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VIRTUAL REALITY ACCEPTANCE IN COSMETIC PRODUCT: A STUDY AMONG YOUNG WORKING GIRLS IN PETALING JAYA, SELANGOR

Aris Abdul Rahman
Faculty of Communication & Media Studies, Universiti Teknologi Mara (UiTM) Shah Alam, Malaysia, Email: vavavom777@gmail.com

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ABSTRACT

Virtual Reality (VR) refers to a computer-generated immersive experience that creates human-digital interaction and provides three-dimensional (3D) visual experiences that simulate the sensation of living information on cosmetic products. This technology has gained major attention, especially in the Malaysian cosmetic industry, owing to its ability to provide users with an interactive experience. The conventional method of obtaining information on cosmetic products is time-consuming and costly, as it requires human interaction. VR offers an innovative method for sharing information about cosmetic products, eliminating the need for young working girls to be physically present at a specific location to access this information. VR is an emerging technology with large potential for business opportunities, especially in the cosmetics industry. Consumers' willingness to buy cosmetic products from an e-commerce company also has consequences for digitalization purchasing intention. This study aims to recognize the acceptance and use of VR in cosmetic product information among young working girls in Petaling Jaya, Selangor. This study applied a non-probability convenience sampling method, in which a questionnaire was distributed to a group of 300 young working girls in various locations in Petaling Jaya. The study results show that VR hedonic motivation (with a Pearson correlation of r =.738) is the highest factor influencing the use of behavioral intention that leads to the acceptance and use of VR in obtaining information on cosmetic products. This result indicates that young working girls accept VR as an alternative method of gaining product information. The results of VR acceptance will be incorporated into the existing literature to assist future researchers in enhancing VR as an alternative means of obtaining information about cosmetic products, particularly in Malaysia.

Keywords: Virtual Reality, Cosmetic product, Acceptance and Use, Digitalisation, Petaling Jaya

1. INTRODUCTION

Virtual reality (VR) creates a computer-generated environment featuring lifelike scenes, creating a sense of immersion for users who feel as though they are placed within surroundings that can mimic reality or even obtain product information while being imaginative. VR often creates an interactive environment from the physical world (Jailani & Nurbatra, 2019) and typically utilizes computer technology to generate a three-dimensional and interactive environment, providing users with an immersive experience and allowing them to explore and interact within a virtual world (Godovykh et al., 2022). Wang (2022) states that by donning a dedicated VR headset, users are fully immersed in a virtual world that effectively stimulates their senses of vision, touch, hearing, and even smell and taste. VR technology is being used in various fields such as tourism, the halal industry, education, entertainment, township planning, and medical training. In the digitalization world, consumer demand for cosmetic products has surged, and to ensure transparency in product information, the integration of VR technology offers a promising solution for gaining product information. Implementing VR in product knowledge training has a significant impact on knowledge retention and transforms the conventional environment (Alsaffar, 2021) into a more engaging and interactive one (Rashid et al., 2021). By utilizing VR, businesses can provide immersive and comprehensive experiences that help consumers make informed choices regarding cosmetic products. One of the primary benefits of using VR in cosmetic product information is the ability to offer consumers a more detailed and realistic view of the products (Sun, 2022). Traditional methods of product display, such as images, sometimes fall short of conveying the full essence of a cosmetic product. VR can take consumers on a virtual tour of production facilities, allowing them to witness the entire process, from sourcing ingredients to packaging, and ensuring transparency and authenticity.

