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Research Article

The Effect of Using Augmented Reality on Purchase Intention with Consumer Control and Media Enjoyment as A Mediating Variable of Wardah Beauty

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ABSTRACT

This study aims to determine the effect of vividness and interactivity in AR technology on purchase intention, with consumer control as a mediating variable. This research focuses on Wardah consumers in Indonesia who use digital platforms to buy beauty products, especially those that use Augmented Reality (AR) features. This research tries to answer how AR features affect consumers' behavioral and cognitive controls and how they affect their purchasing decisions. This research uses a quantitative method with a casual design. Researchers collected data distributed to 385 respondents who had used the Augmented Reality (AR) feature online or through Wardah's official website and had an interest in buying Wardah products or had purchased Wardag products online, so respondents were selected through purposive sampling technique. To assess the relationship between the independent variable (Augmented Reality), the mediating variable (Consumers' Control) and the dependent variable (Purchase Intention) is done using a structural equation model (SEM) based on SmartPLS for data analysis. The results confirm that all constructs exhibit strong reliability and validity, with Outer Loading values exceeding 0.7 and Composite Reliability above 0.8. The R-Square (R^2) value for Purchase Intention is 0.554, indicating that the model explains 55.4% of the variance in purchase intention. Furthermore, the Q-Square (Q^2) value of 0.344 confirms strong predictive relevance. Path coefficient analysis shows that all relationships are positive and significant (P-value < 0.05), confirming that interactivity and vividness in AR enhance consumer control, media enjoyment, and purchase intention. Indirect effects further highlight that behavioral and cognitive control mediate the relationship between AR features and purchase intention, strengthening AR's role as a crucial digital marketing tool. These findings underscore that AR-driven marketing strategies can significantly improve shopping experiences and influence purchasing decisions for Wardah products.

Keywords: Augmented Reality, Purchase Intention, Consumer's Control, Beauty Product, Interactivity, Vividness.

INTRODUCTION

Along with the rise of digital technology, the beauty industry has changed a lot in the recent years. Moreover, Indonesians are now more aware of their self-care and appearance, which has led to an increase in the cosmetics industry in Indonesia. According to predictions, the cosmetics business will also make more revenue every year for the next five years. Figure 1.2 below is a graph of cosmetics market revenue in Indonesia in 2018 to 2029.

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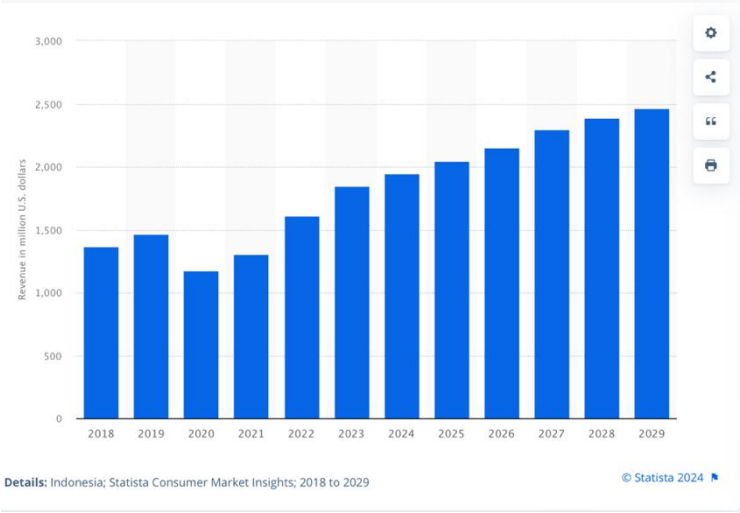
Figure 1.2 Revenue of the cosmetics market in Indonesia from 2018 to 2029

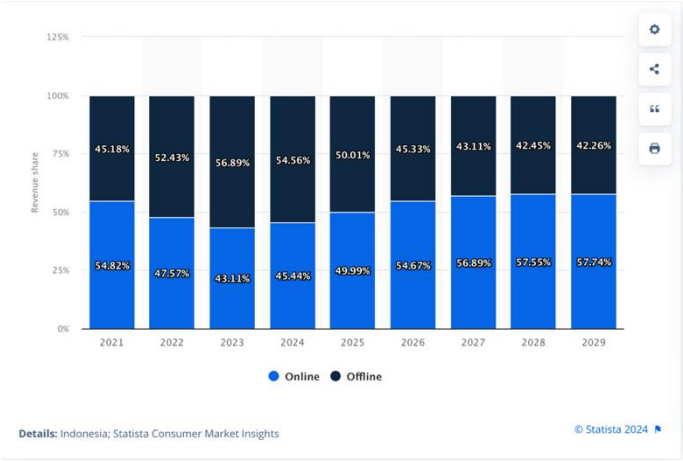


Source: Statista, 2024

From figure 1.2 based on data from Statista (2024) it can be concluded that, the cosmetic industry in Indonesia is predicted to grow rapidly until 2029. Revenues in this industry will be expected to reach 2.5 billion USD, which will be the highest peak during the analysis period. Moreover, between 2024 and 2029, the increase reached 518.5 million USD or equivalent to 26.67% (Statista, 2024). Through 2029, the industry is positioned for continued success related to this encouraging trend. Overall, the Indonesian cosmetics industry has grown both nationally and internationally, with significant growth in the number of companies and export volume (Martarahayu et al., 2019).

The transition from traditional to online platforms has also reshaped shopping habits. According to (Yunita et al., 2022), before the digital era, retailers relied solely on physical stores, printed advertisements, and word-of-mouth marketing. However, digitalization has transformed the way consumers engage with brands, especially in the beauty sector. While online shopping provides convenience, it introduces uncertainties—such as the inability to physically test products, which can reduce buyer confidence (Yunita et al., 2023). Figure 1.3 below shows the sales distribution of beauty and self-care products in Indonesia based on two channels: online and offline.

