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The Impact of Augmented Reality and Live Streaming on Maybelline Makeup Purchase Decisions Among Female Students in Malang Raya

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A B S T R A C T

Makeup purchases are increasingly made online driven by the growing use of digital technology, especially among Generation Z. This research evaluates the impact of augmented reality and live streaming on purchase decisions. Using a quantitative approach, data were collected via surveys from 133 female university students in Malang Raya who use Maybelline products. Analyzed through multiple linear regression findings show that augmented reality enhances purchasing decisions by allowing virtual product trials, which boosts consumer confidence. Live streaming enriches the experience with real-time interactions and product demos. The combined effect of augmented reality and live streaming significantly influences consumer preferences, highlighting the need for Maybelline to optimize these strategies to boost engagement and sales in the Malang Raya region.

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INTRODUCTION

Makeup plays a significant role in women's lives as a tool to enhance their appearance. Psychologically, makeup serves two main functions: seduction, to highlight attractive facial features, and camouflage, to conceal physical imperfections (Kusumadinata, Chaniago, & Hasbiyah, 2023). Therefore, makeup use has become a primary need, no longer limited to special occasions. A survey by Jakpat (2023) in the Figure 1 reveals that 75% of women in Indonesia use makeup daily and consider it is essential using makeup everyday, especially students. Makeup is significant for female students transitioning from adolescence to early adulthood, a period often marked by hormonal changes that cause skin issues. Additionally, the freedom to wear makeup on campus and peer influence are also social factors that affect makeup use among students (Rahmawati & Muslikah, 2021).

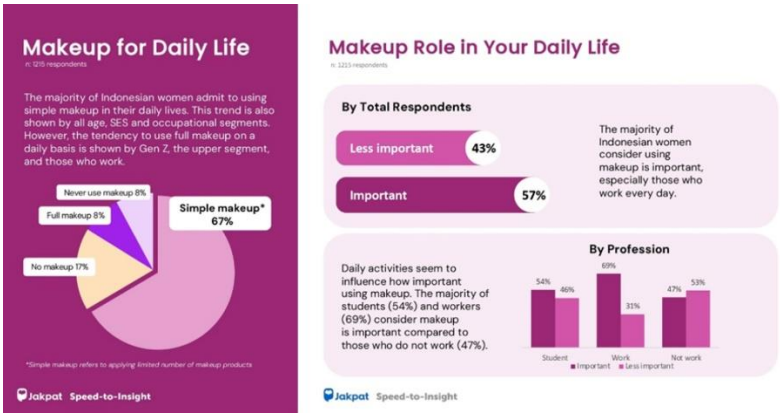

Figure 1. Makeup Role and The Habit of Wearing Makeup in Indonesia
Source: (Jakpat, 2023)

Students are a vital part of Malang's life, which is known as an educational city due to its numerous institutions. In 2022, Malang had 59 higher education institutions, including 3 public and 56 private universities (Badan Pusat Statistik Provinsi Jawa Timur, 2023), and this number increased to 62 institutions in 2023. As of 2022, there were about 330,000 active students in Malang, highlighting its role as a major destination for higher education (Malang Posco Media, 2023).

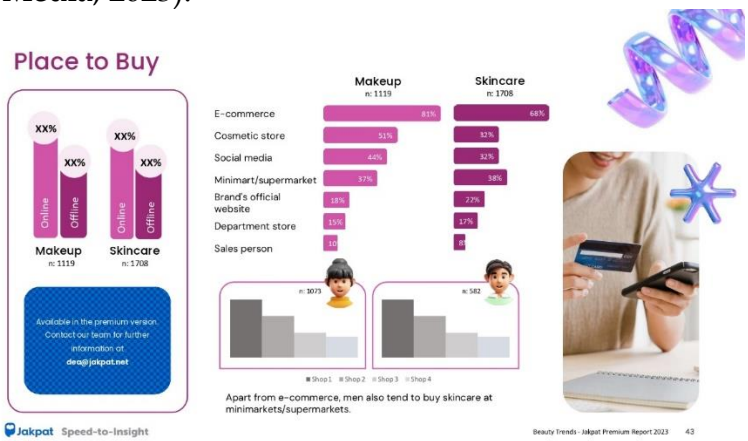

Figure 2. Place to Buy Makeup in Indonesia
Source: (Jakpat, 2023)

The majority of these students belong to generation z, born between 1997 and 2012, who spend substantial time online, sing digital platforms for various activities, including shopping. In 2024, over 95% of gen z will have used e-commerce (IDN Times, 2024). E-commerce is the most popular medium for buying makeup. In the Figure 2 shows that 81% of respondents in a Jakpat (2023) survey reporting they purchase makeup from e-commerce. E-commerce is favored because it offers many benefits, such as accessibility anytime and anywhere, multiple payment options, attractive offers like discounts, vouchers, and promo codes, free shipping, and lower prices due to competition among sellers (Adriansah & Hasanah, 2023).

