction security, privacy, and product quality notably influence consumer purchasing behaviors (Rane & Meshram, 2012). Similarly, in the adoption of emerging technologies like VR, apprehensions about health risks, privacy issues, and device reliability critically affect user acceptance and intentions (Abadi et al., 2012). Moreover, a negative correlation between perceived risk and consumer trust in brands or entities has been documented, revealing the nuanced relationship between these constructs (Aprilia, 2021). This body of evidence underscores the critical role of perceived risk in shaping consumer decision-making, advocating for its strategic consideration to enhance consumer trust and acceptance of new technologies and offerings.

This study further explores the Perceived Risk hypothesis and its impact on adopting Virtual Reality in Interior Design. It highlights the profound effect of Virtual Reality on interior design by offering immersive experiences. It addresses the adoption challenges, including the variance between virtual and actual experiences, economic considerations, and the potential for unsatisfactory design decisions. Drawing from the findings of Abadi et al. (2012), Zhang and Yu (2020), and Aprilia (2021), The research highlights the crucial significance of Trust and Perceived Risk in shaping customer adoption intentions towards Virtual Reality Immersive Digital Products (VRIDP). Trust, particularly regarding data privacy and security in virtual settings as noted by Limaye et al. (2020), is significant. By incorporating Perceived Risk into the TAM alongside Trust and subjective norms, this study reveals the complex interplay between these factors and consumer acceptance of VRIDP, offering key insights for industry stakeholders interested in leveraging VR technology in interior design.

2.2 Hypothesis development

Perceived risk pertains to the subjective apprehension and ambiguity consumers encounter when purchasing a product or utilizing a service. This worry stems from their subjective assessment and psychological apprehension around unforeseeable future hazards. The study was conducted by Slovic et al. (2016). Within the Virtual Reality Immersive Digital Products (VRIDP) domain, perceived risk refers to the unique association with potential losses or risks consumers anticipate when using these products. This perception of risk has a negative influence on their desire to embrace or accept VRIDP. Lăzăroiu et al. (2020) emphasize the crucial significance of trust and confidence in online transactions, proposing a connection between trust, perceived risk, and client loyalty. Alshurideh et al. (2021) highlight the impact of similarities on how consumers perceive utility, contentment, and trust, which subsequently influence their shopping behavior. They see a positive correlation between trust, social connection, and the intention to make online purchases. Sankaran and Chakraborty (2023) explore the impact of trust in social commerce on internet retailers' pricing and selling methods, resulting in enhanced performance. Given the information obtained, this study puts forward the following hypotheses:

H1: Trust is adversely impacted by perceived risk.

H2:The perception of danger has a detrimental impact on the perceived usefulness of VRIDP.

H3: The perception of risk has a detrimental impact on the perception of the ease of use of VRIDP.

H4: Subjective norms are adversely impacted by perceived danger.

Trust is the belief an individual has in the honesty, reliability, knowledge, and positive intentions of another party. It is essential for smooth transactions and relationships, including acceptance of technology. Thorough research conducted in the era of digital technology has uncovered trust's substantial influence on customers' purchasing behavior. (Salanitri, 2018).This is further corroborated in the domain of human-robot interaction, where Chi et al. (2021) highlights the importance of trustworthy robot functions and design in enhancing users' perceptions of competence and fostering Trust in artificial intelligence technologies.

Given the nascent and uncertain nature of VRIDP market, Trust emerges as a critical determinant of consumer willingness to engage with VRIDP. In this environment, Trust not only bolsters consumers' intentions to use VRIDP by reinforcing their confidence in the technology but also, a lack of Trust could impede their willingness to adopt it. Therefore, this study posits the hypotheses as below:

H5: Trust positively affects the perceived ease of use of VRIDP.

H6: Trust positively influences consumer attitudes toward VRIDP

H7: Trust positively influences consumers' intention to accept VRIDP.

Subjective norms, the perceived influence of others' opinions on individual behavior towards technology use, significantly affect behavioral intentions, particularly in contexts where social influence is strong, such as among consumers engaged with multiple social groups (Huda et al., 2012). In Chinese culture, known for its emphasis on social relationships and high-context communication, subjective norms play a crucial role, with modern technology like mobile internet enhancing the influence of social networks and media on consumer choices (Kashif et al., 2018). For VRIDP, consumer intentions are notably shaped by the social endorsement from their networks, as seen in platforms like WeChat Moments (Roh et al., 2022).This study highlights the importance of subjective norms in adopting Virtual Reality Immersive Digital Platforms (VRIDP). The following hypotheses are proposed:

H8: Subjective norms have a beneficial impact on consumers' perception of the usefulness of VRIDP.

H9: Subjective norms have a favorable impact on customer attitudes towards VRIDP.

Perceived usability, as defined by Davis et al. (1989), refers to the belief in the ease and efficiency of using information technology to enhance performance. This study examines perceived usability within the context of VR interior design products, focusing on the consumer's perception of their utility in improving interior design outcomes (Tahar et al., 2020). It suggests that consumers are more likely to adopt VR interior design products if they believe these technologies can provide more personalized design solutions, thereby improving the efficiency and quality of services. The research indicates that the convenience and efficiency of VR interior design products, especially when accessed via smartphones, significantly influence consumer satisfaction and their propensity to choose VR-based solutions over traditional services (Asnawati et al., 2022).Based on the

acquired information, the study formulates the following hypotheses:

H10: The perceived usefulness of Virtual Reality Immersive Design and Prototyping (VRIDP) positively influences the perception of ease of use.

H11: The perceived simplicity of usage positively influences consumer sentiments about VRIDP.