Figure 1.3 Distribution of beauty and personal care market sales in Indonesia from 2021 to 2029



Source: Statista, 2024

Based on figure 1.3, according to data from Statista (2024) The distribution of beauty and personal care product sales in Indonesia has shifted gradually. In 2021, online sales reached 54.82%, but they decreased to 43.11% in 2023 due to the post-pandemic resurgence of offline shopping. However, Statista (2024) projects that online sales will rise again and surpass offline channels by 2029, capturing 57.74% of the market. This is because there is more and more e-commerce platform on the market, that make things easier for customers. Many people like shopping online because it's faster and easier than doing things the traditional way, like going to places (Afrianto & Irwansyah, 2021).

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With the rise of online shopping, it has become easier for consumers to find and buy the products they need through various platforms (Melia, 2023). In Indonesia, Wardah Cosmetics offers its products through both offline and online channels to cater to a wider range of customers (Pasaribu & Pasaribu, 2021). Known for its halal-certified products, Wardah is part of PT Paragon Technology and Innovation and has successfully positioned itself as a trusted halal beauty brand (Maulidyah et al., 2023)

Wardah consistently targets Gen Z and millennials, two groups whose preferences changed quickly and have a lot of influence in the beauty market. To stay in connect with them, Wardah uses creative and interactive content marketing through social media sites like TikTok to build engagement and trust the brand (Wulandari et al., 2024). That means people aged 17 and up are actively buying beauty items (Septina et al., 2023). This is supported by the ZAP Beauty Index 2020 survey, which revealed that most respondents began using skincare products such as facial wash, moisturizers, and toners in the 19-23 age range.

Wardah is the biggest halal cosmetics brand in Indonesia. To improve its position even more, Wardah uses campaigns like "Beauty Moves You" to encourage young women to be the best versions of themselves and contribute positively to their surroundings (wardahbeauty.com). According to World Population Review (2024), Indonesia is the one of the countries that has a largest muslim population with total reached around 242.70 million people. So, Wardah's commitment to offering halal-certified cosmetics helps build a positive brand image and strengthens its reputation with Indonesian consumers (Geraldine & Susanti, 2021).

The company has earned high brand recall, with Wardah consistently recognized as the leading halal beauty brand in the market. This strong brand awareness plays a significant role in shaping consumers' purchase intentions, making them more likely to choose Wardah over other beauty products (Kusumawati & Rahmawan, 2021). The company's success is partly due to its ability to appeal to both teenagers and adults, especially with its wide range of products, including skincare and makeup (Khumaeroh et al., 2023; Maulidyah et al., 2023). Consumers are not only drawn to the halal label but also to the variety of product options that align with their needs and preferences (Anjani et al., 2023)

Due to changes in consumer behavior, this phenomenon is very interesting to analyze in depth about the determinants of purchase intention (Antarizkia & Arif, 2022). Augmented reality (AR) technology has emerged as a key driver for consumer engagement and purchase decisions in online retail. According to Kim (2016) as cited in Indiran et al., (2024), A customer's interactions with shopping help software might affect the choices they make about what to buy when they are online. This interaction enhances cognitive control by helping consumers visualize how makeup products will look on them, thereby reducing uncertainty during the decision-making (Patnaik, 2024). For example, Wardah's Virtual Try-On feature enables users to virtually try on different makeup items, facilitating their ability to evaluate and make decisions more effectively. Moreover, this technology also promotes behavioral control by allowing users to easily explore various shades and products, increasing their confidence in their purchasing decisions without needing to visit a physical store (Febrianty et al., 2024). By enhancing control, this feature reduces hesitation, helping consumers feel more confident in their purchasing decisions (Febrianty et al., 2024). Figure 1.4 below shows how users can try out different shades and products from Wardah.

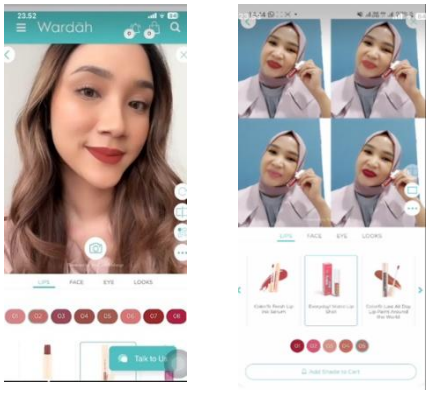

Figure 1.4 Wardah's Augmented Reality Virtual Try-On Feature
Source: Tiktok.com

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Through its virtual try-on feature, Figure 1.4 above shows Wardah's innovative use of augmented reality (AR) technology. It lets people try out different types of products, like lipsticks, and see how they look on their faces right now. The AR feature not only makes it easier to make choices, but it also gives customers more faith in their decisions, which makes users happier and more engaged. It lets them virtually see how the makeup would look on their face, which helps them choose the best product for them.

Augmented reality (AR) technologies help consumers feel more confident in their purchase decisions by letting them try on products in a more interactive way (Mussa, 2022). For instance, L'Oreal's AR-based virtual mirror allows customers to virtually try on makeup, thus integrating the "fit and feel" sensory richness of trying on a physical product into customers' online experience (Hilken et al., 2018). Digital technology is getting better, businesses are more likely to offer innovative features that let customers try out product without touching them. consumers can use to try out the products without actually touching them (Viohafeni et al., 2023). These technologies are unique because they not only show goods in a vivid and interactive way, but they also make the user think that the product is there (Verhagen et al., 2013).