However, online shopping, particularly for makeup, presents challenges, primarily due to the inability to try products before purchase, leading to potential mismatches in product selection (Nurhadi, 2023). To address these issues, the integration of augmented reality in e-commerce has emerged as a game-changer. Augmented reality technology allows consumers to virtually try on products, enhancing the shopping experience by providing a realistic preview of how products, such as makeup, will appear on the user (Sufiatmi, Astriani, & Prawita, 2020).

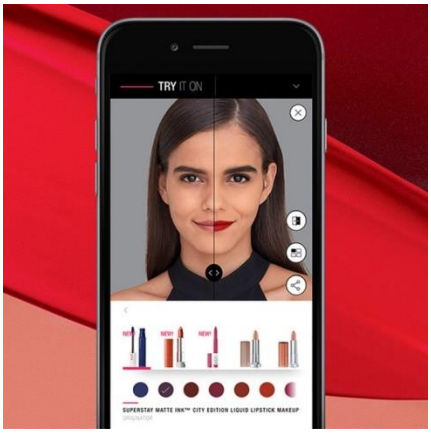

Figure 3. The Appearance of the Maybelline Virtual Try On Feature
Source: (L'Oréal Groupe, n.d.)

This technological advancement has been widely adopted by leading cosmetic brands, such as Maybelline in 2019, known as "Maybelline Virtual Try On" as shown in the Figure 3 (Pratama A. , 2022). Several studies have explored the impact of augmented reality features in the cosmetics industry. Research by Viohafeni & Aliyah, (2023), Muna & Cahyaningratri (2023), Pratama, Hasanah, & Wibasuri (2023), and Prabowo, Fakhriza, & Irawan (2023) indicate that augmented reality can significantly influence purchasing decisions. However, research by Barta, Gurrea, & Flavián (2023) shows that augmented reality may not directly influence consumer comfort and confidence in making purchase decisions. This could be due to several issues in using augmented reality features, such as the inability to adjust objects to real-life situations, poor quality of virtual products, and device limitations (Adlian & Juniarti, 2020; Islam, Miron, Liu, & Li, 2023).

In addition to augmented reality, live streaming can also be a solution for online makeup shopping challenges, as live streaming allows real-time product demonstrations and interactive Q&A sessions, giving consumers a clearer understanding of the product (Wongkitrungrueng & Assarut, 2020). Studies by Putri & Junia (2023) and Wijaya (2022) confirm its positive effect on purchase decisions. Qu, Khan, Su, Tong, & Zhao (2023) further shows that the frequency of viewing live streams influences future purchasing decisions. However, some research highlights limitations such as streamer appeal and comment visibility, which reduce live streaming's effectiveness (Syukur, 2024; Zalfa, Indayani, & Supardi, 2024).

This study examines the combined effects of augmented reality and live streaming on makeup purchase decisions among female students in Malang Raya, aiming to fill gaps in previous research and provide insights into their effectiveness in influencing consumer behavior. This research also contributes to the understanding of the effectiveness of digital marketing strategies like augmented reality and live streaming, especially among generation z consumers.

THEORETICAL REVIEW

Augmented Reality

Augmented reality is a technological innovation that enhances the visual experience in real life by overlaying digital elements in 2D or 3D formats onto the real world in real-time (Ismayani, 2020). It allows users to interact with their environment by adding virtual elements—both static and dynamic, including images, videos, and audio—overlaid on the physical world, accessible through devices that can record the actual environment (Zailini, 2022). This technology integrates digital and physical worlds, providing direct communication and 3D object recording to create a highly realistic illusion, often making users feel immersed in a digital environment (Bhosale, Patil, & Karjulkar, 2021). In summary, augmented reality is an innovative marketing that enriches users' visual experiences by integrating real-time digital elements into their real-world surroundings. According to Silvia, Oliveira, & Giraldi (2003) in Kusuma (2023), augmented reality comprises three main components: (1) The tracking system, (2) The scene generator (3) The display devices According to Miyanti, Muhidin, & Ardiatma (2024), augmented reality can be classified into two types: marker-based and markerless.There are several variations of markerless augmented reality, including face tracking, 3D object tracking, motion tracking, and GPS-based tracking (Alamsyah & Rachman, 2022).

According to Viohafeni & Aliyah (2023) there are several indicator of augmented reality: (1) Perceived usefulness refers to the consumer's perception of the benefits of using augmented reality, (2) Perceived ease of use involves the consumer's perception of how easy and comfortable it is to use augmented reality, (3) Perceived enjoyment is the pleasure and satisfaction consumers experience when using augmented reality to virtually try products.

