THE ROLE OF ARTIFICIAL INTELLIGENCE (AI) AND PRODUCT POPULARITY IN SHAPING CONSUMER BUYING BEHAVIOR ON INDONESIAN E-COMMERCE PLATFORMS

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Abstract**:** *This study aims to bridge the gap in the literature by examining how artificial intelligence (AI) and product popularity play a role in shaping consumer purchasing behavior on Indonesian e-commerce platforms. The sample is users who make purchases of cosmetic products with AI features on Indonesian E-Commerce. Using multiple linear regression methods and SPSS 25 as a calculation tool. It was found that artificial intelligence and product popularity have a significant influence on consumer purchasing behavior in Indonesian E-Commerce.*

Keywords: Artificial Intelligence, Product Popularity, Consumer Buying Behavior

1. Introduction

In recent years, e-commerce in Indonesia has experienced rapid development, along with the increasing number of internet users and the use of online shopping applications. This phenomenon has drastically changed consumer purchasing patterns, especially in the beauty industry(Yema Charista Zelda et al., 2024a). One of the international brands that is increasingly popular in the Indonesian market is Maybelline, which utilizes e-commerce platforms to reach consumers more directly and effectively. On the other hand, with technological advances, the application of artificial intelligence (AI) in marketing and sales is also increasing, including in analyzing consumer behavior and providing personalized product recommendations(Winarto & Wisesa, 2024).

The beauty industry in Indonesia is one of the sectors that has experienced significant growth on the e-commerce platform. For example, Maybelline products have become a favourite of Indonesian consumers, especially through e-commerce platforms such as Tokopedia, Shopee, and Lazada. Based on sales data, Maybelline is included in the list of cosmetic brands that have performed well in the Indonesian market. In 2023, data shows that Maybelline products experienced a significant increase in sales on e-commerce, with sales volume increasing by more than 30% compared to the previous year. This is in line with the increasing use of artificial intelligence features on e-commerce platforms, which provide more

appropriate product recommendations according to user preferences, as well as increasing interaction with consumers through a more personalized digital experience.

However, despite sales data showing that Maybelline has successfully gained a large market share, there is another interesting phenomenon related to the role of AI technology and product popularity in shaping consumer purchasing decisions(Etha et al., 2024). Several Maybelline products have received great attention from Indonesian consumers because they are often in the spotlight on social media and e-commerce platforms, thanks to promotions driven by AI algorithms and data-based marketing strategies. This shows that in addition to price and quality factors, other elements such as personalization offered by AI and product popularity on social media or e-commerce also greatly influence consumer purchasing decisions.

While many studies have discussed the role of AI in enhancing user experience and personalization in e-commerce, few have comprehensively discussed how the combination of AI technology and product popularity influences consumer behavior, especially in the Indonesian context (Khrais, 2020a). Most existing studies have focused more on individual factors in decision-making, such as price, quality, or product reviews, but few have integrated an analysis of how AI and product popularity work together to shape purchasing behavior in the Indonesian e-commerce market. In this regard, especially for beauty products such as Maybelline, there is still a gap in the literature that explicitly links the application of AI to the influence of product popularity on consumer purchasing decisions.

Several studies have discussed the application of AI in improving the shopping experience and how AI is used to provide more relevant and personalized product recommendations to consumers. (Maharjan, 2024) explained that AI technology in e-commerce allows platforms to leverage big data in providing more targeted product suggestions, thereby increasing the likelihood of purchase. Similarly, in the context of beauty, (Winarto & Wisesa, 2024)stated that the use of AI can help consumers choose beauty products that suit their preferences based on their behavioral analysis and search history.

On the other hand, product popularity also plays an important role in consumer purchasing decisions. According to (Khrais, 2020b)in his theory of social proof, consumers tend to follow other people's purchasing decisions, especially when the product is considered popular or has positive reviews. In e-commerce, the product popularity factor is often influenced by consumer reviews, product ratings, and promotions that are growing rapidly on social media. (Chrisniyanti & Tin Fah, 2022)stated that in Indonesia, social media such as Instagram and TikTok have a significant impact on the popularity of beauty products, with many consumers following the growing trends on these platforms.