The perceived utility of a technology, which refers to the belief in the benefits and improvements it provides, significantly impacts customer attitudes and behaviors when it comes to using and buying items, especially in the case of VR interior design products.This concept involves the consumer's assessment of whether a product meets their needs and provides practical value, significantly influencing decision-making processes (Tahar et al., 2020). In the realm of VR interior design, perceived usefulness encompasses the belief that these products can improve utility, efficiency, and performance in obtaining interior design solutions that align with consumer preferences, thereby enhancing the overall quality and efficiency of design services (Asnawati et al., 2022). The perception that VR interior design products expedite the design process, coupled with the convenience offered by mobile platforms for consulting, selecting, and purchasing, heightens consumer inclination towards adopting VR interior design solutions (Anifa & Sanaji, 2022). Consequently, this study posits following hypotheses:

H12: The perceived usefulness of VRIDP has a beneficial impact on consumer perceptions.

H13: The perceived usefulness of VRIDP has a beneficial impact on consumers' propensity to embrace it.

This study highlights consumer attitude as a critical determinant in the adoption and utilization of VR interior design products, emphasizing its influence on purchase intentions and technology acceptance. Attitudes, shaped by perceptions of product attributes, functionality, and quality, directly impact consumers' decisions to engage with VR technologies, as evidenced by studies from Arora and Jain (2021) and Fan et al. (2020). Recognizing the importance of consumer attitudes, this study underscores the necessity for targeted marketing strategies to boost VR product adoption and satisfy market demands (Kim et al., 2023). By aligning product offerings with consumer attitudes, companies can enhance their market position and drive sustainable growth. Consequently, this study proposes a hypothesis as below:

H14: Attitudes Positively Influence Consumer Intention to accept VRIDP.

The academic discourse on the interplay between perceived risk and trust has yielded divergent views, ranging from their independent influence on behavior to perceived risk acting as a precondition for trust. (Deutsch, 1958) pioneered the exploration of this relationship, suggesting that trust entails accepting the consequences associated with risk. Recent studies, such as Jacovi et al. (2021), have underscored the significant impact of trust and perceived risk on online purchase decisions, emphasizing factors like trustworthiness, privacy, security, and information quality. Siegrist (2021) introduced a model delineating how trust can diminish perceived risk, thereby encouraging transaction engagement and usage behavior, positioning perceived risk as a mediator between trust and behavior. This concept of mediation is further supported by Wu and Ke (2015), who demonstrated that perceived risk mediates the trust-behavior relationship, influencing individuals' actions by reducing perceived risk. Glikson and Woolley (2020) applied this mediating model to examine cooperative

members' participation, revealing trust's role in mitigating perceived risk and affecting participation behavior. Given the potential security concerns associated with VR interior design products, such as data breaches or financial losses, this study proposes the following hypotheses:

H15: Trust mediates the relationship between the perceived risk and perceived ease of use of VRIDP.

H16: The level of trust influences the relationship between customers' perception of risk and their attitudes towards VRIDP.

H17: Trust plays a part in the relationship between perceived risk and customer readiness to embrace VRIDP.

Perceived usability, which refers to the perception of how easy and efficient it is to use information technology to improve work performance, significantly impacts consumer purchase intentions. Cho and Sagynov (2015) and Zuelseptia et al. (2018) have shown that perceived usability not only directly influences purchase intentions but also indirectly boosts them by diminishing perceived risks, suggesting that user-friendly products are perceived as less risky and more beneficial.Dewi et al. (2021) explain that perceived usability can indirectly increase perceived usefulness by reducing concerns about hazards associated with a product or service. This implies that the simplicity of using a product or service can decrease the perceived level of hazards and enhance the perceived worth for consumers. Perceived usability is crucial in linking perceived risk to both purchase intention and perceived utility and trust to perceived usefulness. Customer perception of usability, which is determined by their confidence and understanding of how easy a product is to use, can substantially affect their desire to purchase and reduce their perception of risks. This offers crucial perspectives for conceptual comprehension and real-world implementations in consumer behavior. Therefore, this study puts forth the subsequent hypotheses:

H18: The perceived ease of use of VRIDP functions as an intermediary factor between trust and attitude.

H19: The perceived ease of use of the VRIDP serves as an intermediary in the relationship between perceived risk and attitude.

H20: The perceived ease of use of Virtual Reality Interface Design and Performance (VRIDP) influences the impression of risk and usefulness.

H21:The user's impression of the ease of use of VRIDP serves as an intermediary between trust and perceived usefulness.

Perceived utility is a crucial factor influencing the interactions between Trust, Perceived Risk, subjective norms, perceived ease of use, and purchase intention. In accordance with the study conducted by Cho and Sagynov (2015) , when customers see a product as functional, it increases their trust in the provider and boosts their intention to purchase. Furthermore, how something is perceived as being helpful mediates how something is perceived as risky and the intention to buy. When a product is considered advantageous, it reduces the perceived risks and enhances the propensity to purchase (Zuelseptia et al., 2018).Furthermore, it facilitates the connection between personal beliefs and the intention to purchase, indicating that a product that is viewed as

valuable is more inclined to correspond with the impact of individual beliefs, therefore enhancing the intention to make a purchase. Additionaly, the relationship between the perceived ease of use and the intention to purchase is influenced by the perceived utility. In this context, the ease of use positively impacts the perception of usefulness, which in turn affects the decision to make a purchase (Dewi et al., 2021). This mediating role underscores the importance for businesses to highlight product usefulness to mitigate perceived risks, build Trust, and align with subjective norms and ease of use to foster positive purchase behaviors (Ventre & Kolbe, 2020). While perceived usefulness is a significant factor, it operates alongside other determinants like price, quality, and brand reputation in shaping purchase intentions. Considering the discussion above, following hypotheses are proposed:

H22: The perceived usefulness of VRIDP functions as an intermediary between the perceived ease of use and attitude.