Live Streaming

Live streaming is a form of broadcasting that allows real-time sharing of information about activities, conditions, or objects via internet-connected devices, enabling interactive communication between the streamer and a wide audience (Rudy, Faijurahman, & Ramdani, 2021). According to Widodo & Napitupulu (2023), it involves two-way interaction through audio and text-based chats. This feature has become popular among sellers, reflecting a shift from traditional business models to digital approaches connected to the internet (Netrawati, Nuada, & Syakbani, 2022). Live streaming, used for online trading through digital platforms, allows real-time product showcases and direct interaction with potential buyers via comment sections during broadcasts (Anisa & Chamidah, 2022). It is favored for its time, cost, and space efficiency, and its ability to reach a large audience easily (Zalfa, Indayani, & Supardi, 2024). Additionally, it benefits consumers by providing accurate product information through streamers' reviews and interactions with other viewers (Anisa & Chamidah, 2022). Overall, live streaming is an innovative marketing strategy that enables brands to showcase products in real-time, offers two-way interaction, and saves time and resources for businesses while enriching consumer knowledge.

According to Wijaya (2022), Zalfa, Indayani, & Supardi (2024), Syukur (2024), five key indicators of live streaming effectiveness include: 1) Feature completeness, where features such as comment sections, product carts, and direct purchase buttons enhance the purchasing process; 2) Streamer credibility, which involves the streamer's reputation, unique presentation style, and expertise, helping build consumer trust; 3) Interactivity, allowing consumers to engage directly by asking questions and receiving real-time product information, which helps in decision-making; 4) Discounts or promotions, creating a sense of urgency and encouraging impulse purchases with exclusive offers during the live session; and 5) Viewership numbers, where a high number of viewers can enhance the perceived popularity and reliability of the products, driving urgency and providing diverse perspectives.

Purchasing Decisions

Purchase decision is the final phase in a decision-making process that involves multiple factors and considerations, starting with consumers determining if a product meets their needs or desires and then making practical decisions about the type of product, timing, method of purchase, and the seller (Verdynata, Pratiwi, & Maduwinarti, 2023). It is a thinking and acting process that includes identifying needs, gathering product information, evaluating alternatives, and ultimately deciding on the product or service that meets those needs (Santuso, Musadieq, Hidayat, & Sunarti, 2024). The purchase decision involves a complex process of selecting among alternatives, making the purchase, and deciding how to act with the product or service afterward (Artameviah, 2022). Therefore, purchase decision is concluded as the final stage where consumers decide on practical aspects such as what, when, how, and where to buy a product after undergoing a complex process of evaluation and consideration. According to Kotler, Keller, & Chernev (2022), the purchasing

decision process involves several stages: (1) Problem recognition (2) Information search, (3) Evaluation of alternatives (4) Purchase decision (5) Post-purchase behavior. Additionally, Sunyoto (2015) identifies three factors shaping purchasing decisions: 1) Internal influences, such as personal values and lifestyle; 2) External environment, including culture and social groups; and 3) Marketing strategies, which aim to shape brand perception and drive purchasing actions.

According to Ambiapuri, Setiadi, & Parwitasari (2023), there are five key indicators in the purchase decision process: (1) Product Choice, which involves identifying and selecting a product that meets the consumer's needs or desires, 2) Brand Choice, where consumers select a specific brand from among various options, influenced by personal preferences and trust. 3) Choice of Place or Distributor, where consumers evaluate and choose a purchasing location or distributor based on availability, accessibility, service quality, price, and trust. 4) Timing of Purchase, which involves deciding the optimal time for buying based on factors like season, promotions, economic conditions, and urgency. 5) Quantity of Purchase, where consumers determine how much of the product or service to buy, influenced by needs, promotions, stock availability, and budget.

Model Penelitian

Referring to the existing literature, the research model used is:

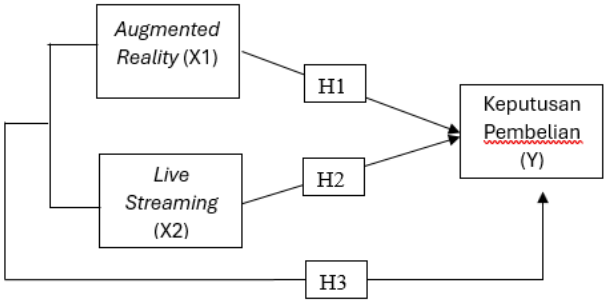

Figure 4. Conceptual Framework
Source: Author (2024)

Hipotesis Penelitian

Research by Prabowo, Fakhriza, & Irawan (2023) demonstrates that the use of augmented reality features positively influences purchase decisions. The use of augmented reality stimulates purchase intentions, which ultimately lead to purchasing decisions. This is consistent with the research by Viohafeni & Aliyah (2023), which states that augmented reality can impact purchasing decisions through perceived usefulness, perceived ease of use, and perceived enjoyment. However, research by Barta, Gurrea, & Flavián (2023) shows the opposite, indicating that the application of augmented reality features does not directly affect consumer comfort and confidence in making purchase decisions.