The adoption of AR in beauty retail has been widely studied, primarily focusing on how AR elements such as vividness and interactivity influence consumer control and, subsequently, purchase intention (Whang et al., 2021). However, while consumer control plays a crucial role in decision-making, previous research has paid less attention to the emotional aspect of AR experiences. Specifically, the role of media enjoyment, the level of pleasure and engagement consumers experience while interacting with AR has not been sufficiently explored. Several studies indicate that when users enjoy digital media interactions, they are more likely to engage with the technology and develop a stronger intention to purchase (Yang & Lin, 2024).

The beauty industry has changed a lot because of technology, especially AI and AR, which have helped businesses learn more about their customers (Fenanda et al., 2024). Especially when it comes to makeup features that let you try them on virtually (Salma Dhianita & Popy Rufaidah, 2024). Mobile augmented reality let people who are interested in buying beauty products online try out different makeup without having to clean it all the time. They can also share the test results of the makeup with their friends and family, even on social media (Liu & Napitupulu, 2020).

Using augmented reality (AR) technology, the Wardah company has released a feature that users can use to instantly "try on" makeup items by seeing virtual makeup on their faces (Febrianty et al., 2024). This augmented reality technology lets users virtually try on different effects, like lipstick colors, eyeshadow, and other beauty items, by using websites (Dhianita & Popy Rufaidah, 2024). With AR, people can see if the makeup fits them perfectly before they buy it (Kristi & Kusumawati, 2021). According to Racat and Capelli (2016) as cited in Azizi (2022) A study on makeup found that digital marketing and apps used for virtual trials can change how satisfied customers are and how likely they are to buy something. When judging how someone feels or what they think they're feeling in a virtual world, two common criteria are how interactive and vivid the sensation is (Jan et al., 2023).To improve customer ratings when AR is used, marketing managers will be able to fine-tune their e-commerce promotional strategies by learning how the two main media features of interactivity and vividness affect ratings (Yim et al., 2017).

Wardah has utilized the "beauty match and shade match" feature on the Wardah website. Wardah beauty products that can be tried on virtually include 4 categories, there are Lip, Face, Eye and Looks (try.wardahbeauty.com, 2024). First category is for lip products (Wardah Long Lasting Lipstick, Colorfit Velvet Matte Lip Mousse, Exclusive Matte Lip Cream, Intense Matte Lipstick, Colorfit Ultra-Light Matte Lipstick). Next category is for face like blush on (Exclusive Blush On, Blush On series A, series B, Series C and Series D). Also, for the eye product, there is eyeshadow, eyeliner, mascara, and an eyebrow pencil. Lastly, users can try out themed makeup like elegant arisan makeup, korean makeup, and makeup for interviews (wardahbeauty.com). Figure 1.4 is an example of using Wardah Virtual Try On.

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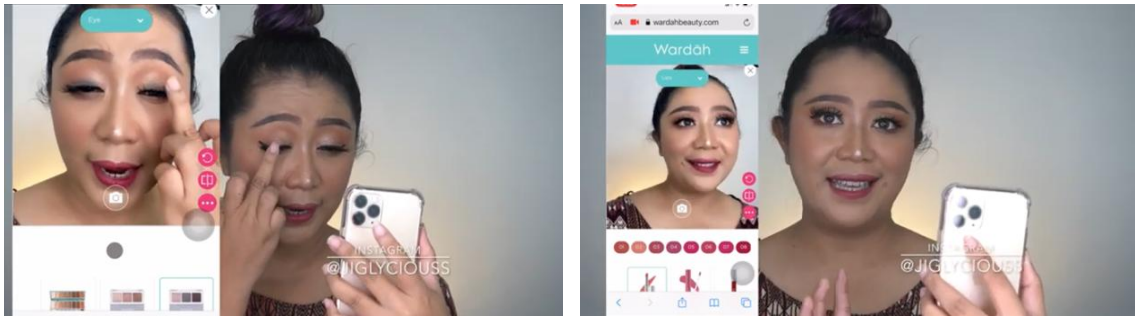

Figure 1.4 Example of using Wardah Virtual Try-On
Source: youtube.com (@jiglyciouss)

Figure 1.4 above is an example of using Wardah Virtual Try-On (Beauty Match) uploaded on YouTube from a YouTuber named Jiglyciouss (Arianti). This YouTuber is explained the steps of using Wardah Virtual Try-On and in the video, she is trying lipstick and eyeshadow. Within this video, viewers can directly experience how AR technology enables users to quickly and interactively explore products, thereby increasing their desire to buy. Visual demonstration allows viewers actually experience the product, which may affect their choice to buy it in the future. Furthermore, this kind of material helps spread the word about the brand and encourage more people to try the new products that Wardah has to offer.

However, the Virtual Try-On feature on Wardah's website was down for repair at the time this study was conducted. In response, the study uses Wardah's augmented reality features on TikTok as an alternative platform. TikTok was picked because Wardah supports interactive AR effects, which offer a comparable virtual experience.

This approach ensures that the research remains relevant and representative of Wardah's efforts to integrate digital innovation into its marketing strategies. Figure 1.5 below shows Augmented Reality Feature on Wardah's TikTok account (@wardahofficial), which lets users explore its products in fun and creative ways.