The use of virtual reality (VR) technology to engage businesses is not a recent idea. VR has been researched and analyzed since 1990, particularly in Anglo-Saxon countries. VR has emerged as a marketing tool for enhancing young working women's product knowledge and helping them better understand product compliance. Through immersive experiences, young working women can learn about cosmetic products and foster trust and brand loyalty. VR technology has rapidly advanced in recent years, opening up new possibilities and applications in the cosmetic industry. Technology has spread its arms over every sector of life, and the largest spectator of technology is the educational institution (Akman & Çakır, 2020), whereby knowledge is gained through alternative methods. For example, the architecture and design sectors have benefited from the implementation of VR. By creating virtual walkthroughs, professionals can present their designs to clients in an immersive and interactive manner. According to Gómez et al. (2021), design training significantly improved the orientation, rotation, and visualization of architectural spaces realistically modelled in immersive VR environments, allowing for the same sensations that the designer initially sought to convey. VR in cosmetic products is in demand not only in Muslim-majority countries but also in many non-Muslim regions. VR transcends geographical boundaries (Jeng et al., 2020), making it an ideal medium for presenting cosmetic product information to a diverse and global audience. Businesses create VR experiences that cater to various cultural backgrounds and languages, ensuring that all consumers, regardless of their location, have access to all relevant information electronically (Jeng et al., 2020). The immersive nature of VR has proven to be transformative, benefiting a wide range of users, and is a new method (Rashid et al., 2021). According to Ruan (2022), research indicates that the implementation of VR for obtaining information has yielded several positive effects. These benefits include the improvement of young working women's behavior and listening skills, enhancement of their perception of cosmetic products, and an overall increase in their eagerness to obtain new information regarding cosmetic products. The use of interactive apps and VR has transformed traditional methods of marketing into dynamic and immersive marketing environments (Alsaffar, 2021). By creating virtual environments, young working women can explore cosmetic products without being in a specific place, as information can be obtained through digitalization. Using VR to obtain information allows young working women to increase their interest in learning, promote their understanding of knowledge, and establish emotional attitudes and values. (Zhang & Yin, 2020).

VR can empower young working women to make informed choices when selecting cosmetic products. For example, a VR shopping experience allows consumers to inspect products, read labels, and access detailed information about ingredients and certifications interactively. This hands-on approach significantly enhances consumer confidence in their purchase decisions (Zhang & Yin, 2020). VR is poised to revolutionize the way cosmetic product information is presented and accessed by consumers. Its ability to offer enhanced product visualization, deliver engaging education, provide global access, support interactive decision-making, and promote eco-friendliness makes VR an invaluable tool for businesses in the cosmetic industry (Arshad et al., 2017). As the demand for cosmetic products continues to grow, embracing VR technology cannot only meet this demand but also foster trust, transparency, and informed consumer choices in the cosmetic market.

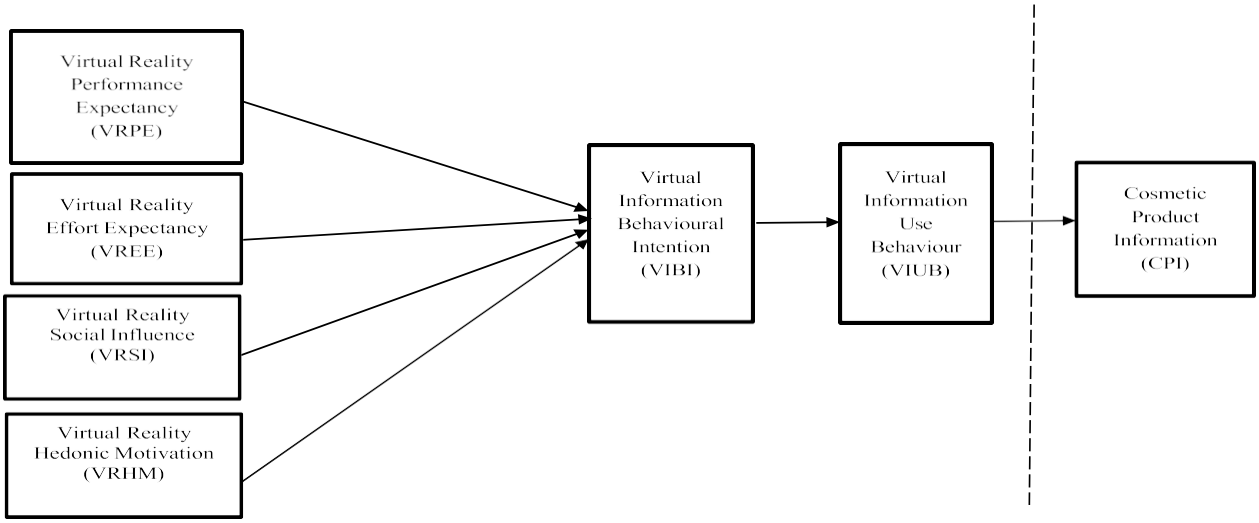
To identify the acceptance of virtual reality in cosmetic product information among young working girls in Petaling Jaya, this study underlines three (3) main objectives: -

i. To identify VR factors influencing Virtual Information Behavioural Intention (VIBI)
ii. To identify Virtual Information Behavioural Intention (VIBI) and its impact towards Virtual Information Use Behaviour (VIUB)
iii. To study the acceptance and use of Virtual Information Use Behaviour (VIUB) and its impact towards Cosmetic Product Information (CPI)