According to Putri & Junia (2023), live streaming is an effective marketing method that aids consumers in making purchase decisions by allowing them to view, evaluate, and inquire about products in real time. This is supported by Wijaya (2022), who also notes that live streaming assists in purchase decision-

making. Additionally, Qu, Khan, Su, Tong, & Zhao (2023) found that frequent participation in live streaming sessions influences future purchase decisions. However, Zalfa, Indayani, & Supardi (2024) and Syukur (2024) argue that live streaming may not be effective for decision-making due to issues such as the streamer's inability to engage consumers and unreadable comments.

The combination of augmented reality and live streaming offers a comprehensive and engaging shopping experience by allowing users to try products virtually and interact directly with sellers, which enhances decision-making for purchases. Muna & Cahyaningratri (2023) study shows that the use of omnichannel marketing through augmented reality and live streaming positively and significantly impacts purchase decisions via perceived value. Based on the findings of previous studies, the researcher proposes three hypotheses as follows:

H1: The use of augmented reality has a positive influence on the purchase decisions of Maybelline makeup among female students in Malang Raya.

H2: The use of live streaming has a positive influence on the purchase decisions of Maybelline makeup among female students in Malang Raya.

H3: The use of augmented reality and live streaming has a positive influence on the purchase decisions of Maybelline makeup among female students in Malang Raya.

METHODOLOGY

Type of Research

This study employs a quantitative approach, utilizing measurable data for empirical testing, with a focus on explanatory or causal research to examine the impact of augmented reality and live streaming on purchasing decisions (Sari et al., 2023).

Operational Definition and Measurement of Variables

In accordance with the research problem and hypotheses, this study utilizes two types of variables: augmented reality (X1) and live streaming (X2) as independent variables, `and purchasing decisions (Y) as the dependent variable.

Sampling Technique

The population for this study consists of all female students residing in Malang Raya, including those from various public and private universities, institutes, polytechnics, and academies in Malang City and Malang Regency, with the exact number being unspecified due to its variability. In this study, the sample size is determined using Hair's formula, which recommends a minimum of 5 to 10 times the number of variables or indicators analyzed, and at least 100 respondents for quantitative research (Hair, Babin, Black, & Anderson, 2018). With 13 indicators, the recommended minimum sample size is 130 respondents to ensure reliable and accurate results. In this study, nonprobability sampling is used, where the population does not have an equal chance of being selected (Sugiyono, 2020). Specifically, purposive sampling, where samples are chosen based on predetermined criteria set by the researcher

to ensure relevance to the studied phenomenon (Kriyantono, 2020). The characteristics for the purposive sample include: female, aged 18-22, university student in Malang Raya, with a monthly income of Rp. 1,000,000 - Rp. 3,000,000, and having purchased and used Maybelline makeup products after using augmented reality features and participating in Maybelline's live streaming sessions at least once.

Types, Sources and Data Collection Techniques

This study uses two types of quantitative data: nominal which respondents based on predefined characteristics and ordinal measures the intensity of respondents' attitudes toward the studied variables. The data sources include primary data from active female students in Malang interested in Maybelline products, and secondary data from previous studies to validate hypotheses and provide additional insights. Data collection is conducted through surveys using questionnaires and distributed both offline and online via Google Forms to maximize accessibility and response rates. Questionnaires are distributed both offline at Malang universities and online via Google Forms. Likert scale with four points is used in the questionnaires to avoid neutral responses and reduce complexity in categorizing answers (Priadana & Sunarsi, 2021).

Data Analysis Method and Data Quality Test

In this study, instrument testing involved several key steps to ensure validity and reliability. Validity testing used Pearson correlation to compare each item's correlation coefficient (r) with the critical value (r table), considering items valid if r was greater than r table and the significance was above 0.05 (Suganda & Cahyadi, 2020). Reliability testing used Cronbach's Alpha to check consistency, with a reliable instrument showing Cronbach's Alpha > r table and ideally above 0.6 (Anggraini, Aprianti, & Hartanto, 2022).

Classical assumption testing included normality tests with Kolmogorov-Smirnov, where a p-value above 0.05 indicates normal distribution (Musnaini & Wijoyo), multicollinearity tests using tolerance and VIF values to ensure low correlation among independent variables (Suganda & Cahyadi, 2020), and heteroscedasticity tests with Glejser, where a significance level above 0.05 suggests homoscedasticity (Afrizal, 2023).

Data analysis techniques included multiple linear regression to assess the impact of independent variables on the dependent variable, with hypotheses tested using t-tests to determine individual variable significance and F-tests for simultaneous variable impact, where a p-value below 0.05 indicates significant influence (Suganda & Cahyadi, 2020). The R-Square test evaluated the proportion of variance explained by independent variables, with values close to 1 indicating a strong explanatory power (Putri, Rosada, & Husain, 2022).