H23: The perceived usefulness of VRIDP serves as an intermediary factor between the perceived ease of use and the willingness to embrace it.

H24: The perceived utility of VRIDP serves as an intermediary in the relationship between perceived risk and attitude.

H25: The perceived usefulness of VRIDP serves as an intermediary between the perceived risk and the willingness to embrace it.

H26: Perceived usefulness of VRIDP mediates between subjective norms and attitudes.

H27: Perceived usefulness of VRIDP mediates between subjective norms and acceptance intentions.

Subjective standards influence how individuals perceive risk and their subsequent intent to purchase.They can both alleviate perceived risks, thereby increasing purchase intentions, and enhance positive attitudes towards buying (de Klerk, 2020; Wang & Hazen, 2016). Additionally, by influencing social identity and the strength of subjective norms, they indirectly affect risk perception, encouraging proactive purchasing behaviors when aligned with societal expectations (Rosário & Raimundo, 2021). Essentially, subjective norms act as a bridge between risk perception and behavioral intentions, modifying individuals' risk perceptions and purchase decisions through their impact on cognition and attitudes (Singh, 2017). This underscores the importance of further investigating subjective norms to promote more proactive consumer buying behaviors in the context of perceived risks. Thus, this study proposes hypotheses as below:

H28: Subjective norms of VRIDP mediate between perceived risk and perceived usefulness.

H29: The subjective norms of the VRIDP mediate between perceived risk and attitudes.

Research by McKnight et al. (2002), (Kim et al., 2009), and Ismagilova et al. (2020) underscores the critical roles of Trust and satisfaction in e-commerce, highlighting purchase intention as a pivotal mediator between Trust and purchase behavior. This suggests that consumers' willingness to buy increases with their trust and satisfaction levels towards an e-commerce platform. Further investigation into how purchase intention serves as

a bridge in this relationship could offer insights for enhancing consumer purchase intentions, thereby boosting purchase behaviors and aiding businesses in refining their marketing strategies for better sales outcomes (De Canio & Martinelli, 2021)). Within the VR interior design product domain, the Technology Acceptance Model posits that consumer trust catalyzes the behavioral intention to use these products, which in turn facilitates actual usage. Given the online environment's inherent risks, consumer trust becomes crucial, significantly impacting usage behavior through the mediation of behavioral intentions (Rahman et al., 2020). Given these insights, this study thus puts forward hypotheses:

H30: Attitudes towards the VRIDP influenced the connection between trust and acceptance intentions.

H31: Attitudes towards VRIDP influence perceived usefulness and acceptance intents.

H32: The relationship between the perceived ease of usage and the intention to embrace the Virtual Reality Immersive Design Process (VRIDP) is influenced by perceptions.

H33: Attitudes toward the Virtual Reality Immersive Design Process (VRIDP) have a role in influencing the connection between subjective norms and intentions to accept VRIDP.

3. Methodology

Utilizing a quantitative research methodology, this investigation gathers 614 valid data via online questionnaire, who are with the consumption experience in the interior design products in Shenzhen, China. To measure the variables, this study collects data through a range of systematic structured scales with 5-point Likert:

This study synthesizes trust dimensions from technology-related research, focusing on users' beliefs, confidence, and expectations of VRIDP's reliability and validity. Inspired by Alalwan et al. (2018) and Chen and Aklikokou (2020), five tailored items are developed to capture trust in VRIDP, reflecting aspects such as honesty, reliability, and the benefits of using the platform. We utilize approaches from Slovic (2016), Lopez-Nicolas and Molina-Castillo (2008), and Kamal et al. (2020) to investigate different types of risk. It is comprehending the concept of perceived risk. This study examines the perceived ease of use of VRIDP by combining research findings on technological adoption and usability, incorporating insights from Chen and Aklikokou (2020), Rafique et al. (2020), and Vahdat et al. (2021). The importance of perceived usefulness cannot be overstated when it comes to adopting technology, as it significantly impacts user behavior, satisfaction, and loyalty (Chen & Aklikokou, 2020; Kamal et al., 2020). Subjective norms, which refer to the perceived societal pressure to adopt technology, are critical in influencing technological acceptance. The research uses findings from Bai et al. (2019) and La Barbera and Ajzen (2020) to create measuring items that assess how social expectations affect consumers' decisions to adopt VRIDP. Consumer attitudes towards VRIDP are key to understanding their acceptance, focusing on subjective perceptions and evaluations (Xu et al., 2019; Xu et al., 2022). This study investigates consumer acceptance intentions for VRIDP by leveraging established technology adoption and consumer behavior theories (Uhm et al., 2022), we crafted a series of measurement items to evaluate consumers' willingness to purchase VRIDP, aiming to assess market demand and factors influencing purchase decisions.

This study employs SPSS 26.0 and AMOS 26.0 software to analyze the data. The study examines descriptive

statistics, assessments of reliability and validity, the application of Structural Equation Modeling (SEM), and the implementation of Path analysis. These statistical techniques are employed to examine the gathered data comprehensively.

4. Findings

4.1 Descriptive analysis

Table 1 displays crucial demographic and perceptual information obtained from a survey on VRIDP. The age distribution reveals a significant proportion of participants falling between the 31 and 50 age bracket, making up 84.7% of the sample. This suggests that VRIDP appeals mainly to a mature audience. The gender representation in VRIDP is about equal, with a slight majority of females, indicating the broad attraction of VRIDP across both genders.

Educational levels of participants vary, with a significant portion holding an undergraduate degree or higher (65.9%), indicating that the survey attracted a well-educated demographic. This suggests a potential connection between higher levels of education and a greater interest or awareness of VRIDP.