This study employs the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) (Venkatesh et al., 2012), a theoretical model that examines the factors influencing the acceptance and use of VR technology among young working women to gain cosmetic product information. Venkatesh et al. (2003) previously used the UTAUT, which considers Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC) as the key factors influencing technology acceptance. UTAUT is widely regarded as one of the most suitable models for technology acceptance, and many researchers have engaged this model in acceptance and use-related studies. These constructs are moderated by factors, such as age, gender, experience, and voluntariness of use. UTAUT provides a comprehensive framework for explaining and predicting technology acceptance (Azalan et al., 2022; Dwiyanto et al., 2020), offering stronger predictive power than other models. It has been tested in various contexts and has shown wide application and generalizability. The UTAUT has also been extended and refined over the years with the enhancement of three additional constructs, namely Hedonic Motivation (HM), Price Value (PV), and Habit (H), to explain behavioral intention and usage behavior in the UTAUT2 framework. In this VR study, UTAUT2 was adapted to explain and predict the behavioral intention and usage behavior of young working women towards VR in gaining cosmetic product information. Figure 1 illustrates the VR theoretical framework, comprising two main dimensions: VR acceptance and use and cosmetic product information. This theoretical framework integrates UTAUT2 (Venkatesh et al., 2012) to evaluate the acceptance of new technology in cosmetic product information (Kasri et al., 2023). The following hypotheses were derived from the theoretical framework in Figure 1.

i. H_1 There is a significant relationship between Virtual Reality Performance Expectancy (VRPE) and Virtual Information Behavioural Intention (VIBI) among young working girls
ii. H_2 There is a significant relationship between Virtual Reality Effort Expectancy (VREE) and Virtual Learning Behavioural Intention (VLBI) among young working girls
iii. H_3 There is a significant relationship between Virtual Reality Social Influence (VRSI) and Virtual Information Behavioural Intention (VIBI) among young working girls
iv. H_4 There is a significant relationship between Virtual Reality Hedonic Motivation (VRHM) and Virtual Information Behavioural Intention (VIBI) among young working girls
v. H_5 There is a significant relationship between Virtual Information Behavioural Intention (VIBI) and Virtual Information Use Behaviour (VIUB) among young working girls
vi. H_6 There is a significant relationship between Virtual Information Use Behaviour (VIUB) and Cosmetic Product Information (CPI) among young working girls

Figure 1.
Research Theoretical Framework : Unified Theory of Acceptance and Use of Technology 2 (Venkatesh et al., 2012) Kasri et al. (2023): Consumption of Pharmaceutical Product



2. LITERATURE REVIEW

2.1 Virtual Reality Development over the Years

Virtual Reality (VR) technology has rapidly evolved over the past few decades, bringing about a paradigm shift in various industries and revolutionizing digital content. VR offers an immersive and interactive experience that transcends the boundaries of the physical world (Hilken et al., 2021; de Keyser et al., 2019), and young working girls are more eager to gain information on cosmetic products through interactive encounters. From its inception as a niche concept to its widespread application in gaming, healthcare, tourism, marketing, halal products, education, and beyond, VR has made tremendous strides in both hardware and software development. The roots of VR can be traced back to the 1960s, when pioneers such as Ivan Sutherland developed early VR systems (Dodge & Kitchin, 2003). The development of VR has faced many challenges, especially in terms of graphical capabilities and interface design. However, technological advancements have led to significant breakthroughs. In the 1990s, VR gained mainstream attention with commercial products such as Nintendo's Virtual Boy and early arcade VR experiences. During this time, VR was expensive, limiting its accessibility to wealthy individuals. Consequently, its potential impact on society remained constrained, and widespread adoption was slow to materialize. The initial high expenses were mainly linked to the need for complex and specialized hardware necessary to provide a fulfilling VR experience. Additionally, limited manufacturing capabilities and economies of scale have contributed to the high price of VR systems (Aithal & Aithal, 2018). Nevertheless, despite its initial exclusivity, early adopters and enthusiasts of VR technology laid the groundwork for its future growth. Their enthusiasm and feedback have provided valuable insights to developers and manufacturers, encouraging them to refine and innovate the technology (Juřík et al., 2021). According to Weijdom (2022), VR as a new media is a new concept of digital environment where the user metaphorically steps inside a reality world in

exploring interactive information, games, online festivals, conferences, and enjoying performances (Weijdom, 2022). The concept of digitalization provides end-users with a distinctive platform for immersing themselves in content and virtual environments that replicate reality. This empowers users to perceive and interact with computer-generated elements within a three-dimensional space and create an interactive environment. As advancements in computing and display technologies continue, the costs of VR hardware are gradually declining (Hashem et al., 2021). Virtual reality technology has evolved over the years and has benefited all end-users in many sectors.