RESULTS

Respondent Characteristic

In this study, respondents were selected using purposive sampling to ensure they met specific criteria relevant to the research. Respondents were selected based on their identity and experience with augmented reality and live streaming, with an automatic screening system used in online questionnaires to filter out those who did not meet the criteria. Offline questionnaires were distributed after short interviews to verify the suitability of potential respondents. Through this rigorous selection process, the author collected data from 133 female students aged 18-22 from universities in Malang Raya, all of whom had purchased Maybelline makeup products using Maybelline's augmented reality features and live streaming sessions at least once. Most of the respondents came from several universities below:

Tabel 1. Number of Respondents Based on University

	Number of Respondents	**Percentage**
Universitas Brawijaya	18	14%
Universitas Negeri Malang	18	14%
Politeknik Negeri Malang	9	7%
Universitas Ma Chung	39	29%
Universitas Bina Nusantara	10	8%
Universitas Merdeka Malang	18	14%
Universitas Muhammadiyah Malang	12	9%
Sekolah Tinggi Ekonomi Malang Kucecwara	9	7%

Source: Data Processed by the Author, 2024

Descriptive Analysis

In this study, descriptive analysis was performed using a 4-point Likert scale to evaluate respondent agreement with questionnaire statements, where higher scores indicated greater agreement and lower scores indicated less agreement. A descriptive analysis of the augmented reality variable is presented in the table below:

Tabel 2. Descriptive Analysis of Augmented Reality Variable

Indicator	**Item**	**Respondent's Answers**								**Number**		**Mean**	**Mean of Indicator**
		1		**2**		**3**		**4**					
		F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**N**	**%**		
Perceived usefulness	AR1	79	59%	51	38%	3	2%	0	0%	133	100%	3,57	3,51
	AR2	68	51%	56	42%	9	7%	0	0%	133	100%	3,44	
Perceived ease of use	AR3	68	51%	56	42%	9	7%	0	0%	133	100%	3,44	3,47
	AR4	75	56%	52	39%	4	3%	2	2%	133	100%	3,50	
Perceived enjoyment	AR5	68	51%	52	39%	11	8%	2	2%	133	100%	3,40	3,38
	AR6	61	46%	60	45%	11	8%	1	1%	133	100%	3,36	
Mean of Augmented Reality Variable													3,45

Source: Data Processed by the Author, 2024

The descriptive analysis results in Table 2 show that the average values for each item, indicator, and overall augmented reality variable are above 3, indicating that most respondents agreed with the statements related to augmented reality. This high average suggests that the respondents, who are female students from various universities in Malang Raya, perceive augmented reality as beneficial for making purchasing decisions, easy to use, and enjoyable. Specifically, item AR1, regarding the ability to try all makeup colors through augmented reality, has the highest average score of 3.57, while item AR6, concerning the interest in continuously using augmented reality for makeup shopping, has the lowest average score of 3.36.

A descriptive analysis of the live streaming variable is presented in the table below:

Tabel 3. Descriptive Analysis of Live Streaming Variable

Indikacor	Item	Respondent's Answers								Number		Mean	Mean of Indicator
		1		2		3		4					
		F	%	F	%	F	%	F	%	N	%		
Feature Completeness	LS1	124	93%	9	7%	0	0%	0	0%	133	100%	3,90	3,77
	LS2	86	65%	43	32%	4	3%	0	0%	133	100%	3,60	
Streamer Credibility	LS3	77	58%	47	35%	9	7%	0	0%	133	100%	3,49	3,40
	LS4	57	43%	62	47%	10	8%	4	3%	133	100%	3,28	
Interactivity	LS5	55	41%	68	51%	8	6%	2	2%	133	100%	3,30	3,39
	LS6	74	56%	49	37%	10	8%	0	0%	133	100%	3,46	
Discounts or Promotions	LS7	87	65%	43	32%	3	2%	0	0%	133	100%	3,60	3,54
	LS8	73	55%	49	37%	10	8%	1	1%	133	100%	3,43	
Viewership Numbers	LS9	45	34%	63	47%	17	13%	8	%	133	100%	3,07	3,20
	LS10	53	40%	70	53%	9	7%	1	1%	133	100%	3,30	
Mean of Live Streaming Variable													3,46

Source: Data Processed by the Author, 2024

According to the responses in Table 3, the average scores for each item, indicator, and overall variable related to live streaming are above 3, indicating agreement with the statements about live streaming features. This high score reflects positive acceptance from female students in Malang Raya regarding aspects such as feature completeness, streamer credibility, interactivity, discounts, and viewer count in Maybelline's marketing context. Among the 10 evaluated items, LS1, which focuses on the completeness of live streaming features for product reviews, received the highest average score, showing that respondents find features like chat, like, and share buttons helpful, while LS9, measuring the impact of viewership on respondents' confidence in purchasing Maybelline products, received the lowest score, indicating viewership has less impact on purchase confidence compared to other factors.