Income levels are skewed towards the higher end, with 68.9% of respondents earning more than 10,001 yuan monthly, suggesting that VRIDP may currently be more accessible or appealing to individuals with higher disposable incomes.

Regarding VRIDP, a majority of respondents have at least a general understanding (91%), with 33.2% claiming to understand and 26.2% very understanding, reflecting a relatively high level of awareness among the sample. Satisfaction levels with VRIDP experiences show a positive tilt, with 57.7% of respondents feeling generally satisfied to very satisfied, though a notable 34.4% express dissatisfaction to some degree, pointing towards areas for improvement in VRIDP offerings.

This data offers vital information about the demographic and perceptual characteristics of VRIDP consumers. It indicates a strong interest and happiness among users. However, there is still potential to improve the user experience and increase access for people with different financial levels.

Table 1. Essential information

		Frequency	Percent
Age	18~25	2	0.3
	26~30	89	14.5
	31~40	267	43.5
	41~50	253	41.2
	51~60	3	0.5
Gender	Male	304	49.5

	Female	310	50.5
Education level	Junior high school and below	25	4.1
	High school/technical secondary school	22	3.6
	Junior college	162	26.4
	Undergraduate	201	32.7
	Postgraduate and above	204	33.2
Monthly income level	Less than 3000 yuan	2	0.3
	3001 to 5000 yuan	93	15.1
	5001-10000 Yuan	96	15.6
	10001-20000 yuan	216	35.2
	More than 20,001yuan	207	33.7
Understanding of virtual reality interior design products	Very do not understand	7	1.1
	Do not understand	48	7.8
	General understand	194	31.6
	Understand	204	33.2
	Very understand	161	26.2
Experience satisfaction with virtual reality interior design products	Very dissatisfied	59	9.6
	Dissatisfied	152	24.8
	Generally satisfied	189	30.8
	Satisfied	162	26.4
	Very satisfied	52	8.5

4.2 Reliability and validity analysis

Table 2 presents reliability statistics, namely a Cronbach's Alpha coefficient of .893, for 41 questions. This demonstrates a high degree of internal consistency among the survey items. This suggests a significant correlation between the items, implying that they are reliable indicators for the assessed variables. A Cronbach's Alpha above 0.7 is generally acceptable, whereas values nearing 1.0 imply high dependability.

Table 3 displays the outcomes of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The KMO value of .957 shows a high level, suggesting that the sample size is adequate for factor analysis and that the data patterns are suitable for this statistical technique. Bartlett's Test of Sphericity produced a remarkably significant chi-square value of 15673.909, with 820 degrees of freedom and a significance level of .000. This demonstrates a robust correlation between the variables and validates the appropriateness of component analysis. Overall, these statistics demonstrate the reliability and suitability of the

data for further investigation.

Table 2. Reliability Statistics

Cronbach's Alpha	N of Items
.893	41

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.957
Bartlett's Test of Sphericity	Approx. Chi-Square	15673.909
	df	820
	Sig.	.000

4.3 Structural equation model

Table 4 displays the indicators of convergence validity for a study investigating VRIDP. The information includes details about latent variables, observation indicators, factor loadings, Composite Reliability (CR), and Average Variance Extracted (AVE). All the indicators have factor loadings that exceed the minimum criterion of 0.7, indicating a robust association between the latent variables and their corresponding indicators. This validates the dependability of the constructs under examination. All constructs have CR values that exceed the accepted benchmark of 0.7, with a range of 0.891 to 0.920. This suggests that the constructions exhibit exceptional internal consistency and reliability.

In addition, the AVE values surpass the minimum requirement of 0.5, ranging from 0.620 to 0.697. This validates that most variations in the observed indicators are explained by their corresponding underlying causes, ensuring a robust convergence validity. This analysis confirms the reliability and coherence of the ideas related to Trust, Perceived Risk, Perceived Ease of Use, Perceived Usefulness, Subjective Norms, Attitude toward VRIDP, and Intention to accept VRIDP within the VRIDP acceptance framework. The table presents the meticulous technique employed to measure the parameters crucial to understanding the customer acceptability of VRIDP. This provides a solid foundation for future examination and understanding within the research.

Table Error! No text of specified style in document.**. Convergence Validity**

Latent variables	Observation indicators	Factor loading	CR	AVE
Trust	TR1	0.848	0.920	0.697
	TR2	0.835		
	TR3	0.801		
	TR4	0.817		
	TR5	0.872		
Perceived risk	PR1	0.816	0.891	0.620
	PR2	0.768		
	PR3	0.798		
	PR4	0.777		

	PR5	0.775		
	E1	0.814		
Perceived Ease of Use of VRIDP	E2	0.791	0.904	0.654
	E3	0.784		
	E4	0.812		
	E5	0.842		
	U1	0.798		
	U2	0.832		
Perceived usefulness of VRIDP	U3	0.785	0.903	0.650
	U4	0.819		
	U5	0.795		
	N1	0.769		
	N2	0.814		
Subjective norms	N3	0.826	0.895	0.631
	N4	0.794		
	N5	0.768		
	A1	0.814		
	A2	0.818		
Attitude towards VRIDP	A3	0.812	0.904	0.653
	A4	0.806		
	A5	0.790		
	I1	0.777		
	I2	0.855		
Intention to accept VRIDP	I3	0.789	0.909	0.666
	I4	0.791		
	I5	0.865		

Table 5 presents the outcomes of a discriminant validity assessment carried out for a study on VRIDP. The test evaluates different latent factors, such as Trust, Perceived Risk, Perceived Ease of Use, Perceived Usefulness, Subjective Norms, Attitude towards VRIDP, and Intention to use VRIDP. Discriminant validity assesses the extent to which an idea is distinct and discernible from other concepts within the framework.The diagonal elements in this table correspond to each construct's square root of the Average variation Extracted (AVE). They represent the variation the construct captures about the variance caused by measurement error. The off-diagonal elements represent the connections or correlations between different structures.