2.2 Cosmetic Product Information

Cosmetic products have become an integral part of our daily lives, offering a wide array of options to enhance appearance and boost self-esteem, particularly for women (Morganti et al., 2020), and address various skincare and beauty concerns. Understanding cosmetic product information is crucial for many reasons, and most cosmetic users lack awareness of the ingredients of certain products that they have consumed (Kamil et al., 2020). In Malaysia, beauty product sales are increasing, even though the majority of Malaysians are concerned about various issues regarding cosmetics and their impact on users (Boon et al. 2020). The manufacturing sector, which emphasizes the cosmetics and toiletries industry, contributed approximately RM13 billion in sales in 2003 and imparts a 13% growth rate per year (Mustafar et al. 2018). According to Höfer (2021), the global cosmetics market grew by 5.5% in 2018, and this growth has a significant impact on product-sharing information, as social media is used as a marketing platform. Women and cosmetics are closely intertwined (Boon, Fern &Chee 2020), and nowadays, women use many different cosmetic products on their faces every day without seeking product information that aligns with their values, such as cruelty-free, vegan, or eco-friendly options, which could be determined through comprehensive product information. The cosmetics market comprises several categories, including skincare, hair care, makeup, fragrances, and deodorants. One of the causes of this expansion is technological progress. Details of cosmetic product information can be visualized using virtual reality (VR) technology. VR has emerged as a game-changing technology in the world of cosmetics, as the integration of VR into the cosmetic product industry has created a transformative experience for both consumers and businesses ((Juřík et al., 2021). VR has revolutionized the way consumers discover cosmetic products. In the past, consumers had to rely on traditional methods, such as visiting physical stores, consulting beauty advisors, or relying on product descriptions and images. With VR technology, customers can virtually explore an extensive range of products in a highly immersive and interactive environment (Wirawan & Gading, 2022; Alsaffar, 2021). Virtual try-on experiences (Shmeleva et al., 2020) have become increasingly popular, whereby consumers can virtually apply cosmetics, from lipstick and eyeshadow to foundation and blush, to see how they would look on their skin. This not only saves time and money but also offers a more personalized and accurate way of selecting products that suit individual skin tones and preferences.

3. METHODOLOGY

This study used a cross-sectional survey in which a questionnaire was distributed to young working women aged 18 to 25 years (Morean et al., 2023; Potvin et al., 2022; Adams et al., 2021; Peng et al., 2020) in Petaling Jaya, Selangor, Malaysia. During this period, young women experienced increased personal freedom, experimentation, and the development of independence from their families (Zarrett & Schulenberg, 2006). The researcher chose this age category because it represents the stage of emerging adulthood, which is characterized by significant developmental changes and transitions (Kouros et al., 2017), and most of them have social media to gain product information on cosmetic products. In today's world, young working women are growing up in a digital technology era where Internet-based smartphones, laptops, and tablets influence all aspects of modern life (Cottin et al., 2022). This age is also a developmental period where emotions and intellectual thinking have an impact on brain development, and this age group has behavioral adjustments associated with basic psychosocial age-related developmental tasks (Richard et al., 2015). This young working age group represents an important life stage involving a transition to adulthood, earning money, and spending it on the products they need (Morean et al., 2023). This age category, considered emerging adulthood, is a critical period for human physical, cognitive, emotional, and social development (Lee et al., 2022). This survey applied

Convenience sampling was used in Petaling Jaya because the respondents met the age criteria and there are numerous shopping malls in the area. This questionnaire was administered using traditional paper-and-pencil surveys because they provide higher response rates than online surveys, which would not receive a high response rate given that some potential participants are unwilling to participate in online surveys (Lefever et al., 2007). The results indicate that the effect of the length of the response field is more pronounced in the paper-and-pencil condition than in the web survey condition (Fuchs, 2009). The respondents were 100% female because this survey only targeted young working women, and cosmetics and women are closely intertwined (Boon, Fern, &Chee, 2020). Table 1 presents the age demographics of the participants in this cross-sectional study.