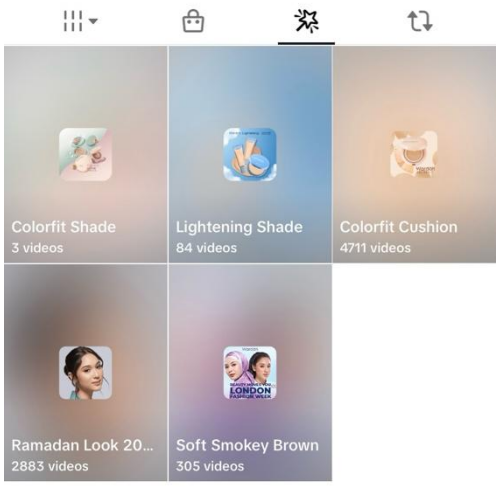

Figure 1.5 Augmented Reality Feature on Wardah's Tiktok
Source: www.tiktok.com (@wardahofficial)

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TikTok, with over 157.6 million active users in Indonesia, is currently the country with the largest TikTok audience worldwide (Figure 1.6)

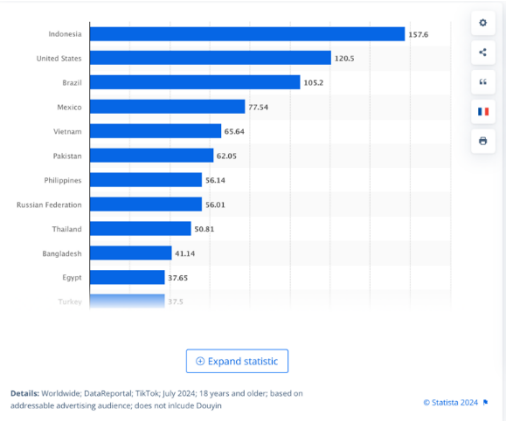

Figure 1.6 Countries with the largest TikTok audience as of July 2024

Source: Statista, 2024

Figure 1.6 above shows that Indonesia had the largest number of TikTok users in the world in July 2024, with a total of 157.6 million users. This highlights TikTok's dominance in Indonesia as a hugely popular social media platform. By leveraging this popular platform, Wardah shows adaptability in embracing digital innovations to enhance user experience and strengthen its presence in the competitive beauty market.

Previous studies have explored how Augmented Reality (AR) affects Purchase Intention in digital marketing. However, most of these studies have focused on the technical aspects of AR, such as *vividness* and *interactivity*, and how these elements influence Consumer Control. Meanwhile, the emotional side of using AR, especially related to Media Enjoyment, has not been widely discussed.

Some studies suggest that when users enjoy using digital media, they are more likely to adopt the technology and be influenced in their purchase decisions. However, how AR impacts Media Enjoyment, and how this enjoyment affects Consumer Control and Purchase Intention, has not been clearly studied.

Additionally, while Consumer Control is already known to influence Purchase Intention, there are still limited studies that examine Media Enjoyment as an additional mediator, especially in the context of AR in the beauty industry. Therefore, this research aims to fill that gap by proposing a model where Media Enjoyment acts as a second mediator, influencing how AR affects Consumer Control and, in turn, Purchase Intention.

Based on the explanation of this phenomenon and based on previous studies, the author is encouraged to further research on “THE EFFECT OF USING AUGMENTED REALITY ON PURCHASE INTENTION WITH CONSUMER CONTROL AS A MEDIATING VARIABLE OF WARDAH BEAUTY”

METHODS

Research Types

This research uses quantitative methods, namely the type of research that produces findings that can be achieved (obtained) using statistical procedures or other ways of quantification (measurement) (Sujarweni, 2015:39). The purpose of this research is causal, which is to identify the cause-and-effect relationship between the independent and dependent variables in order to understand how changes in one variable can affect the other (Sekaran & Bougie, 2016:44). As for this research, the variable that becomes the cause is Augmented Reality Experience and the variable that becomes the effect is Purchase Intention with the intermediate variable being Consumers' Control, so that tests will be carried out related to the correlation of all these variables. Table 3.1 shows the characteristics of this research.

Table 3.1 Research Characteristics

No.	Research Characteristics	Type
1.	Research Methods	Quantitative Method
2.	Purpose of the Research	Causal
3.	Based on the Research Strategy	Survey

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4.	Research Setting	Non-Contrived Setting
5.	Time Horizon	Cross Sectionals
6.	Unit of Analysis	Individual

Source: Author Processed Data (2024)

The research setting is carried out in a non-contrived setting, or natural environment without manipulation by the researcher, so that the data obtained is more representative of real conditions (Sekaran & Bougie, 2016:100). This research uses a survey approach, where data is collected through questionnaires to obtain information from a large population in a short period of time (Sekaran & Bougie, 2016:97). In addition, this study is cross-sectional, with data collection conducted at one specific time to provide a description of specific conditions at that time (Sekaran & Bougie, 2016:104). The unit of analysis used is the individual, where respondents provide data based on their personal experiences and opinions, which are relevant to understanding their perceptions or behavior towards certain phenomena (Sekaran & Bougie, 2016:102).

Based on the characteristics that have been identified, the research takes a structured method and mainly looks at how variables are related to each other in terms of causes and effects. Surveys and other quantitative methods are used to gather information that can then be analyzed statistically. It is important to note that the research is being done in a natural setting or non-contrived settings, so the results should be accurate. The objective of this research is to give a clear and useful picture of the thing being studied by using a cross-sectional time frame and an individual unit of analysis. In line with the objectives that need to be reached, these characteristics help the research process proceed in a logical and organized way.

Data Analysis Technique

Data analysis is defined as the effort of data that is already available and then processed with statistics and can be used to answer the formulation of problems in research (Sujarweni, 2015: 121). According to Sekaran and Bougie (2011: 175), In data analysis has three objectives:

1. Get a feel for the data by checking for symmetrical tendency and dispersion
2. Testing the quality of the data
3. Testing the research hypothesis

According to Sujarweni (2015: 123), various types of data analysis based on the number of variables are divided into Univariate Analysis, Bivariate Analysis and Multivariate Analysis. This study uses will use Multivariate Analysis for data analysis. Multivariate analysis is an analysis of statistical methods that allow us to conduct research on more than two variables simultaneously. Multivariate analysis is the application of statistical methods to analyze several research variables stimulant or simultaneously (Sholihin & Ratmono, 2020).