To demonstrate discriminant validity, it is essential for the square root of the average variance extracted (AVE) for each construct to exceed the correlations between that construct and any other construct in the model. This table demonstrates that the values along the diagonal are more important than the corresponding values off the diagonal, thereby confirming the discriminant validity between the constructs.

Trust has a diagonal value of 0.835, which means it has a stronger relationship with its indicators than with other constructs. This is evident from its lower correlations with other constructs, such as -0.661 with Perceived Risk and 0.611 with Perceived Ease of Use. This consistent pattern observed in all constructs confirms that each construct is separate and effectively represents certain aspects of consumer behavior towards VRIDP. This finding provides more support for the theoretical framework of the model.

Table 5. Distinguish between validity tests

Latent variables	1	2	3	4	5	6	7
Trust	**0.835**						
Perceived risk	-0.661	**0.787**					
Perceived Ease of Use of VRIDP	0.611	-0.602	**0.809**				
Perceived usefulness of VRIDP	0.593	-0.641	0.605	**0.806**			
Subjective norms	0.547	-0.559	0.561	0.601	**0.794**		
Attitude towards VRIDP	0.583	-0.630	0.555	0.604	0.591	**0.808**	
Intention to accept VRIDP	0.635	-0.669	0.627	0.623	0.624	0.650	**0.816**

Note: The diagonal is the square root of the corresponding dimension AVE

Table 6 displays the measure model fit metrics that are utilized to evaluate the suitability of a structural equation model in a research study. The fit indices include Chi-square/degrees of freedom ($\chi 2$/df), Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Normed Fit Index (NFI), Tucker-Lewis Index (TLI), and Comparative Fit Index (CFI). The requirements for appropriate model fit suggest that the ratio of $\chi 2$ to degrees of freedom ($\chi 2$/df) should be less than 3, the root mean square error of approximation (RMSEA) value should be less than 0.08, and the goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), normed fit index (NFI), Tucker-Lewis index (TLI), and comparative fit index (CFI) values should be more than 0.9. The results indicate that the $\chi 2$/df ratio is 1.757, the RMSEA is 0.035, the GFI is 0.924, the AGFI is 0.911, the NFI is 0.940, the TLI is 0.970, and the CFI is 0.973. All of these numbers exceed or reach the stated criteria. This demonstrates a robust correlation between the model and the observed data, indicating that the model is highly suitable for explaining the occurrences under investigation and provides a reliable basis for concluding the relationships between variables.

Table 6. Measure model fit metrics

Fit index	χ2/df	RMSEA	GFI	AGFI	NFI	TLI	CFI
Reference standards	<3	<0.08	>0.9	>0.85	>0.9	>0.9	>0.9
Result	1.757	0.035	0.924	0.911	0.940	0.970	0.973

4.4 Path analysis

Table 7 presents the results of a path analysis performed on a structural equation model. The study examines the relationships between perceived risk (P.R.), trust (T.R.), perceived ease of use (E), perceived usefulness (U), subjective norms (N), attitude towards VRIDP (A), and intention to use VRIDP (I). The table displays path estimates, standardized coefficients (β), standard errors (S.E.), critical ratios (C.R.), and significance levels (P). All hypotheses were evaluated with a significance level of $p<0.001$ (***).

The findings suggest that there are robust negative associations between perceived risk and trust (H1), perceived usefulness (H2), perceived ease of use (H3), and subjective norms (H4). Higher levels of perceived risk are associated with decreased trust, perceived usefulness, ease of use, and subjective norms towards VRIDP. Conversely, trust has a beneficial influence on the perceived ease of use (H5), attitude towards VRIDP (H6), and intention to accept VRIDP (H7). Placing more faith in VRIDP leads to more positive assessments of its ease of use, attitudes, and intent to take it.

Subjective norms have been observed to favorably influence perceived usefulness (H8) and attitude towards VRIDP (H9). Perceived simplicity of use positively affects both perceived usefulness (H10) and attitude towards VRIDP (H11). The findings indicate how people perceive the ease of using VRIDP and how the social influences they experience impact their perceived benefits and positive attitudes toward VRIDP.

In addition, the perception of usefulness positively impacts the attitude towards VRIDP (H12) and the intention to accept VRIDP (H13). Furthermore, the attitude towards VRIDP positively influences the intention to accept VRIDP (H14). The results highlight the significance of how individuals view the utility and hold favorable attitudes towards VRIDP in influencing their intentions to adopt it.

The model profoundly understands the various elements that influence customer adoption of VRIDP. The study highlights the critical influence of factors such as perceived danger, trust, subjective norms, perceived ease of use, and perceived utility on attitudes and intentions toward adopting VRIDP.

Table 7. Structural equation model path test

Hypothesis	Path	Estate	β	S.E.	C.R.	P	Results
H1	PR→TR	-0.795	-0.691	0.049	-16.092	***	Accepted

H2	PR→U	-0.357	-0.363	0.055	-6.479	***	Accepted
H3	PR→E	-0.386	-0.377	0.056	-6.924	***	Accepted
H4	PR→N	-0.600	-0.598	0.046	-13.000	***	Accepted
H5	TR→E	0.319	0.359	0.047	6.742	***	Accepted
H6	TR→A	0.198	0.228	0.042	4.772	***	Accepted
H7	TR→I	0.249	0.308	0.035	7.207	***	Accepted
H8	N→U	0.254	0.259	0.044	5.759	***	Accepted
H9	N→A	0.270	0.271	0.045	5.929	***	Accepted
H10	E→U	0.246	0.256	0.044	5.560	***	Accepted
H11	E→A	0.142	0.146	0.049	2.893	0.004	Accepted
H12	U→A	0.239	0.235	0.053	4.506	***	Accepted
H13	U→I	0.259	0.274	0.043	6.082	***	Accepted
H14	A→I	0.292	0.314	0.044	6.700	***	Accepted

Note: TR: Trust; PR: Perceived risk; E: Perceived Ease of Use of VRIDP; U: Perceived usefulness of VRIDP; N: Subjective norms; A: Attitude towards VRIDP; I: Intention to accept VRIDP.

