

The influence of perceived values on intentions to use halal cosmetics among engineering students at Universitas Muhammadiyah Yogyakarta: *partial least squares-structural equation modeling*

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ABSTRACT

The Ministry of Industry of the Republic of Indonesia has emphasized the importance of cosmetics as an essential need due to the increasing awareness of the general population. Various values, including functional, conditional, emotional, social, epistemic, and religious, influence individuals in selecting cosmetics, particularly halal cosmetics, given Indonesia's predominantly Muslim population. This study aims to identify the factors influencing the adoption of halal cosmetics among students of the Faculty of Engineering at Muhammadiyah University of Yogyakarta. This research employs a non-experimental quantitative design using a survey method with a cross-sectional approach and a questionnaire as the primary instrument. The sample consists of 137 students who use halal cosmetics, selected through purposive sampling based on inclusion criteria, namely active students who have used or are currently using halal cosmetics. Data analysis was conducted using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. The PLS-SEM analysis revealed that functional, conditional, emotional, and epistemic values have a positive and statistically significant influence on the usage of halal cosmetics, with p-values of 0.089, 0.001, 0.001, and 0.004, respectively. In contrast, social and religious values showed no significant relationship with halal cosmetics usage, with p-values of 0.706 and 0.374, respectively. Therefore, this study concludes that the adoption of halal cosmetics among students of the Faculty of Engineering at Muhammadiyah University of Yogyakarta is primarily driven by functional, conditional, emotional, and epistemic values rather than social or religious values.

Keywords: the factor of usage, halal cosmetic, SEM-PLS, faculty of engineering students

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INTRODUCTION

Indonesia is widely recognized as a Muslim-majority nation, with the World Population Review estimating that its Muslim population exceeded 229 million individuals ([Statista research department, 2024](#)). Consequently, the halal status of products has gained paramount significance in the country. Since 2014, through Law Number 33 concerning halal compliance for products circulating in Indonesia (UU JPH), the Indonesian government has begun implementing regulations related to halal certification. This law mandates that all products substantiate their status with a halal certificate. Moreover, it requires all businesses, including those in the cosmetics sector, to obtain halal certification. The cosmetics industry is rapidly expanding in Indonesia, introducing a diverse range of new cosmetic products. The Indonesian Ministry of Industry has acknowledged that cosmetics have become necessary, in line with the increasing demand for halal cosmetics. Previous research has indicated that the primary demographic of cosmetic consumers in Indonesia falls between the ages of 20 and 26 ([Putri, 2016](#)). This age range is characteristic of the student population.

The student population in government and privately owned universities in the Special Region of Yogyakarta (DIY) has experienced a significant increase, rising from 174,046 in 2017 to 368,066 in 2019 ([Kemenristekdikti, 2019](#)). Muhammadiyah University of Yogyakarta, a private university in the Yogyakarta Special Region, has a predominantly male student population in its Faculty of Engineering ([Maulida, 2018](#)). In recent years, men have been using cosmetic products, including facial skincare, in the United States. In Indonesia, it is noteworthy that a staggering 95% of men who use facial skincare products feel comfortable incorporating them into their daily routine. This societal shift has led to several transformations, driven by the expectation for men to display attractiveness in their personal lives and professional endeavor.

The Food and Drug Monitoring Agency (BPOM) has reported that Indonesia currently has 246,906 cosmetic products in circulation ([BPOM, 2021](#)), out of which a mere 21, accounting for a meagre 1.79 per cent, have been certified as halal ([Anwar, 2016](#)). Sadzalia's research (2015) explores the increasing concern about the safety of cosmetics people use. However, further exploration is needed regarding how people perceive the halal status of the cosmetic products they use ([Sadzalia, 2015](#)). Consumers' decisions on which products to choose are influenced by their consumption values [Wei et al. \(2020\)](#) categorized these values into five types: functional, conditional, social, emotional, and epistemic. Furthermore, [Mohezar et al. \(2016\)](#) and [Ali et al. \(2019\)](#) have researched the religious aspects of consumers to examine their connection with their deity ([Ali et al., 2019](#); [Mohezar et al., 2016](#); [Wei et al., 2020](#)). This research seeks to explore the various determinants that affect preferences and decisions of Faculty of Engineering students, Universitas Muhammadiyah Yogyakarta when choosing halal-certified cosmetics as halal cosmetics are becoming increasingly relevant in predominantly Muslim societies like Indonesia. By exploring consumer perceptions of functional, social, emotional, and religious values, this study aims to fill the gap in previous research that has insufficiently highlighted the reasons behind preferences for halal cosmetics products. We expect the results of this research to offer valuable insights for the cosmetics industry to develop products that cater to Muslim consumers' needs, and for educational institutions to promote awareness of halal cosmetic choices among the younger generation.