However, although there are studies that discuss these two elements, there is still little research that integrates the influence of AI and product popularity simultaneously in shaping consumer behavior in Indonesia. A study by shows that product popularity through social media algorithms can accelerate consumer purchasing decisions, but there has been no research that specifically explores the relationship between AI used by e-commerce platforms and product popularity in the context of the Indonesian market, especially for beauty products such as Maybelline.

This study aims to bridge the gap in the literature by examining how artificial intelligence (AI) and product popularity play a role in shaping consumer purchasing behavior on Indonesian e-commerce platforms. The focus of this study is on Maybelline products, with the aim of understanding the interaction between the two factors and how they can influence consumer purchasing decisions. Thus, it is hoped that this study can provide deeper insights

into how AI technology and product popularity work together to increase sales in the Indonesian e-commerce market.

2. Method

This study utilizes quantitative research with descriptive methods. The use of this type of research was chosen for the reason of analyzing between artificial intelligence variables (X1) and product popularity (X2) on purchasing behavior. Research with this type of quantitative method is in the form of numbers and analysis that utilizes statistics. The population is all or objects in the study that have met the requirements related to the research problem, such as all individuals included in the research area. The population for this study is buyers on the Indonesian E-Commerce Platform. This study uses sampling by utilizing non-probability sampling techniques which are combined with purposive sampling methods. Non-probability sampling as a sampling method that does not show similar possibilities or opportunities for members of the population to be determined as samples. Purposive sampling is a method of identifying a sample against certain criteria and utilizing certain parameters that are able to represent the population in determining the total respondents for this study (Palinkas et al., 2015). There are sample criteria determined for this study, namely people who make purchases of cosmetic products with AI features on E-Commerce Indonesia. Thus, the author uses the Lemeshow formula to determine the number of samples (Surjanovic & Loughin, 2024).

In the formula, so that alpha is used for this study with a number of 95% or 1.96. The total population is unknown at 0.5 in a confidence level of 10%. So, for the calculation of the sample in this study as below: Based on the results of the calculation, the number of samples needed is 100 samples. To determine the number of samples is said to be feasible based on the theory of Roscoe which explains the equivalent sample parameters for a study there are between 30 and 500 samples. The data source used for this study is based on primary data. Primary data is a researcher who obtains data by directly covering the variables that are the main focus of the study to get answers to research questions (Zano & Santoso, 2019). Not only that, in the primary data type, the author distributed an online questionnaire for E-Commerce consumer users using a Google form that met the criteria and was needed in this study. The author determined the scale by applying the Likert scale. The Likert scale is used to measure the actions, opinions, or perceptions of a person or group with a social event through 5 alternative answers such as a score of 5 (Strongly Agree), score 4 (Agree), score 3 (Neutral), score 2 (Disagree), or score 1 (Strongly Disagree) (Joshi et al., 2015). This measurement scale shows the ease of respondents to respond to the questionnaire and makes it easier for the author to collect data from respondents. The data analysis technique in this study uses a multiple linear regression test which is used to determine the effect of artificial intelligence, digital marketing and popularity on purchase intentions through SPSS 25 as a data processing medium. The instrumental test in this study implements a validity test which aims to estimate the extent to which the instrument can measure what is desired and a reliability test that reflects the level of accuracy or precision of the measurement. The higher the reliability coefficient, the more optimal the accuracy of the study. A variable is considered reliable when the Cronbach's alpha value is more than 0.60. In addition, this study also uses the classical assumption test and the T test.

3. Discussion and Conclusion

3.1 Validity Test

Validity is the level of accuracy between the data recorded in the study and the data that can be delivered by the researcher. In order to find out whether the data used is accurate or valid by comparing the calculated r with the r table with a (significant) error rate of 5% (Manajemen et al., 2022).