***: $p<0.001$

Table 8 displays the outcomes of a bootstrap test that investigates the mediation effect. The test analyzes the indirect impacts inside a structural equation model focused on Virtual Reality Interior Design Products (VRIDP). The table evaluates mediation paths, effect sizes, standard errors (SE), and bias-corrected 95% confidence intervals (CI) for hypotheses H15 through H33.

The mediation analysis shows statistically significant indirect effects through multiple channels. The perception of risk negatively impacts the perception of how easy it is to use, the attitude towards VRIDP, and the desire to embrace VRIDP. This effect is mediated by trust. This implies that having faith in VRIDP can mitigate the adverse impact of perceived risk on these variables. Trust serves as a crucial factor in augmenting the acceptability of VRIDP, even in the presence of perceived hazards. It supports the connection between risk perception and the perceptions of ease of use, attitude, and the inclination to adopt VRIDP.

In addition, the model analyzes the mediation channels that involve the perceived ease of use (E) and perceived usefulness (U) about attitude (A) and intention to accept (I). The findings demonstrate substantial positive impacts, suggesting that the perceived simplicity and utility of VRIDP can enhance individuals' views towards it and their willingness to adopt it (H18-H33). Subjective norms (N) have a considerable impact by favorably mediating the influence on perceived utility, attitude, and intention to accept VRIDP. This emphasizes the relevance of social pressures and expectations in determining VRIDP acceptance.

To summarize, the mediation analysis reveals the complex connection between perceived risk, trust, perceived ease of use, perceived usefulness, subjective norms, attitude, and desire to adopt VRIDP. The findings provide distinctive perspectives on the aspects that affect consumer acceptability of Virtual Reality Immersive Digital Platforms (VRIDP). Trust, user-friendliness, practicality, and social impact are essential in addressing perceived risks and encouraging positive attitudes and intents toward using VRIDP.

Table 8. Mediation effect bootstrap test

Hypothesis	Mediation path	Effect size	SE	Bias-Corrected 95%CI		Results
H15	PR→TR→E	-0.254	0.044	-0.339	-0.164	Accepted
H16	PR→TR→A	-0.158	0.047	-0.255	-0.066	Accepted
H17	PR→TR→I	-0.198	0.046	-0.299	-0.116	Accepted
H18	TR→E→A	0.045	0.023	0.004	0.095	Accepted
H19	PR→E→A	-0.055	0.028	-0.117	-0.004	Accepted
H20	PR→E→U	-0.095	0.026	-0.152	-0.051	Accepted
H21	TR→E→U	0.078	0.025	0.036	0.129	Accepted
H22	E→U→A	0.059	0.023	0.022	0.119	Accepted
H23	E→U→I	0.064	0.023	0.028	0.117	Accepted
H24	PR→U→A	-0.085	0.032	-0.151	-0.027	Accepted
H25	PR→U→I	-0.093	0.028	-0.157	-0.045	Accepted
H26	N→U→A	0.061	0.022	0.025	0.117	Accepted
H27	N→U→I	0.066	0.024	0.028	0.122	Accepted
H28	PR→N→U	-0.152	0.035	-0.226	-0.087	Accepted
H29	PR→N→U	-0.152	0.035	-0.226	-0.087	Accepted
H30	TR→A→I	0.058	0.020	0.028	0.110	Accepted
H31	U→A→I	0.070	0.024	0.032	0.133	Accepted
H32	E→A→I	0.042	0.023	0.002	0.092	Accepted
H33	N→A→I	0.079	0.028	0.035	0.152	Accepted

Note: TR: Trust; PR: Perceived risk; E: Perceived Ease of Use of VRIDP; U: Perceived usefulness of VRIDP; N: Subjective norms; A: Attitude towards VRIDP; I: Intention to accept VRIDP.

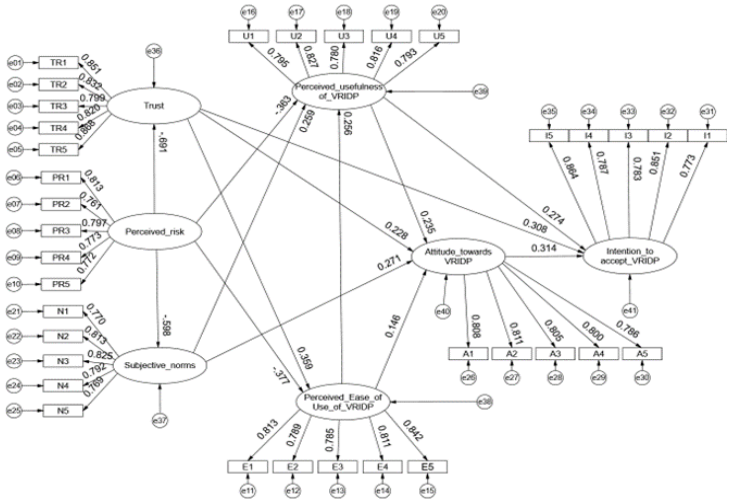

Figure 1. Structural equation model diagram

Figure 1 depicts the dynamic relationship among trust, perceived danger, subjective norms, perceived benefit, perceived ease of use, attitude towards VRIDP, and motivation to adopt VRIDP. This model notably concentrates on the role of perceived usefulness, perceived ease of use, and attitude towards VRIDP as mediators.