This research seeks to examine how perceived benefits impact students' willingness to use halal cosmetics at the Faculty of Engineering, Muhammadiyah University of Yogyakarta, using a PLS-based Structural Equation Modeling approach.

MATERIALS AND METHOD

Materials

This study relies on the following instruments and resources: (1) Explanation form for prospective respondents, (2) Respondent consent form, (3) Respondent characteristics form, (4) A Questionnaire assessing religious, functional, emotional, epistemic, social, and conditional values in relation to cosmetic usage, and (5) SEM-PLS software.

Methods

This study is characterized by its observational and cross-sectional design. The dataset for this study is categorized as primary data, collected via online questionnaires distributed through Google Forms, and graded on A five-tier response scale adapted from the Likert method.. The research employed Partial Least Squares - Structural Equation Modeling (SEM-PLS) 3.0 Version to identify the factors influencing the use of halal cosmetics. The questionnaire used in this research includes items adapted and validated from previous research by Wei, Kuah, and Muhammad (Wei et al., 2020). Before distribution to respondents, the researcher translated it into Indonesian with the assistance of professional experts. We validated the Indonesian version of the questionnaire. This research incorporated a questionnaire divided into two sections. The first section, labeled Section A, gathers respondent information, including age, marital status, profession, academic attainment, and earning level. The study focuses on the monthly expenses incurred in purchasing halal cosmetic products, the frequency of such purchases, and the duration of their usage. Apart from Section A, there is also a questionnaire labeled Section B, which measures 33 items. These include value constructs of functional, social, and emotional aspects, each consisting of 4 items. Additionally, Section B assesses value constructs for conditional and epistemic aspects, each with 3 items, as well as 9 items for religious value and 5 items to measure the use of halal cosmetic products as the dependent variable.

The study's participants comprised students currently enrolled in the Faculty of Engineering at Universitas Muhammadiyah Yogyakarta (UMY). The purposive sampling approach used in this research was applied to select a sample from the population. This method falls under non-probability sampling, ensuring that participants were chosen based on specific criteria relevant to the study. This approach includes deliberately choosing individuals who meet particular conditions aligned with the study goals. The inclusion criteria for this study include active students in the Faculty of Engineering at UMY who are currently or have previously used halal cosmetics. The sample consists of students from the Faculty of Engineering at UMY, specifically from the Academic Year 2020/2021, with 137 students selected through this method.

This study was approved by the Health Research Ethics Committee of Universitas Muhammadiyah Yogyakarta's Faculty of Medicine and Health Sciences under the number 120/EC-KEPK FKIK UMY/IV/2021.

The research methodology was structured as follows: (1) Preparation of research instruments, (2) The ethical assessment of this research, conducted by the ethics committee, determined that the study has passed the ethical review. The review was carried out by a committee from the Faculty of Medicine, Dentistry, and Health Sciences (KEPK FKIK UMY), (3) Evaluation of the instrument's validity and reliability with a pilot sample of 30 participants, (4) Survey and data gathering phase, and (5) Data interpretation and analysis process.

Data Analysis

The study conducted using the SEM procedure (Structural Equation Model) for hypothesis testing. Specifically, it adopted Partial Least Squares (PLS) as the data analytical technique. PLS is a type of SEM which is based on variance or components. SEM is a statistical methodology that examines multiple observable relationships simultaneously. It integrates regression and factor analysis to explore the associations between variables in a model and the connections between constructs and their indicators (Santoso, 2014).

PLS is an alternative approach of SEM that focuses on variance rather than covariance. The analysis technique using PLS consists of two stages.