Table 1.
Demographic for participant (n = 300)

Age Group (years)	Frequency (n)	Percentage (%)
18 - 20 years old	84	28.0
21 – 23 years old	106	35.3
24 – 25 years old	110	36.7

The developed instrument is structured in such a way that the entire question is directly related to VR acceptance in cosmetic product information among young working girls, and all questions are developed to answer the study's objective. All items are divided into two sections: A: demographic information and B: acceptance and use of technology. All questions in Section B are asked using a 5-point Likert scale, with "1" indicating strongly disagree. "2" being Almost Disagree, "3" being Neutral, "4" being Agree and "5" is Strongly Agree. The survey comprised 42 closed-ended questions, including a demographic section. This survey aimed to explore whether a connection exists between VR technology and cosmetic product information among young working adults in Petaling Jaya, Selangor. This study emphasizes a non-probability sampling design as part of the sampling strategy. Non-probability sampling was employed in this study because randomization is impossible for young working adults as the population is very large and there are time limitations to conducting the study (Pace, 2021; Etikan et al., 2016). The resulting outcome was not targeted to produce findings that will be used to create generalizations about the entire population. Therefore, convenience sampling was performed on young working girls in the Petaling Jaya vicinity, where participants of the target population met the age standards, had easy geographical access, were willing to participate in the research, and were given a set of questionnaires. Each respondent answered the same set of surveys that were distributed to 300 young working girls aged 18 – 25 years. Before data collection, reliability and normality tests were performed. The reliability of the research instrument was assessed by conducting a Cronbach's alpha reliability test, as outlined by Field (2009) and Spiliotopoulou (2009). The results are presented in Table 2. The acceptable value for this test is 0.70 (Nunnally & Bernstein, 1994), and all variables exceeded this threshold.

Table 2.
Summary Results of Reliability Analysis *(n* = 300)

Variable	Number of items	Cronbach's alpha
VRPE	6	.746
VREE	5	.763
VRSI	5	.788
VRHM	5	.914
VIBI	5	.881
VIUB	6	.787
CPI	6	.854

To examine whether the data were normally distributed, a normality test was conducted, which involved assessing skewness and kurtosis. Table 3 presents the normality test results for the seven variables applied in the survey. The skewness and kurtosis indices were used to identify the normality of the collected data using SPSS (Pallant, 2013, 2005). The data were considered normal for a skewness range from − 3 to +3 and kurtosis from − 10 to +10 (Brown, 2006). The skewness index range was from

-1.037 to -.101 and the kurtosis index range was from -.896 to .623. Hence, it is concluded that the data collection for seven (7) variables, exhibited a normal distribution range, as indicated by the Skewness and Kurtosis where all data collected fell within the range for a normal distribution

Table 3.
Test of Normality *(n* = 300)

	N	Skewness		Kurtosis	
Variable	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
VRPE	300	-.222	.131	-.548	.251
VREE	300	-.101	.131	-.896	.251
VRSI	300	-.387	.131	-.082	.251
VRHM	300	-1.037	.131	.012	.251
VLBI	300	-.881	.131	.623	.251
VLUB	300	-.377	.131	.124	.251
CPI	300	-.635	.131	.057	.251

The Kaiser-Meyer-Olkin (KMO) test was conducted to assess the appropriateness of the data for factor analysis and verify its compliance with the essential criteria for further analysis. The KMO test evaluates the degree of partial correlation strength among variables. According to Napitupulu et al. (2017), KMO values close to 1.0 are ideal, while values less than 0.5 are unacceptable. Bartlett's test of sphericity was used to test the null hypothesis that the correlation matrix is an identity matrix, which means that the variables are unrelated and not ideal for factor analysis (Rojas et al., 2015). Table 4 shows the result for KMO & Bartlett's Test with result .887 which is close to 1.0 and this result is acceptable.

Table 4.
Test of Normality *(n* = 300)

Kaiser–Meyer–Olkin Measure of Sampling Adequacy		.887
Bartlett's Test of Sphericity	Approx. Chi-Square	1674.867
	df	21
	Sig	.000