A descriptive analysis of the live streaming variable is presented in the table below:

Tabel 4. Descriptive Analysis on Purchasing Decisions Variable

Indicator	Item	Respondent's Answers								Number		Mean of Indicator
		1		2		3		4				
		F	%	F	%	F	%	F	%	N	%	
Brand	PD1	61	46%	52	39%	19	14%	1	1%	133	100%	3,28

Choice												
Product Choice	PD2	93	70%	37	28%	2	2%	1	1%	133	100%	3,64
Choice of Place or Distributor	PD3	68	51%	56	42%	7	5%	2	2%	133	100%	3,41
Timing of Purchase	PD4	55	41%	67	50%	11	8%	0	0%	133	100%	3,17
Quantity of Purchase	PD5	79	59%	48	36%	6	5%	0	0%	133	100%	3,49
Mean of Purchase Decisions Variable												3,37

Source: Data Processed by the Author, 2024

Similar to the independent variables, the purchase decision variable in Table 4 also shows average scores above 3 for all items, indicators, and the overall variable. This high average score indicates that most respondents are confident and positive about their decision to purchase Maybelline products, reflecting the positive impact of augmented reality and live streaming features on their purchase decisions. Among the 5 evaluated items, PD2 received the highest score, indicating strong consumer confidence in product choices after using these features, while PD1, with the lowest average score, suggests that augmented reality and live streaming do not directly influence brand choices as other factors like product type, purchase location, timing, and quantity.

Research Instrumen Test

Validity Test

To determine the validity of the statement items in this study, the Pearson correlation method was used, focusing on both the r-value and the asymp sig value of each item as criteria, as shown in the table below:

Tabel 5. Validity Test

Variable	Indicator	R-Calculate	Asymp Sig	Description
Augmented Reality (X1)	AR1	0,460	0,000	Valid
	AR2	0,698	0,000	Valid
	AR3	0,721	0,000	Valid
	AR4	0,669	0,000	Valid
	AR5	0,731	0,000	Valid
	AR6	0,738	0,000	Valid
Live Streaming (X2)	LS1	0,213	0,014	Valid
	LS2	0,194	0,025	Valid
	LS3	0,754	0,000	Valid
	LS4	0,598	0,000	Valid
	LS5	0,507	0,000	Valid
	LS6	0,599	0,000	Valid
	LS7	0,385	0,000	Valid
	LS8	0,217	0,012	Valid
	LS9	0,711	0,000	Valid

	LS10	0,572	0,000	Valid
Purchase Decisions (Y)	PD1	0,830	0,000	Valid
	PD2	0,450	0,000	Valid
	PD3	0,602	0,000	Valid
	PD4	0,796	0,000	Valid
	PD5	0,591	0,000	Valid

Source: Data Processed by the Author, 2024

The validity of each item was assessed by comparing the calculated r-value with the table r-value; if the r-value exceeded the table value and the asymp sig was less than 0.05, the item was considered valid. In this study, with a sample size of 133 respondents, the r-value of 1.703 was used, and results in Table 5 confirmed that all items for augmented reality, live streaming, and purchase decisions had r-values above 1.703 and asymp sig values below 0.05, ensuring their validity and relevance for the research.

Reliability Test

In this study, reliability of the variables was ensured by conducting a reliability test using Cronbach's Alpha, as shown in the table below:

Tabel 6. Reliability Test

Variable	Cronbach's Alpha	Description
Augmented Reality (X1)	0,760	Reliable
Live Streaming (X2)	0,650	Reliable
Purchase Decisions (Y)	0,679	Reliable

Source: Data Processed by the Author, 2024

In the reliability test in Table 6, a variable is considered reliable if the Cronbach's Alpha value is at least 0.6, and since all variables in this study show Cronbach's Alpha values above 0.6, they are deemed reliable and consistent for further analysis.

Classical Assumption Test

Normality Test

To meet the regression model requirements of normally distributed residuals, this study uses the Kolmogorov-Smirnov test for normality, as presented in the table below:

Tabel 7. Normality Test

Asymp. Sig	Kriteria	Keterangan
0,112	>0,05	Normally distributed

Source: Data Processed by the Author, 2024

Normality assessment is based on the significance value from the normality test, where a significance value greater than 0.05 indicates normally distributed residuals; hence, with a significance value of 0.112 as shown in Table 7, it can be concluded that the residuals in this study are normally distributed.

Multicollinearity Test

To evaluate the strength of the relationships between variables in the regression model and ensure no high correlation among independent variables, multicollinearity testing is performed using tolerance and Variance Inflation Factor (VIF) values, where low tolerance or high VIF indicates multicollinearity issues, as shown in the results below:

Tabel 8. Multicollinearity Test

Variable	Tolerance	VIF	Description
Augmented Reality (X1)	0,938	1,067	Free from multicollinearity
Live Streaming (X2)	0,938	1,067	Free from multicollinearity

Source: Data Processed by the Author, 2024

The multicollinearity test results in Table 8 show a tolerance value of 0.938 and a VIF value of 1.067, indicating no multicollinearity issues as the tolerance is greater than 0.10 and the VIF is less than 10.