The initial phase of the methodology is dedicated to the assessment of the measurement framework., focusing on its validity assessment through the following criteria: (a) Convergent Validity: This aspect of validity is confirmed when the factor loading values of the indicators demonstrate a correlation exceeding 0.7 with the construct under examination. This threshold ensures a strong relationship between the indicators and the construct, indicating a high level of convergent validity. However, during the preliminary stages of research and development, factor loading values within the range of 0.5 to 0.6

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are considered acceptable, as posited by [Chin \(1998\)](#) and [Ghozali \(2018\)](#). Furthermore, the Average Variance Extracted (AVE) values serve as another critical metric for assessing convergent validity ([Ghozali, 2018](#)). AVE values that satisfy the criteria for both Confirmatory and Exploratory Factor Analyses are indicative of robust convergent validity. (b) Discriminant Validity: The assessment of discriminant validity is accomplished through several measures, including cross-loading analysis, the square root of the average variance extracted, and reliability metrics. This study employs Cronbach's alpha to assess the reliability of the research instrument, also referred to as composite reliability in determining the reliability level. A measurement is considered reliable when the coefficient measure exceeds 0.7.

The subsequent step includes analyzing the structural design to observe the presence or absence of influence between variables or correlations between the measured constructs using the t-test from PLS itself. In this stage, hypothesis testing is also conducted using the Bootstrapping method.

RESULT AND DISCUSSION

The total data tabulation indicates that 164 respondents completed the collected online questionnaires. Out of the 164 respondents, 27 did not meet the inclusion criteria due to incomplete questionnaire responses and the use of non-halal cosmetics. The researchers obtained 137 respondents' final data for analysis. The sample comprised 137 currently enrolled students from the Faculty of Engineering at Muhammadiyah University of Yogyakarta. The 137 respondents were observed for their characteristics, which included gender, age, monthly expenditure, monthly expenditure specifically for cosmetics, duration of using halal cosmetics, type of study programme, and academic year. The respondent background included in this research can be seen in [Table 1](#).

Based on the provided table, there are 96 male students, representing 70% of the total, and 41 female students, representing 30%. As a result, there is a considerable gender difference in the Faculty of Engineering, with a higher proportion of male students than female students. The reason for this disparity is not apparent, but it is worth noting that both men and women are becoming more interested in using cosmetics. Prasetyo states that men caring for their facial skin project a confident and masculine image ([Prasetyo, 2013](#)). Masculinity refers to characteristics, behavior, and societal expectations often associated with men. The notion of masculinity is changing as more men adopt a skincare routine as part of their lifestyle.

Out of all the participants, the largest group consists of individuals who are 21 years old, comprising 43 people or 31.39% of the total. The survey reveals that most participants from the Faculty of Engineering at the Muhammadiyah University of Yogyakarta are primarily 21 years old. This aligns with prior studies that indicated that the predominant demographic of cosmetic customers falls between the ages of 20 and 26 ([Putri, 2016](#)).

The majority of participating students from the Faculty of Engineering during the academic year 2020/2021 who took part in the study had a monthly expenditure between Rp 500,000 and less than Rp 1,000,000. Consistent with prior studies, it has been found that respondents with a monthly expenditure ranging from Rp. 500,000 to Rp. 1,000,000 have sufficient financial resources to meet their daily needs as students and allocate some of them towards purchasing cosmetics. According to a prior study, most middle-class students receive pocket money that is less than Rp 1,000,000 ([Persada & Wibawa, 2018](#)).

Based on the statistics mentioned above, it can be inferred that the majority of the enrolled students from the Faculty of Engineering for the academic year 2020/2021 who took part in the survey allocate a monthly budget exclusively for cosmetic products, which falls within the range of Rp 100,000 to less than Rp 500,000. This aligns with prior research that indicated that individuals often assign a budget of at least Rp. 100,000 per month for purchasing beauty goods, which is impacted by specific motives ([Juliarty, 2019](#)).

Out of the respondents, 71 individuals, or 52%, had been using halal cosmetics for over two years. The findings of this survey indicate that a significant proportion of participants had been using halal

cosmetics for over two years. This suggests a long-term commitment to halal cosmetic goods, as seen by their repeated purchases.

Following the successful completion of validity and reliability tests, ensuring the accuracy and consistency of the data, the hypotheses were next subjected to bootstrapping for testing. The outcomes are illustrated in [Figure 1](#).