This study uses the Partial Least Squares Structural Equation Modeling (SEM-PLS) method to analyze the relationship between latent variables, such as vividness, interactivity, consumer control, and purchase intention. SEM-PLS was chosen because it has high flexibility in handling exploratory and predictive research models. This method does not require the assumption of multivariate normal distribution, making it suitable for data that does not meet the assumption of normality (Jufriyanto et al., 2024). In addition, SEM-PLS is suitable for research with smaller sample sizes compared to the covariance-based SEM (CB-SEM) method (Sholihin & Ratmono, 2020:6).

This study aims to examine the complex causal relationships, including mediating variables (consumer control) between augmented reality (vividness and interactivity) and purchase intention. SEM-PLS is considered effective in evaluating direct and indirect relationships, as well as in providing relevant predictive results for the digital marketing context. With the support of SmartPLS software, this method allows researchers to analyze the model structure efficiently and provide results that can be interpreted well according to the research objectives.

RESULTS

This chapter presents the results of data analysis using PLS SEM with SmartPLS software. The analysis includes measurement model evaluation (validity and reliability), structural model evaluation, and hypothesis testing using the bootstrapping method. If mediation is involved, its effect is also analyzed. The findings are then compared with previous research to assess their theoretical alignment.

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1. Measurement model (Inner model) testing

The measurement model shows the relationship between constructs and measurement indicators (also known as the outer model in SEM-PLS) based on measurement theory (Sholihin & Ratmono, 2020). According to Santoso (2021), The Measurement Model explains the connection between latent variables and their indicators. Researchers need to consider two different kinds of measurement specifications when creating construct measurement indicators: formative measurement models and reflective measurement models (Sholihin & Ratmono, 2020). The following figure shows the outer model results:

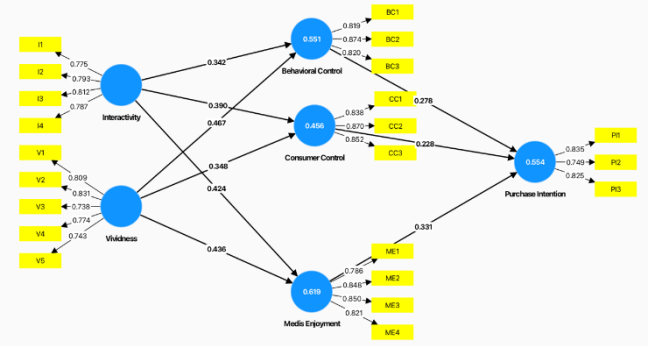

Figure 4.1 Outer Model Results

Convergent Validity

When two different measures or indicators for the same contract are positively connected, this is called convergent validity. The outer loading of each signal and the average variance extracted (AVE) can be used to test convergent validity (Sholihin & Ratmono, 2020: 44). A measurement is considered to have convergent validity if its loading factor exceeds 0.7. Additionally, the AVE indicator must have a minimum value of 0.50 to meet the criteria for convergent validity (Indrawati, 2015)

Table 4.1 Convergent Validity Results

No.	Variable	Dimension	Code	Item in Research	Outer Loading
1.	Augmented Reality	Vividness	V1	This shopping experience is clear.	0,809
			V2	This shopping experienced is detailed.	0,831
			V3	This shopping experience is vivid.	0,738
			V4	This shopping experience is sharp.	0,774
			V5	This shopping experience is well-defined.	0,743
		Interactivity	I1	Overall product shopping experience was very interactive with me.	0,775
			I2	This shopping experience	0,793

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No.	Variable	Dimension	Code	Item in Research	Outer Loading
				facilitates two-way communication.	
			I3	This shopping experience facilitates concurrent communication.	0,812
			I4	During the shopping, I feel on an equal footing.	0,787
2.	Consumer Control (Z)	Behavioral Control	BC1	This shopping experience save my time and effort in choosing Wardah beauty products.	0,819
			BC2	Through this shopping experience, I feel like I can try all the Wardah beauty products that I want.	0,874
			BC3	Through this shopping experience, I feel like I can try all the Wardah beauty products that I need.	0,820
		Cognitive Control	CC1	The overall shopping experience were easy to understand.	0,838
			CC2	The shopping experience was easy to grasp at a glance.	0,870
			CC3	The overall shopping experience was easy to predict.	0,852
4.	Media Enjoyment (Z)	Media Enjoyment,	ME1	I feel that Wardah's product presentation with Augmented	0,786

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No.	Variable	Dimension	Code	Item in Research	Outer Loading
				Reality (AR) is entertaining.	
			ME2	I found Wardah's AR product presentation experience enjoyable.	0,848
			ME3	The experience of shopping for Wardah products online using Augmented Reality (AR) was pleasing.	0,850
			ME4	The online shopping platform embedded with Wardah's AR technology was fun to use.	0,821
3.	Purchase Intention (Y)	Purchase Intention,	PI1	I'm going to buy this Wardah beauty products.	0,835
			P12	I consider purchasing this Wardah beauty products.	0,749
			PI3	I may purchase this Wardah beauty products.	0,825

The table above indicates that all constructs have Outer Loading values exceeding 0.7, confirming valid convergent validity. Furthermore, most values are above 0.7, demonstrating a strong and significant correlation.