Heteroscedasticity Test

A good regression model, there should be no variance differences; therefore, the study used the Glejser test for heteroscedasticity, with significance levels above 0.05 indicating no heteroscedasticity issues, as detailed in the table below:

Tabel 9. Heteroscedasticity Test

Variable	Sig	Description
Augmented Reality (X1)	0,303	Free from heteroscedasticity
Live Streaming (X2)	0,191	Free from heteroscedasticity

Source: Data Processed by the Author, 2024

Table 9 shows that the significance levels for the augmented reality (X1) and live streaming (X2) variables are 0.303 and 0.191, respectively, both above 0.05, indicating that the regression model meets the homoscedasticity assumption and has no variance issues.

Data Analysis Result

Multiple Linear Regression

Multiple linear regression analysis is conducted in order to test the hypothesis of a positive influence of augmented reality and live streaming as independent variables on purchasing decisions as dependent variable, as shown in the table below:

Tabel 10. Multiple Linear Regression

No	Variable	Coefisien β
1.	Constanta	5,142
2.	*Augmented Reality* (X1)	0,249
3.	*Live Streaming* (X2)	0,201

Source: Data Processed by the Author, 2024

The results of the multiple linear regression analysis led to the following regression equation:

$$Y = 0{,}5142 + 0{,}249(X1) + 0{,}201(X2)$$

Based on the results of the multiple linear regression analysis in the Table 10, the following conclusions can be drawn: First, the regression model has a constant value of 0.5142, indicating that if both independent variables (augmented reality and live streaming) were considered zero, the purchase decision would still be at 0.5142, suggesting that other factors beyond these variables affect the purchase decision. Second, the regression coefficient for augmented reality is 0.249, meaning that each one-unit increase in augmented reality usage by consumers leads to a 0.249-unit increase in Maybelline makeup purchase decisions, highlighting augmented reality's significant contribution. Third, the regression coefficient for live streaming is 0.201, indicating that each one-unit increase in live streaming usage results in a 0.201-unit increase in purchase decisions, demonstrating live streaming's important role in influencing consumer choices.

T Test

The t-test in this study was conducted to test both Hypothesis 1 and Hypothesis 2, which respectively propose that augmented reality and live streaming each have an effect on purchase decisions.

Tabel 11. The Result of T-Test Analysis

Variable	T Test Statistic	T Table
Augmented Reality (X1)	4,666	0,00
Live Streaming (X2)	4,587	0,00

Source: Data Processed by the Author, 2024

The decision criteria for the t-test are based on whether the significance value (p-value) is less than 0.05 , it indicates a significant effect of the variable, and if the t-statistic is greater than the t-table value, it also suggests a significant effect. With 133 respondents and 3 variables, the degrees of freedom (df) are calculated as 130. For this df, the t-table value at a 5% significance level is 1.97838. In the Table 11, the results show that for Hypothesis 1, the t-statistic for augmented reality (X1) is 4.666, greater than 1.978, and the significance value is 0.00, less than 0.05, indicating a significant effect on purchase decisions. Similarly, for Hypothesis 2, the t-statistic for live streaming (X2) is 4.586, also greater than 1.978, with a significance value of 0.00, confirming a significant effect on purchase decisions as well.

F Test

The F-test was conducted to evaluate the third hypothesis, which posits a significant simultaneous effect of augmented reality and live streaming on purchase decisions. The decision criteria involve two factors: (1) a significance level less than 0.05, which indicates a significant effect, and (2) the F-statistic exceeding the F-table value. The degrees of freedom (df) for this test are calculated as Df(N1) = 2 and Df(N2) = 130, yielding an F-table value of 3.07. The

F-test compares the F-statistic with this value to determine whether the combined effect of the independent variables is significant.

Tabel 12. The Result of F-Test Analysis

Variable	F Test Statistic	Significance
Augmented Reality (X1) dan *Live Streaming* (X2)	18,746	0,000

Source: Data Processed by the Author, 2024

The F-test results in the Table 12, indicate a significance level of 0.00, which is less than 0.05, and the F-statistic of 18.746, surpassing the F-table value of 3.07. This confirms that augmented reality and live streaming have a significant combined effect on the purchase decision of Maybelline makeup, thereby supporting the third hypothesis.

Coefficient Determination Test

The coefficient of determination (R-square) is used to assess the extent to which independent variables explain the variation or changes in the dependent variable within a regression model.

Tabel 13. The Result of Coefficient Determination Test

Variabel	R-Square
Augmented Reality (X1) dan *Live Streaming* (X2)	0,225

Source: Data Processed by the Author, 2024

Based on Table 13, the coefficient of determination (R-Square) in this study is 0,225, indicating that 22,5% of the variation in Maybelline makeup purchase decisions is explained by augmented reality and live streaming. The remaining 77,5% of the variation is influenced by factors outside of this model or by variables not included in the analysis.