4. FINDINGS AND DISCUSSION

4.1 To Identify Virtual Reality Factors Influencing Virtual Information Behavioural Intention (VIBI)

An analysis was conducted using a one-tailed test to assess the likelihood of a relationship in a particular direction without considering the possibility of a relationship in the opposite direction. Table 5 presents the results of the factors influencing VIBI using Pearson 's correlation and regression. Based on Pearson 's correlation results, the researcher found that VRHM (r = .750) is the main factor influencing the relationship between VIBI in the first dimension. Hedonic motivation plays a vital role in young working girls' acceptance of VR as a tool for gaining cosmetic product information. A total of 86.5% of young working girls in Petaling Jaya strongly agreed that using VR for cosmetic product information is fun, while only 2.5% disagreed with the above statement. Previous research by Bower and Lai (2020) and Sharif and Raza (2017) indicates similar results, in which hedonic motivation predicts behavioral intention to accept new technology. The next result of Pearson's correlation follows VRSI (r = .702) and VRPE (r = .686). The least factor that influences the relationship between VIBI and VREE (r = .577); however, this factor remains significant in the study. This is because young working girls expect that using VR will provide convenient knowledge about cosmetic products. The results show that social influence impacts young working girls in gaining information on cosmetic products. Of the respondents, 76.8% agreed that the usage of VR was influenced by family members, and 71 % were influenced by friends.

The researcher also produced the results of the regression for the study using VR towards factors that influence VIBI. This shows that in the first dimension, the VRHM relationship with VIBI **(**R^2 = .562) is the main factor influencing the intention of young working girls to use VR to gain knowledge of cosmetic products. The second highest result for regression was VRSI (R^2 = .503), followed by VRPE **(**R^2 = .471), and lastly, VREE **(**R^2 = .344). The constructs of VRPE, VREE, VRSI, and VRHM have a significant relationship with VIBI among young working girls; thus, Hypotheses H_1, H_2, H_3, and H_4 were supported. Several studies have confirmed that PE, EE, SI, and HM significantly influence BI to accept new technology, such as VR games for chemical education (Chioma et al., 2021), students' acceptance of the Use & Go Pay (Batoro, 2020), Moodle-learning management system (Zwain, 2019), and acceptance of e-scooter VR service (Huang, 2020). Since this study focused on young working girls' acceptance and use of VR for gaining cosmetic product information, the constructs play a significant role in accepting and using VR technology

Table 5. Summary Results of Pearson Correlation (n = 300, a=0.05)

Variable	Pearson Correlation (r)	Regression (R^2)
VRPE > VIBI	.686	.471
VREE > VIBI	.577	.344
VRSI > VIBI	.702	.503
VRHM > VIBI	.750	.562

4.2 To Identify Virtual Information Behavioural Intention (VIBI) and Its Impact towards Virtual Information Use Behaviour (VIUB)

Pearson 'scorrelation analysis revealed a significant impact of VIBI on VIUB, with a correlation coefficient of r =.755. Additionally, the regression analysis result for the study, indicated by an R-squared value of R2 =
The correlation coefficient was.597, further supporting the notion that VIBI has a significant influence over VIUB. Therefore, H5 is supported. According to Xie (2022) and Adnan and Bahar (2019), the advent of technology in a globalized world has transformed marketing, shifting it towards digital platforms such as digital advertisement boards. This is a new norm in the cosmetic product field, especially when the method of sharing information with digital technology has grown popular in recent years. As these respondents are young working girls aged 18–25 years, they are excited and happy to explore and use new technology as an alternative way of acquiring product information. According to Chioma et al. (2021), behavioral intention indicates that a customer is willing to trust a company, which affects

consumer behavior; thus, when using products and services from that company, consumers will feel satisfied. Based on the findings, 87.7% of young working girls agree that "virtual reality is exciting in gaining product information, " showing that they are willing to adapt and accept new technology as an alternative way of gaining information. The great advantage of virtual media is the increasing knowledge power of the media user, as it provides a wider range of knowledge, as the young working girls would ask any type of question to this media, whereas books have limitations. In addition to these, VR provides more practical and colorful images, so the end user understands better, and they do not receive conventional information from the seller. This increases enthusiasm for knowledge and helps boost their imagination of the product (Yulie et al., 2021). Digitalisation became increasingly essential in 2020 as the world faced the COVID-19 pandemic, customer engagement and interactions in the traditional face-to-face environment have instantly changed the world scenario (Salta et al., 20220). During this pandemic outbreak, all sectors were badly hit, including marketing. Individuals were forced to stay home and encouraged to practice social distancing to prevent the spread of the deadly virus. Therefore, digital product information has become essential to keep up with the current product information environment (Madan et al., 2022).