Realibility test and Validity

Reliability is the level of trust, consistency, and stability of the measurement results, which indicates that the questionnaire used is reliable and of good quality (Indrawati, 2015). According to Hair et al. (2010) as cited in Indrawati (2015), Cronbach's Alpha technique is the most used method, with a minimum coefficient of 0.70 as an indication that the questionnaire has a good level of reliability. The validity of research data is determined by an accurate measurement process. A measuring instrument is said to be valid if the instrument measures what should be measured (Indrianto & Supomo, 2018).

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Table 4.2 Latent Variable Reliability and Validity

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Behavioral Control	0,787	0,876	0,702
Cognitive Control	0,813	0,889	0,728
Interactivity	0,801	0,870	0,627
Media Enjoyment	0,845	0,896	0,684
Purchase Intention	0,728	0,845	0,646
Vividness	0,838	0,886	0,608

The reliability and validity analysis results indicate that all constructs in this study exhibit good internal consistency. Behavioral Control has a Cronbach's Alpha of 0.787, Composite Reliability of 0.876, and an AVE of 0.702, suggesting that AR features enhance consumers' control over their purchasing decisions for Wardah products. Cognitive Control demonstrates high reliability, with a Cronbach's Alpha of 0.813, Composite Reliability of 0.889, and an AVE of 0.728, confirming that AR helps consumers process product information more effectively, thereby increasing purchase intention. Interactivity has a Cronbach's Alpha of 0.801, Composite Reliability of 0.870, and an AVE of 0.627, indicating that the more interactive the AR experience, the greater the consumer engagement in the purchasing process. Media Enjoyment exhibits excellent reliability, with a Cronbach's Alpha of 0.845, Composite Reliability of 0.896, and an AVE of 0.684, highlighting that a pleasant shopping experience through AR enhances consumer interest in Wardah products. Purchase Intention has a Cronbach's Alpha of 0.728, Composite Reliability of 0.845, and an AVE of 0.646, reinforcing that AR features that provide control and a positive experience contribute to consumers' purchasing decisions. Meanwhile, Vividness demonstrates high reliability, with a Cronbach's Alpha of 0.838, Composite Reliability of 0.886, and an AVE of 0.608, emphasizing that the clearer and more realistic the product display through AR, the higher consumer engagement and purchase interest. Thus, the findings confirm that AR features play a crucial role in enhancing consumer control, engagement, enjoyment, and purchase intention for Wardah products.

Overall, the reliability test results indicate that all constructs in this study exhibit good internal consistency, with Composite Reliability values above 0.7 and AVE values exceeding 0.5. This suggests that the research instrument used is both valid and reliable in measuring variables related to the use of AR in beauty product purchase decisions. With these findings, the study can further analyze how the interaction between Interactivity, Vividness, Consumer Control, and Media Enjoyment significantly influences Purchase Intention within the Wardah Beauty digital ecosystem.

Discriminant Validity

Discriminant validity shows the degree to which a latent variable or construct is truly different from other constructs. So far, researchers have used two approaches to assess discriminant validity, namely *Cross-loadings* and *Fornell-Larcker* ((Sholihin & Ratmono, 2020).

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Table 4.3 Fornell-Lacker Results

	Behavioral Control	Cognitive Control	Interactivity	Media Enjoyment	Purchase Intention	Vividness
Behavioral Control	**0.838**					
Cognitive Control	0.605	**0.853**				
Interactivity	0.658	0.625	**0.792**			
Media Enjoyment	0.705	0.718	0.718	**0.827**		
Purchase Intention	0.650	0.634	0.612	0.691	**0.804**	
Vividness	0.698	0.611	0.675	0.722	0.633	**0.780**

The Fornell-Larcker results confirm strong discriminant validity, as each construct's square root of AVE (bold diagonal values) exceeds its correlations with other constructs. This indicates that each construct is well-differentiated and measures distinct aspects of the research model. Additionally, Table 4.3 shows that the loading values for each construct are consistently higher than the cross-loading values, reinforcing the idea that the construct indicator block performs better than the other indicator blocks. These findings validate the structural relationships within the Wardah Beauty digital ecosystem, ensuring that the model accurately captures the interactions between Behavioral Control, Cognitive Control, Interactivity, Media Enjoyment, Purchase Intention, and Vividness. As a result, this study establishes a robust foundation for further analysis, demonstrating that the constructs used are both reliable and valid in assessing consumer behavior in the context of digital marketing and augmented reality experiences.

2. Structural Model (Inner Model)

According to Musyaffi et al. (2022:12), Testing the structural model aims to identify and see the relationship between exogenous and endogenous variables in a study. This relationship will answer the research objectives, namely testing the hypotheses compiled in a study.

R-Square test

The value of this number represents the coefficient of influence for an endogenous construct. The R square value also explains the variation of endogenous variables on endogenous variables. R-squared values of 0.67, 0.33, and 0.19 indicate "good," "moderate," and "weak" levels, respectively (Indrawati, 2015).

Table 4.4 R-square Results

	R-square
Purchase Intention	0.554

The analysis results show that the R-Square (R^2) value for Purchase Intention is 0.554, which means that the Augmented Reality (Vividness & Interactivity), Consumer Control (Behavioral & Cognitive Control), and Media Enjoyment variables are able to explain 55.4% of Purchase Intention variability. This indicates that the model has a good explanatory power in predicting Purchase Intention based on the given independent variables.

Q-square test

Q^2 was conducted to see how well a prediction could be obtained through a blindfolded method. Stone-Geisser's is another name for Q^2. If Q^2 value is less than 0, it means that the exogenous latent construct can be used as an explanatory variable for predicting existing constructs. Testing Q^2 is carried out only on endogenous constructs that have reflective indicators (Ghozali, 2014).

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Table 4.5 Q-square Results

	R-square
Purchase Intention	0.344

Based on the results of the Q-Square (Q^2) value of 0.344 indicates that the model has good predictive ability, because a Q^2 value greater than 0 indicates predictive relevance. Thus, the model in this study can be said to be strong enough to explain the factors that influence Purchase Intention.