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Table 1. Validity test

Variables	No.Item	r xy	r table	Results
Artificial Intelligence (X1)	X1_1	0,777	0.2565	VALID
	X1_2	0,797		VALID
	X1_3	0,787		VALID
	X1_4	0,761		VALID
	X1_5	0,813		VALID
	X1_6	0,725		VALID
Product Popularity (X_2)	X2_1	0,794		VALID
	X2_2	0,75		VALID
	X2_3	0,784		VALID
	X2_4	0,764		VALID
Consumer Behavior (Y)	X3_1	0,669		VALID
	X3_2	0,711		VALID
	X3_3	0.757		VALID
	X3_4	0,806		VALID
	X3_5	0,819		VALID

From the results of table 1, it can be seen that the validity test states that all items in the questionnaire statements are considered valid because they have a correlation coefficient value or calculated r above r table > (0.2565).

3.2 Reliability Test

Reliability Test is a tool to measure questionnaires that aim to determine whether the measurement instrument provides consistent results or not. In this test an instrument will be declared good or reliable if the Cronbach Alpha value ≥ 0.60.

Table 2. Reliability Test

Variable	Cronbach Alpha	Standard Cronbach Alpha	Result
Artificial Intelligence (X1)	0.866	0.60	Reliable

Product Popularity (X_2)	0.802		Reliable
Consumer Behavior (Y)	0.903		Reliable

Based on the results of the Reliability Test of the research variables of Artificial Intelligence, Product Popularity and Consumer Behavior, the Cronbach Alpha value was obtained more than 0.60. then the questionnaire is declared good or reliable.

3.3 Classical Assumption Test

a) Normality Test

Normality Test is conducted to test whether the regression model, dependent variable or residual used has a normal distribution or not. The normality results can be seen in the Normal Probability Plot graph and in the test results using the One Sample Kolmogorov-Smirnov Test.

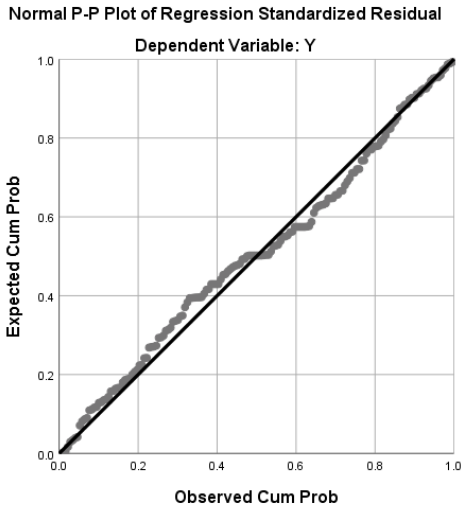

Figure 1. Non Probability Plot Result

From the results above in Figure 1, it can be seen that the Non Probability Plot graph shows a normal graph pattern, marked by points spread around the normal graph and their distribution follows a diagonal line.

Table 3. One Sample Kolmogorov Smirnov Result Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		165
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	1.40544632
	Absolute	.066

Most Extreme Differences	Positive	.069
	Negative	-.042
Test Statistic		.066
Asymp. Sig. (2-tailed)		.080[c]
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

The results obtained using One Sample Kolmogorov Smirnov in table 3 have a variable significance value of 0.080. This result is said to be normally distributed because the result has a value greater than 0.05 (0.080 > 0.05).

b) Multicollinearity Test

Multicollinearity testing aims to examine the dependency or correlation among several variables within a regression model. The presence or absence of multicollinearity can be determined by analyzing the tolerance value or the variance inflation factor (VIF). If the VIF value is less than 10, this indicates favorable results, showing no multicollinearity (Jurnal Ilmiah Manajemen dan Kewirausahaan et al., 2022).