4.3 To Study the Acceptance and Use of Virtual Information Use Behaviour (VIUB) And Its Impact Towards Cosmetic Product Information (CPI)

On the second dimension, where HIP is the dependent variable, the researcher finds that VIUB influences CPI with a Pearson correlation result (r = .766) and the result of the regression for the study is (R^2 = .564). These findings indicate that VIUB plays a substantial role in explaining CPI, thus showing that there is a significant relationship between VIUB and CPI among young working girls, as indicated in H_6. The introduction of graphics-oriented visuals has had a significant impact on the behavior of young working girls, particularly in the context of information sharing (Bistaman et al., 2018). A study by Wirawan and Gading (2022) indicated that any interactive information that has viability, applicability, and efficacy for gaining knowledge improves young adults' motivation to gain more information. According to Wang and Hemchua (2022), these visual components can captivate and educate young professional women, making intricate concepts more accessible and relatable. Research shows that users prefer graphical interfaces over purely textual ones, as they improve knowledge to a greater extent (Engin and Donanci, 2016; Iordatii et al., 2015). Based on the results analysis, 92 % of young working girls are interested in using VR for cosmetic product information, and only 1.2 % disagree on that particular matter. The object-oriented features created by VR technology improve understanding compared with complex explanations and facilitate active interaction with end users. The use of visuals, such as videos, diagrams, and charts, simplifies complex information by transforming it into visual cues. This approach helps young professionals establish connections and retain information about cosmetic products more efficiently. Additionally, visual aids cater to different needs, accommodating both visual learners who thrive on imagery and kinesthetic learners who benefit from interactive content. As a result, these elements not only capture young working girl's attention but also foster a deeper level of comprehension and knowledge retention (Wirawan & Gading, 2022)

5. CONCLUSION

In conclusion, the integration of VR in the field of cosmetic product information signifies revolutionary and versatile progress, with the potential to deliver extensive advantages across various industries, including the cosmetic industry. It transcends the mere dissemination of information and heralds a paradigm shift in how consumers, producers, and various stakeholders interact with and perceive cosmetic products in the future. (Kashif et al., 2017). The use of VR in marketing is gaining significant attention because of its ability to create immersive and interactive experiences that transcend traditional methods of obtaining information (Alsaffar, 2021). This technology enables young working adults to obtain information on specific requirements, such as a list of cosmetic ingredients, which is one of the most critical aspects of cosmetic product information. This provides insight into the product's contents, allowing consumers to avoid substances to which they may be sensitive or allergic to. VR offers a unique and immersive experience that engages young working women and enhances their understanding of certain products (Dwipayana et al., 2019). The adoption of VR in cosmetic product information enriches the consumer's experience. It offers an immersive and engaging platform that transcends traditional, two-dimensional presentations. The use of VR can assist end users with clear instructions on how to use the product, which is typically included in an accompanying leaflet. Young working women can interact with products in a three-dimensional virtual space, enabling them to gain a comprehensive understanding of a product's composition, source, and production methods (Wirawan & Gading, 2022). Consequently, young working women do not only passively absorb information but also actively participate in their learning journey, fostering deeper comprehension

and retention of knowledge. This heightened engagement fosters trust and confidence among consumers, because they have more firsthand choices of virtual experiences.

Cosmetic products have established themselves as indispensable tools for enhancing women's physical appearance (Nayak et al., 2021). Whether it is a subtle touch-up with concealer or a bold statement with vibrant lipstick, cosmetics provide women with the means to accentuate their best features and minimize their imperfections. Virtual reality offers a creative 3D dimension for self-expression, allowing users to experiment with different looks and styles, adapting their appearance to suit their mood or occasion. Furthermore, VR has potential benefits for businesses operating in the cosmetic industry. Manufacturers and producers now have an innovative tool at their disposal to showcase their products to global audiences. VR enables companies to effectively communicate their commitment to guidelines, providing transparency and authenticity to consumers (Adnan & Bahar, 2019). This results in a significant increase in market share, brand loyalty, and ultimately, improved financial performance for cosmetics-oriented businesses. Beyond the consumer–producer relationship, VR in cosmetic product information benefits regulatory bodies and certifying agencies. By embracing VR, these organizations can streamline the marketing process, ensuring that products adhere to guidelines regarding product promotion. This technology facilitates better monitoring, inspection, and quality control, contributing to the overall integrity of cosmetic certification (Kamali, 2013). According to Weissblueth and Nissim (2018), VR stimulates young working girls' interest and motivation by providing them with the opportunity to engage in otherwise impossible-to-experience situations and offering a range of experimental tools delivered directly to their brains. This situation is advantageous for obtaining cosmetic product information at a different level.