Hypothesis Testing

According to (Djaali, 2021), This research hypothesis is based on a review of important theories and ideas that were found through a literature review. Hypotheses are often considered short-term solutions to research problems. In PLS analysis, t-statistics are applied using the bootstrap resampling method to test hypothesis. This approach does not require assumptions of normal data distribution or a large sample size. Bootstrap resampling allows data to be easily shared, and the hypothesis is accepted if the t-statistic value exceeds 1.96 (Ulfa, 2021).

Table 4.6 Path Coefficient Test Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Behavioral Control -> Purchase Intention	0,278	0,279	0,055	5,080	**0,000**
Cognitive Control -> Purchase Intention	0,228	0,227	0,056	4,044	**0,000**
Interactivity -> Behavioral Control	0,342	0,343	0,057	6,043	**0,000**
Interactivity -> Cognitive Control	0,390	0,386	0,065	5,997	**0,000**
Interactivity -> Media Enjoyment	0,424	0,423	0,054	7,913	**0,000**
Media Enjoyment -> Purchase Intention	0,331	0,331	0,063	5,283	**0,000**
Vividness -> Behavioral Control	0,467	0,465	0,051	9,184	**0,000**

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Vividness -> Cognitive Control	0,348	0,350	0,060	5,831	**0,000**
Vividness -> Media Enjoyment	0,436	0,434	0,044	9,897	**0,000**

Path coefficient results analysis:

$H1_a$ Interactivity → Behavioral Control

The results indicate that interactivity in Augmented Reality (AR) has a significant positive effect on Behavioral Control (Path Coefficient: 0.342, T-Statistic: 6.043, P-Value: 0.000). This suggests that the more interactive the AR features are, the greater consumers' perceived control over their purchasing decisions. The ability to manipulate AR elements and engage with the product virtually enhances their confidence in making informed choices.

$H1_b$ Interactivity → Cognitive Control

The findings confirm that interactivity in AR positively affects Cognitive Control (Path Coefficient: 0.390, T-Statistic: 5.997, P-Value: 0.000). A higher level of interactivity enables consumers to better understand and process product information, strengthening their cognitive engagement with the AR experience. As a result, they feel more in control of the information provided, increasing their confidence in purchasing decisions.

H2 Interactivity → Media Enjoyment

The results confirm that interactivity in AR significantly enhances Media Enjoyment (Path Coefficient: 0.424, T-Statistic: 7.913, P-Value: 0.000). This means that when consumers can actively engage with AR elements, they find the shopping experience more enjoyable and engaging, ultimately increasing their satisfaction.

$H3_a$ Vividness → Behavioral Control

The analysis shows that vividness in AR significantly influences Behavioral Control (Path Coefficient: 0.467, T-Statistic: 9.184, P-Value: 0.000). When AR displays are more realistic and visually detailed, consumers perceive a higher level of control over their purchasing choices. The clarity and realism of the virtual product representation help them make decisions with greater certainty.

$H3_b$ Vividness → Cognitive Control

Vividness in AR also has a significant positive impact on Cognitive Control (Path Coefficient: 0.348, T-Statistic: 5.831, P-Value: 0.000). A more vivid AR experience enhances consumers' ability to understand and interpret product information, making them feel more knowledgeable and in control when evaluating their purchase options.

H4 Vividness → Media Enjoyment

The analysis indicates that vividness in AR positively affects Media Enjoyment (Path Coefficient: 0.436, T-Statistic: 9.897, P-Value: 0.000). A clearer and more detailed AR display makes the shopping experience more immersive and enjoyable for consumers, enhancing their overall satisfaction with the interaction.

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$H5_a$ Behavioral Control → Purchase Intention

Behavioral Control is found to significantly influence Purchase Intention (Path Coefficient: 0.278, T-Statistic: 5.080, P-Value: 0.000). This suggests that the greater the consumers' perceived control when using AR features, the more likely they are to purchase the product.

$H5_b$ Cognitive Control → Purchase Intention

The findings confirm that Cognitive Control positively affects Purchase Intention (Path Coefficient: 0.228, T-Statistic: 4.044, P-Value: 0.000). When consumers feel that they can effectively process and understand product information through AR, they are more inclined to make a purchase.

H6 Media Enjoyment → Purchase Intention

Media Enjoyment significantly influences Purchase Intention (Path Coefficient: 0.331, T-Statistic: 5.283, P-Value: 0.000). Consumers who find AR experiences enjoyable are more likely to develop a positive attitude toward the product, increasing their likelihood of purchasing.

All relationships in this model show a positive and significant effect (P-value <0.05). Thus, the use of AR features with a high level of interactivity and vividness can increase Consumer Control (Behavioral and Cognitive), Media Enjoyment, and Purchase Intention for Wardah products. This model confirms that technology-based marketing strategies such as AR can be an effective tool in improving shopping experiences and consumer purchasing decisions.

Indirect Effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Interactivity -> Behavioral Control -> Purchase Intention	0,095	0,096	0,025	3,750	**0,000**
Vividness -> Behavioral Control -> Purchase Intention	0,130	0,130	0,030	4,345	**0,000**
Interactivity -> Cognitive Control -> Purchase Intention	0,089	0,087	0,026	3,441	**0,001**
Vividness -> Cognitive Control -> Purchase Intention	0,079	0,080	0,026	3,027	**0,003**
Interactivity -> Media Enjoyment -	0,140	0,140	0,033	4,296	**0,000**

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> Purchase Intention					
Vividness -> Media Enjoyment -> Purchase Intention	0,144	0,144	0,033	4,382	**0,000**

Indirect effects results analysis:

H7 Interactivity → Behavioral Control → Purchase Intention

Interactivity significantly influences Behavioral Control, which subsequently impacts Purchase Intention. The analysis results show a path coefficient of 0.095, a T-statistic of 3.750 (>1.96), and a P-value of 0.000 (<0.05), indicating a statistically significant relationship. This suggests that the more interactive the Augmented Reality (AR) features are, the more they enhance consumers' perceived behavioral control. When consumers feel they have greater control over the shopping process through interactive AR experiences, their confidence in making a purchase increases, ultimately leading to a higher purchase intention.