Table 1. Characteristic of respondent

Characteristic of Respondent	Total Responden	(%)
Gender		
Male	96	70%
Female	41	30%
Age		
18	2	0.14%
19	15	10.94%
20	40	29.19%
21	43	31.38%
22	26	18.98%
23	5	3.65%
24	3	2.19%
25	3	2.19%
Study Program		
Civil Engineering	57	41.6%
Electrical Engineering	27	19.7%
Mechanical Engineering	27	19.7%
Information Technology	26	18.97%
Monthly Expenditure		
< Rp. 500,000	18	13.14%
Rp. 500,000 – Rp. 1,000,000	51	37.23%
< Rp. 1,000,000 – Rp. 2,000,000	48	35.04%
>Rp. 2,000,000	20	14.60%
Monthly Expenditure specifically for cosmetics		
< Rp. 100,000	51	37.23%
Rp. 100,000 – < Rp. 500,000	73	53.28%
Rp. 500,000 – < Rp. 1,000,000	13	9.49%
Rp. 1,000,000 - < Rp. 2,000,000	0	0%
Duration of using Halal Cosmetic		
< 1 Year	45	33%
1 Year – 2 Year	21	15%
>2 Year	71	52%

The evaluation of the structural framework or internal model in PLS is carried out through R-square analysis, which can be seen in [Table 2](#). The test findings of the variables yielded an R-squared value of 0.770 for the use of halal cosmetics. The findings reveal that functional, conditional, emotional, social, epistemic, and religiosity values collectively influence 77.0% of the variation in halal labeled cosmetics usage. Additionally, this research found that 23% of the variability in the usage of halal cosmetics might be attributed to unmeasured variables.

When conducting hypothesis testing with bootstrapping in a structural test, there are three key factors to consider. The first is the Original Sample (β), which is used to observe the direction of relationships between constructs. The second is the T-statistic, which measures the significance level of the

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hypotheses. Lastly, the P-value indicates the significance level of hypotheses with varying significance levels. The outcomes of hypothesis testing are displayed in Table 3. To evaluate the degree of significance between variables, we examine the T-statistic and P-value. The P-value is classified statistically significant if the T-statistic is surpassing the T-table reference. Research relies on the P-value or T-statistic to evaluate the strength of the relationship between data analysis results in hypothesis testing. The testing conditions dictate that the hypothesis should be rejected if the T-value falls below 1.65 or P is more significant than 0.1. Conversely, the hypothesis is confirmed when the T-value exceeds 1.65 or P is less than 0.1."