The emergence of COVID-19 has caused many industrial sectors worldwide to shift from conventional to online systems, despite inadequate facilities. Technology has accelerated because of COVID-19, which has been regarded as one of the most important events of the 21st century. The impact of modern communication technologies on marketing tools is significant. Technologies such as Zoom, Google Meet, and 360-degree videos have revolutionized the way cosmetic product information is delivered. The acceptance of new technology is challenging based on many factors, such as age, locality, infrastructure, and time. This is an important factor in the acceptance of new technologies. This study adapts the Unified Theory of Acceptance and Use of Technology 2 by Venkatesh et al. (2012) to evaluate young working women's acceptance of using virtual reality to obtain cosmetic product information. The acceptance of new technology is challenging based on many factors, such as age, locality, infrastructure, and time. This is an important factor in accepting new technology, and this study adapts the Unified Theory of Acceptance and Use of Technology 2 by Venkatesh et al. (2012) to evaluate young working women's acceptance of using virtual reality to obtain cosmetic product information.

Four main constructs were used to evaluate the acceptance of technology: PE, EE, SI, and HM. UTAUT2 was used to forecast behavioral intention and use behavior of young working women in Petaling Jaya towards VR in a dynamic marketing environment and evaluate the influences that are relevant to technology acceptance. The results of this study have several theoretical implications. First, this study adds to the current knowledge surrounding VR as an alternative information method. The acceptance validated that the established construct in UTAUT2 may be broadened and used for different virtual technologies, such as artificial intelligence or augmented reality, to gain information regarding cosmetic products. Second, the framework further validated factors that may be relevant to understanding young working women's objectives for using VR to gain cosmetic product information. VRHM was confirmed as the most significant factor for acceptance and use of technology toward behavioral intention to use VR for cosmetic product information. All hypotheses showed a significant relationship between the independent and dependent variables. Furthermore, this study established that the framework is a useful instrument for understanding how young working women perceive using VR to gain cosmetic product information. Moreover, VR has the potential to stimulate innovation in various sectors associated with cosmetic products. Cosmetic products have seamlessly woven themselves into the fabric of women's daily lives, offering numerous advantages. They are not solely about aesthetics but also serve as tools for self-expression, confidence building, and solutions for various skincare and beauty needs. Their ability to enhance the appearance and well-being of young working girls makes them an integral part of modern lifestyles. VR immersive experiences have the potential to open fresh avenues for research, development, and marketing across a spectrum of industries (Rashid et al., 2021), including cosmetics, food and beverages, pharmaceuticals, and tourism. This validated acceptance and use may be adapted with different moderating variables by future researchers in different market segmentations, such as tourism, property management, and sports training. This would allow for a better understanding of how these factors explain users' behavioral intention regarding similar technologies.

This study has three limitations. First, the representation of this study was very limited. Although the findings are based on data collected from young working women in Petaling Jaya, the results may not be generalized to all working

girls because the data collection was only based on the Petaling Jaya vicinity. Demographic factors elsewhere would play a significant role in young professionals' acceptance and use of VR in cosmetic product information. However, this result may be used to inform future researchers about the acceptance and use of VR technology for cosmetic product information. The next shortcoming is the construct used in the UTAUT2 model. The scale of the study has limitations in terms of the construct used to evaluate behavioral intention to use VR. Other constructs, such as habit, different demographics, and different age group variables, may have different outcomes for the framework and may provide different outcomes for the study. Future research could examine the factors of validated acceptance and use and revise them appropriately according to their subject matter.

The final constraint pertains to the survey instrument used in this study. The survey instrument for this study focused on the acceptance and use of VR for cosmetic product information. Future researchers could value-add the instrument based on their focus areas, such as education, property management, tourism, or aviation. The dependent variable may change in their studied subjects. Future researchers should add current survey instruments to other immersive simulation technologies, such as artificial intelligence, augmented reality, and holograms. Cosmetic products have evolved to occupy a central role in women's daily routines (Nayak et al., 2021), seamlessly integrating into their lives in various ways. Their significance extends beyond mere aesthetics, encompassing a multitude of functions that cater to appearance, self-esteem, and broader skincare and beauty needs. In conclusion, the incorporation of VR into cosmetic product information is a transformative force with the potential to enhance consumer experience, bolster business competitiveness, strengthen regulatory oversight, and foster innovation across sectors. As VR technology continues to evolve and become more accessible, stakeholders in the cosmetic industry must recognize its potential and harness its capabilities. Collectively, these measures can propel the cosmetic industry into a new era of growth, trust, and excellence, ultimately benefiting consumers, businesses, and society as a whole.

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