5. Discussion and conclusion

The examination of path analysis elucidates the multifaceted influences on consumer acceptance of Virtual Reality Interior Design Products. The research demonstrates a crucial connection between perceived risk and trust, emphasizing the significance of trust in reducing the adverse effects of perceived risk on acceptance, consistent with the findings of Kim et al. (2021) about the significance of trust in adopting new technology. This relationship underscores the deterrent effect of perceived risk, as identified by Lu and Chen (2021), emphasizing the need for strategies to alleviate consumer concerns.

In addition, the beneficial impact of trust on the perception of ease of use, attitude towards Virtual Reality Interior Design Products, and intention to accept coincides with the findings of Featherman et al. (2021) , who discussed how trust can decrease perceived vulnerabilities and improve the adoption of technology. The mediation paths, particularly from perceived risk through trust to acceptance intention, resonate with Chen and Aklikokou (2020) mediation models, illustrating the nuanced dynamics between trust, risk, and acceptance behaviors. The study also confirms the significance of subjective norms and perceived ease of use in shaping consumer attitudes and intentions, echoing Wang (2020) extended the Technology Acceptance Model models. These findings suggest that social endorsement and usability perceptions are key to fostering Virtual Reality Interior Design Products adoption.

This analysis thoroughly examines the factors that influence the acceptability of Virtual Reality Interior Design Products. It emphasizes the significance of perceived risk, trust, subjective norms, and perceived ease of use. These insights have a dual influence on theoretical knowledge and practical applications in boosting the adoption of Virtual Reality Interior Design Products. Furthermore, they present prospective domains for future studies to explore the enduring impacts on utilization and satisfaction.

5.1 Theoretical implications

By incorporating the Technology Acceptance Model and Perceived Risk Theory into our study's findings, we better understand how customers perceive and use Virtual Reality Interior Design Products. Drawing from substantial and contemporary research, this thorough examination provides an insightful comprehension of the determinants influencing technology adoption within the realm of novel virtual reality (VR) applications.

The findings corroborate the core tenets of the Technology Acceptance Model, which assert that the perceived ease of use and perceived utility of Virtual Reality Interior Design Products significantly impact user perspectives. Blut and Wang (2019) have shown the persistent significance of these determinants in technological acceptability across different contexts, which aligns with this observation. Our study extends this by highlighting the pronounced influence of perceived usefulness in the Virtual Reality Interior Design Products domain, suggesting that consumers prioritize functional benefits in evaluating emerging technologies. This aligns with recent research by Bower and Wedel et al. (2020), which suggests that innovations like Virtual Reality Interior Design Products must clearly articulate their value proposition to gain consumer acceptance. Trust emerges as a critical mediator in our study, aligning with recent findings by Bodó (2020) on the role of trust in online platforms. Our research suggests that trust in Virtual Reality Interior Design Products can alleviate concerns associated with perceived risks, a finding that extends the work of Jaspers and Pearson (2022) by emphasizing the importance of continuous trust built through positive experiences and reinforced by subjective norms.

This study elaborates on the Perceived Risk Theory by illustrating a dynamic interplay between perceived risk and trust in the Virtual Reality Interior Design Products context. This adds depth to the model proposed by Kim et al. (2023), suggesting that perceived risk in adopting Virtual Reality Interior Design Products is multifaceted, encompassing concerns about privacy, functionality, and financial implications. This research suggests that for Virtual Reality Interior Design Products to be widely accepted, it is essential to address these concerns by improving trust and perceived ease of use. Reflecting the expanded theory of planned behavior by Ajzen (2020), our study highlights the significant yet indirect influence of subjective norms on Virtual Reality Interior Design Products acceptance. This underscores the evolving nature of social influences in technology adoption, suggesting that subjective norms work through perceived usefulness and trust to shape consumer attitudes towards Virtual Reality Interior Design Products. This insight builds on the work of Tseng (2022), who noted the growing impact of social media and online communities in shaping technology acceptance behaviors.

This study integrates foundational concepts with current empirical data to offer a thorough understanding of the factors that impact client acceptance of Virtual Reality Interior Design Products. The statement emphasizes the importance of effectively communicating the advantages of Virtual Reality Interior Design Products to increase their perceived usefulness. It also highlights the need for implementing strategies to build trust and reduce perceived risks. Additionally, it suggests utilizing social influences to cultivate a positive attitude toward Virtual Reality Interior Design Products. This complete approach enhances theoretical comprehension and offers practical perspectives for marketers and developers seeking to encourage the use of Virtual Reality Interior Design Products.

This study contributes to the current knowledge by demonstrating the complex relationships among the usability, utility, trustworthiness, perceived risks, and societal effects in emerging technologies like Virtual Reality Interior Design Products. It highlights the importance of adapting marketing and communication strategies to effectively address these issues, enhancing consumer receptiveness and adopting cutting-edge products.

5.2 Practical implications

The amalgamation of the Technology Acceptance Model and Perceived Risk Theory, along with the results of our study on Virtual Reality Interior Design Products, has important implications for stakeholders such as technology developers, marketers, and politicians. By comprehending the intricacies of customer acceptance, stakeholders can formulate tactics that amplify the uptake and efficient utilization of Virtual Reality Interior Design Products.