DISCUSSION

The Influence of Augmented Reality on Maybelline Makeup Purchasing Decisions of Malang Raya Female Students

The analysis in this study confirms that the first hypothesis is supported. The majority of respondents, who are tech-savvy students from Malang Raya, find augmented reality easy to use and have adapted quickly to it. Over 50% of respondents found augmented reality easy to use. The perceived ease of use, as outlined by the Technology Acceptance Model, provides a seamless shopping experience and enhances satisfaction, ultimately influencing consumer purchase decisions (Azizah, Nur, & Putra, 2022). This ease of use also allows them to efficiently utilize the augmented reality feature in their makeup shopping activities. This ease of use is linked to perceived usefulness, as it allows users to virtually try on makeup shades, reducing perceived risk and enhancing the shopping experience (Amanah, Harahap, Gunarto, & Purwanto, 2020). Additionally, the use of augmented reality increases shopping enjoyment, aligning with Moreno, Fabre, & Pasco (2022), who found a positive link between perceived enjoyment and purchase decisions. These findings support (Viohafeni & Aliyah (2023) and Pratama, Hasanah, & Wibasuri (2023), confirming that

perceived usefulness, ease of use, and enjoyment are crucial in influencing purchase decisions. The study also extends Prabowo, Fakhriza, & Irawan (2023) research, reinforcing that augmented reality effectively aids consumers in making better purchasing decisions across different product categories.

The Influence of Live Streaming on Maybelline Makeup Purchasing Decisions of Malang Raya Female Students

The data analysis supports the second hypothesis, confirming that live streaming effectively influences purchasing decisions through direct interaction, special offers, and shopping convenience. One key reason for this influence is the ability to interact directly with streamers via chat, fostering closer connections and providing more detailed product information than traditional marketing (Leonindhira, Zefanya, Tita, Adjisani, & Zuhri, 2024). Credible information from knowledgeable streamers increases consumer confidence in the product, aiding in purchasing decisions (Nabella, 2021). Limited-time offers during live streaming create urgency (Noor, 2020), with 55% of respondents often taking advantage of discounts to buy Maybelline products, showing the effectiveness of these promotions. Additionally, features like pop-up purchase buttons streamline the shopping process, encouraging quicker purchases without leaving the session. Large viewer numbers also create a viral effect, boosting consumer confidence as they see others engaging with the stream (Faradiba & Syarifuddin, 2021). This study validates Wijaya (2022)'s findings that live streaming positively impacts purchasing decisions and supports Putri & Junia (2023)'s assertion that live streaming is an effective marketing method by allowing real-time interaction with sellers. Furthermore, it aligns with Qu, Khan, Su, Tong, & Zhao (2023), who found that frequent exposure to live streaming increases confidence to make purchasing decisions.

The Influence of Augmented Reality and Live Streaming on Maybelline Makeup Purchasing Decisions of Malang Raya Female Students

The data analysis confirms the validity of the third hypothesis, showing that it can be accepted. Augmented reality allows consumers to virtually try products, such as testing makeup colors on their faces, reducing the risk of unsatisfactory purchases. Meanwhile, live streaming offers direct interaction with streamers who provide honest product reviews and often include exclusive promotions. The simultaneous use of augmented reality and live streaming creates a more interactive and informative shopping experience, reducing purchase risk and encouraging quicker, more confident buying decisions. This study aligns with), who found that both augmented reality and live streaming, as part of omnichannel marketing strategies, positively influence purchase decisions through perceived value.

CONCLUSIONS AND RECOMMENDATIONS

Based on the research findings:

1. Augmented reality enhances purchase decisions by allowing consumers to virtually try products, increasing confidence and reducing post-purchase dissatisfaction.

2. Live streaming impacts purchasing decisions through factors like the credibility of the streamer, interactivity, discounts, and viewer numbers, all of which boost consumer confidence and urgency.
3. Combining augmented reality and live streaming in digital marketing strategies creates a comprehensive shopping experience, integrating virtual trials and real-time interactions, which significantly influences purchase decisions.

Based on the findings of this study, companies should continue to utilize and expand their use of augmented reality and live streaming as part of their digital marketing strategies. AR features that offer a wide range of makeup options are crucial for enhancing the consumer experience and encouraging purchase decisions by allowing users to virtually try on products (Salma, 2020). Integrating AR into e-commerce platforms will also improve accessibility and user satisfaction. On the other hand, live streaming effectiveness depends on the credibility of streamers and the interactivity of sessions. Providing proper training for streamers will enhance their ability to present products effectively, increasing engagement. Additionally, offering discounts during live streams can create a sense of urgency, driving immediate purchase decisions (Amalina & Riofita, 2024; Jalantina & Minarsih, 2024).

FURTHER STUDY

Future research could consider adding other variables that might influence purchase decisions beyond the use of augmented reality and live streaming. Additionally, expanding the respondent base to include various market segments, such as consumers of different ages, backgrounds, and geographic locations, would help in understanding consumer behavior across different demographics.

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