H8 Vividness → Behavioral Control → Purchase Intention

Vividness, referring to the clarity and realism of the AR display, also plays a significant role in influencing Behavioral Control, which in turn enhances Purchase Intention. The statistical findings reveal a path coefficient of 0.130, a T-statistic of 4.345 (>1.96), and a P-value of 0.000 (<0.05), confirming a strong and significant relationship. A more vivid AR experience improves consumers' perception of control over their shopping activities, making them feel more capable and confident in their decision-making. As a result, their intention to purchase increases when they perceive that they can explore and evaluate products more effectively through an immersive AR interface.

H9 Interactivity → Cognitive Control → Purchase Intention

Cognitive Control also serves as a mediator in the relationship between Interactivity and Purchase Intention, demonstrating a significant effect. The analysis results indicate a path coefficient of 0.089, a T-statistic of 3.441 (>1.96), and a P-value of 0.001 (<0.05), confirming a strong statistical significance. This finding implies that interactive AR features enhance consumers' cognitive engagement, allowing them to process information more effectively. When consumers feel they have cognitive control over their shopping experience—such as understanding product details or visualizing items in their environment—they are more likely to develop a stronger purchase intention.

H10 Vividness → Cognitive Control → Purchase Intention

Cognitive Control also serves as a significant mediator in the relationship between Vividness and Purchase Intention. The statistical results indicate a path coefficient of 0.079, a T-statistic of 3.027 (>1.96), and a P-value of 0.003 (<0.05), confirming the significance of this relationship. This suggests that a more vivid and realistic AR display enhances consumers' cognitive control, allowing them to process product-related information more effectively. As consumers gain a better understanding and perception of the product through AR, their confidence in making a purchase decision increases, ultimately leading to a stronger purchase intention.

H11 Interactivity → Media Enjoyment → Purchase Intention

Media Enjoyment significantly mediates the relationship between Interactivity and Purchase Intention, as evidenced by a path coefficient of 0.140, a T-statistic of 4.296 (>1.96), and a P-value of 0.000 (<0.05). These findings suggest that the more interactive the AR features are, the greater the enjoyment consumers experience while using them. The interactive elements of AR enhance engagement, making the shopping process more entertaining and immersive. As

a result, when consumers find enjoyment in exploring products through AR, they are more likely to develop a higher purchase intention.

H12 Vividness → Media Enjoyment → Purchase Intention

Similar to interactivity, Vividness also plays a crucial role in enhancing Media Enjoyment, which subsequently influences Purchase Intention. The statistical results reveal a path coefficient of 0.144, a T-statistic of 4.382 (>1.96), and a P-value of 0.000 (<0.05), indicating a strong and significant relationship. A more vivid and visually appealing AR display enhances the entertainment value of the shopping experience, making it more enjoyable for consumers. When consumers find the AR experience fun and engaging, they are more inclined to make a purchase, demonstrating the positive impact of media enjoyment on purchase intention.

All mediation pathways in this model have a positive and significant influence (P-value < 0.05). This indicates that interactivity and vividness in AR features not only directly enhance consumers' purchase intention but also indirectly through increased behavioral control, cognitive control, and media enjoyment. Marketing strategies that incorporate AR with a strong focus on interactivity and vividness can be highly effective in enhancing the shopping experience and influencing consumer purchasing decisions. Cognitive Control also acts as a mediator in the relationship between Vividness and Purchase Intention. A more realistic AR display enhances consumers' cognitive control, which subsequently increases their purchase intention.

CONCLUSION

Based on the research findings, it can be concluded that interactivity and vividness in Augmented Reality (AR) have a positive influence on Behavioral Control and Cognitive Control. This means that the more interactive and realistic the AR experience, the greater the sense of control consumers feel when evaluating and selecting Wardah products. Additionally, interactivity and vividness also positively impact Media Enjoyment, indicating that AR-based shopping enhances consumer engagement and enjoyment. Furthermore, Behavioral Control, Cognitive Control, and Media Enjoyment significantly affect Purchase Intention, meaning that consumers who feel a sense of control and enjoyment during their AR experience are more likely to purchase Wardah products. The results also confirm that Consumer Control (Behavioral & Cognitive Control) and Media Enjoyment act as mediators in the relationship between AR (Interactivity & Vividness) and Purchase Intention. This implies that a well-designed AR experience not only directly increases purchase intention but also does so indirectly by enhancing consumer control and enjoyment in the shopping process.

Based on these findings, several recommendations can be proposed. For cosmetic brands like Wardah, AR technology development should focus on improving interactivity and visual quality to enhance consumer engagement and sense of control in the purchasing process. Additionally, AR-based marketing strategies can be optimized by offering more personalized and immersive experiences, such as more accurate product recommendations tailored to individual preferences. For future research, this study can be expanded by incorporating external factors such as brand loyalty and a broader user experience to gain a more comprehensive understanding of AR's impact on consumer behavior. This research provides valuable insights not only for the beauty industry in enhancing digital marketing effectiveness but also for academia in understanding the role of AR in shaping consumer purchasing decisions.

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