This research emphasizes the critical role of Technology Acceptance Model constructs in shaping consumer acceptance of Virtual Reality Interior Design Products. It suggests that for developers, there is a paramount need to create Virtual Reality Interior Design Products interfaces that are both intuitive and user-friendly, effectively minimizing the learning curve and augmenting the perceived ease of use. Additionally, marketers are advised to underscore the tangible benefits and efficiency improvements offered by Virtual Reality Interior Design Products in their promotional efforts, thereby accentuating the perceived usefulness of these products. Incorporating demonstrations of real-world applications and sharing success stories could further reinforce the value proposition of Virtual Reality Interior Design Products to prospective users, enhancing their appeal and potential for adoption.

The critical role of trust in mitigating perceived risks suggests that stakeholders must prioritize building and maintaining consumer trust. For developers, this means ensuring robust security measures and privacy protections are in place and transparently communicated to users. Marketers should focus on building brand credibility through consistent, positive customer experiences and leveraging customer testimonials. Policymakers may consider establishing standards and regulations that safeguard consumer interests in the Virtual Reality Interior Design Products market.

Given the negative impact of perceived risk on Virtual Reality Interior Design Products acceptance, managing and reducing these risks is paramount. Developers can address this by incorporating feedback mechanisms and offering trial periods that allow users to experience Virtual Reality Interior Design Products without significant commitment. Marketers should craft messages that address potential concerns directly, providing clear information on risk mitigation measures and the reliability of Virtual Reality Interior Design Products solutions.

The influence of subjective norms on Virtual Reality Interior Design Products acceptance indicates the power of social proof in consumer decision-making. Marketers should leverage social media and influencer partnerships to create buzz and demonstrate widespread acceptance and satisfaction with Virtual Reality Interior Design Products. Encouraging user-generated content and reviews can also amplify positive social signals.

The correlation between customer views and their inclination to embrace Virtual Reality Interior Design Products

implies that enhancing consumer perceptions can directly impact adoption rates.This calls for targeted marketing campaigns that not only inform but also engage and excite potential users about the possibilities offered by Virtual Reality Interior Design Products. Offering immersive experiences at trade shows, in retail environments, or through online demos can change attitudes and stimulate interest.

Collectively, these findings offer a roadmap for stakeholders to enhance the adoption of Virtual Reality Interior Design Products. Technology developers are encouraged to focus on user-centric design principles that prioritize ease of use and usefulness. Marketers should develop comprehensive strategies that build trust, reduce perceived risks, and leverage social influences to shape positive attitudes towards Virtual Reality Interior Design Products. Policymakers play a role in creating a conducive environment for Virtual Reality Interior Design Products adoption through consumer protection measures and standards. By tackling these pivotal concerns, stakeholders can markedly impact the successful market entry and sustained utilization of Virtual Reality Interior Design Products. This will open opportunities for creative applications in interior design and other fields.

In conclusion, the synthesis of the Technology Acceptance Model and Perceived Risk Theory, underpinned by empirical findings, offers valuable insights for individuals and organizations aiming to understand and facilitate the adoption of Virtual Reality Interior Design Products. By strategically addressing the identified factors, stakeholders can foster a favorable ecosystem for Virtual Reality Interior Design Products, driving forward the evolution of interior design practices.

5.3 Conclusions

This study examined how consumers perceive and adopt Virtual Reality Interior Design Products, employing the Technology Acceptance Model and Perceived Risk Theory. Key findings reveal that perceived ease of use and perceived usefulness significantly impact consumer attitudes towards Virtual Reality Interior Design Products, underscoring the importance of intuitive design and clear communication of benefits. Trust emerged as a pivotal factor in mitigating perceived risks associated with Virtual Reality Interior Design Products, highlighting the necessity for robust security measures and privacy protections. Furthermore, Subjective factors and societal influences significantly impact consumer attitudes and intentions, highlighting the significance of social validation in adopting technology.

This study enhances current knowledge by thoroughly examining the factors that influence the level of acceptance of virtual reality interior design products. The technology acceptance model is enhanced by incorporating perceived risk and trust, offering a more comprehensive understanding of consumer behavior toward emerging technologies. Moreover, the study emphasizes the importance of social factors, enhancing the theoretical framework by providing insights into the function of subjective norms in the acceptance of technology. These contributions promote scholarly discussions and offer practical insights to developers, marketers, and politicians who want to improve the acceptance of Virtual Reality Interior Design Products.

While this study has provided essential insights, it also has certain drawbacks. The limited representation of potential clients for Virtual Reality Interior Design Products in the sample may hinder the applicability of the findings. Furthermore, this study primarily examines customer acceptance without thoroughly investigating

long-term usage and satisfaction, which are crucial factors for ensuring continued adoption. Future research could overcome these constraints by utilizing a more heterogeneous sample and analyzing the longitudinal aspects of using Virtual Reality Interior Design Products. Investigating the impact of advancing technologies, such as natural language processing, on developing and adopting Virtual Reality Interior Design Products could provide valuable findings. Moreover, studying the impact of environmental and ethical considerations on customer decision-making processes could improve our understanding of including Virtual Reality Interior Design Products in sustainable design methods.

In summary, this study enhances our comprehension of the complex connection between several factors influencing consumer receptiveness towards Virtual Reality Interior Design Products. It offers significant insights that can be used to improve the adoption of this technology. By examining recognized constraints and investigating proposed avenues for future study, academics and professionals can further progress the discipline, hence aiding in the seamless use of virtual reality technologies in interior design and other domains.

Authors' Contribution

Original daft and writing: Qian and C.S; Data analysis: Qian; Review and edit: Qian and C.S; Data saturation: Qian and C.S; Revision: Qian; Process and inspection: Qian and C.S

Interest declaration

All the authors agree to public this manuscript to the Kurdish Studies.

Foundation

There is no available foundation.

Data available

The original data can be used as academic research, all the data can be tracked with Ms. Qian, Email: baiying.qia@rmutto.ac.th

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