Table 4. Multicollinearity Result Test

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	X1	.587	1.672
	X2	.550	1.346
a. Dependent Variable: Y			

From the test results in Table 4, it shows that the multicollinearity test has a VIF value for all variables below > 10. Based on these results, it can be stated that there is a strong correlation between independent variables.

c) Heteroscedasticity Test

The heteroscedasticity test is used to evaluate whether there is any inequality in the variance of residuals between the initial observation and subsequent ones. This can be assessed using the scatterplot and the Spearman Rho correlation significance values for the independent variables. If all variable significance values exceed 0.05, it suggests that heteroscedasticity is not present.

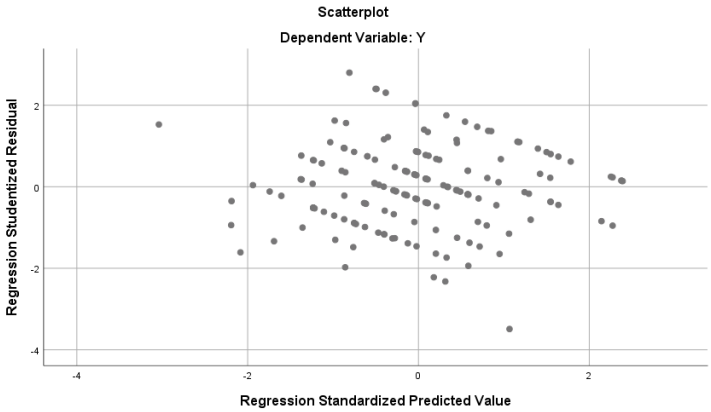

Figure 2. Heterocadastic Test Results (Scatterplot)

The results shown in Figure 2 indicate that the points are dispersed and do not form a distinct pattern, leading to the conclusion that there is no heteroscedasticity in the model**.**

Table 5. Results of Heteroscedasticity Test (Spearman Rho)

Correlations			
			Unstandardized Residual
Spearman's rho	X1	Sig. (2-tailed)	.597
	X2	Sig. (2-tailed)	.563
**. Correlation is significant at the 0.01 level (2-tailed).			

According to the Spearman Rho test results in Table 5, the significance values (2-tailed) for all variables are greater than 0.05. Therefore, it can be concluded that the data does not exhibit heteroscedasticity.

3.4 Multiple Linear Regression Analysis

a) T-Test

The t-test or partial test is used to test the effect of each variable on the related variable. In determining the results can be seen from the calculated t value, if the calculated t value is greater than the t table then the variable has an effect. The t-table value found is 1.660.

Table 6. T-Test Result

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.024	.642		1.217	.147		

	X1	.079	.076	.134	1.985	.001	.213	4.325
	X2	.351	.144	.169	2.450	.000	.240	4.102
a. Dependent Variable: Y								

From the test results in table 6, it can be explained that the t-test results are as follows :

1. The analysis results for the Artificial Intelligence variable (X1) show a t-count value of 1.985, which is smaller than 0.1660, and a significance value of 0.001, which is greater than 0.05. These results indicate that the Artificial Intelligence variable has a significant positive influence on purchasing behavior.
2. The results of the analysis show that the t-value for the product popularity variable (X2) is 2,450, which is greater than 1,660, and the significance value is 0.000, which is less than 0.05. Thus, it can be concluded that the product popularity variable has a significant influence on purchasing behavior.

b) R-Square

R Square analysis is used to measure how much influence all independent variables have on the dependent variable, which is usually expressed in the form of numbers or percentages(Sudariana & Yoedani, 2020).

Table 7. R-Square Test Results

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.733[a]	.605	.395	1.13171
a. Predictors: (Constant), X1, X2				
b. Dependent Variable: Y				

Based on the results obtained, the R Square value was recorded at 0.605 or 60.5%. Thus, it can be concluded that the variables of artificial intelligence (X1) and product popularity (X2) have a relationship with purchasing behavior of 60.5%, while the rest, which is 39.5%, is influenced by other variables not included in this study.

4. Conclusion

Based on the results of the analysis above, it is known that artificial intelligence and product population have a significant influence on consumer behavior on cosmetic products in E-Commerce in Indonesia.

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