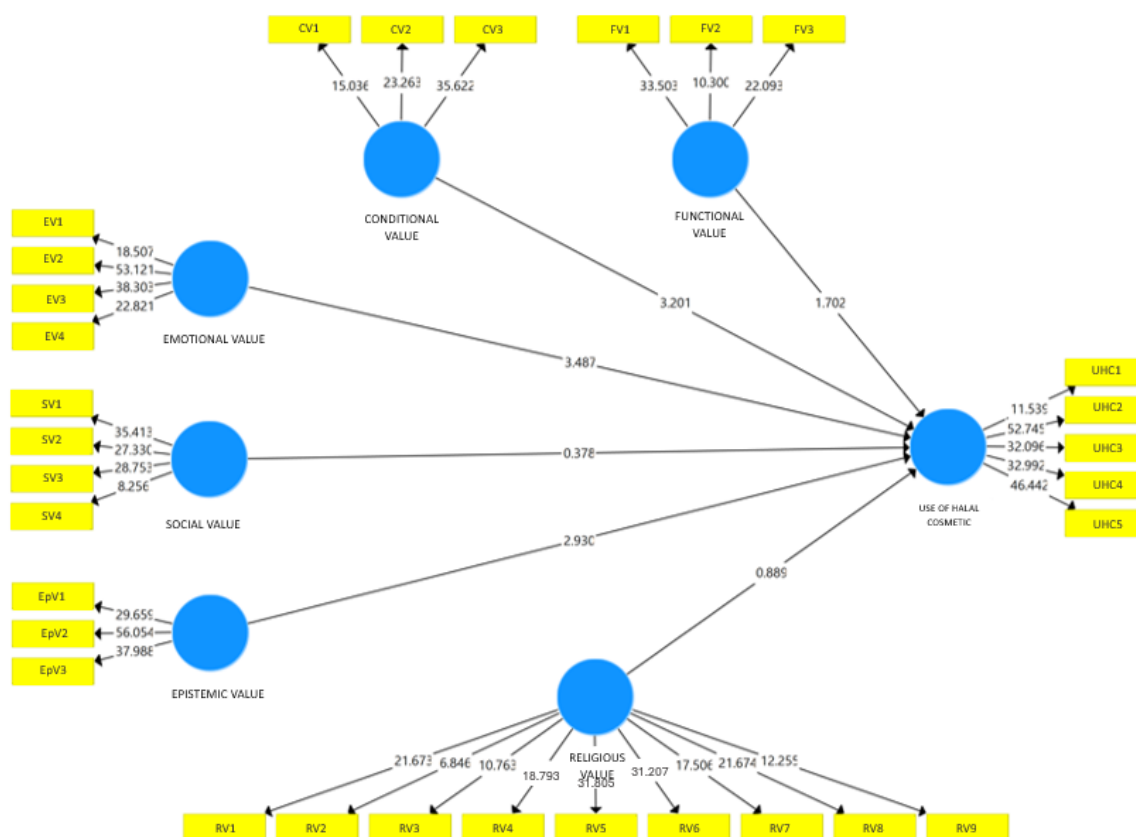


Figure 1. Inner model output display

Table 2. The R-square results show how the measured variables influence the use of halal cosmetics

	R Square	R Square Adjusted
Penggunaan Kosmetik Halal	0.770	0.760

Table 3. Hypothesis testing of SEM-PLS

	Original Sample	T-Statistic	P-Value
Functional Value → Use of Halal Cosmetics	0.133	1.702	0.089
Conditional Value → Use of Halal Cosmetics	0.178	3.201	0.001
Emotional Value → Use of Halal Cosmetics	0.403	3.487	0.001
Social Value → Use of Halal Cosmetics	0.028	0.378	0.706
Epistemic Value → Use of Halal Cosmetics	0.244	2.930	0.004
Religiosity Value → Use of Halal Cosmetics	0.039	0.889	0.374

The study's findings indicate that functional value positively and significantly influences UMY Faculty of Engineering students' adoption of halal cosmetics. The functional value significantly and positively influences halal cosmetics, with a significance level of 90% ($\pm 10\%$). This is supported by the value of T-statistic of 1.702 (above 1.65), the original sample (β) value of 0.133 (showing a positive direction), and the P-value of 0.089 (below 0.1). Functional value can, therefore, be used to gauge how often halal cosmetics are used. These results are consistent with earlier research by Xiao (2005:56), which claims that consumers' inclinations to purchase cosmetic items are influenced by the products' durability, safety, and quality (Xiao, 2005).

Similarly, the study's findings show that conditional value positively and significantly affects UMY Faculty of Engineering students' use of halal cosmetics. The original sample (β) value of 0.178 (indicating a positive direction), the T-statistic result of 3.201 (above 1.65), the P-value of 0.001 (below 0.1) all support this, indicates that the use of halal cosmetics is positively and significantly influenced by conditional value with a 90% ($\alpha 10\%$) significance level. Thus, the consumption of halal cosmetics can be quantified using conditional values. These results align with previous studies by Mohd Noor and Wen (2016), who found that individuals who plan to purchase halal cosmetics for special occasions should ensure that the items have undergone a thorough inspection in compliance with laws and regulations, provided that the products have been certified halal by an authorized body (Mohd Noor & Wen, 2016).

Additionally, the study's findings show that emotional value significantly and favorably influences UMY Faculty of Engineering students' use of halal cosmetics. The original sample (β) value of 0.403 (indicating a positive direction), the T-statistic value of 3.487 (greater than 1.65), and the P-value of 0.001 (below 0.1) all support this, demonstrates that the use of halal cosmetics is significantly and positively influenced by emotional value at a significance rates of 90% ($\pm 10\%$). Thus, the use of halal cosmetics can be gauged using emotional value. These results align with the study by Asshiddin et al. (2016), which claims that consumers' intentions to buy halal cosmetics make them happy and satisfied. Furthermore, purchasing halal cosmetics is one of Muslims' duties (Asshiddin et al., 2016).

The study's findings make it is evident that social value does not have a noticeable or positive effect on halal cosmetics consumption among UMY Faculty of Engineering students. The original sample (β) value of 0.028, the T-statistic value of 0.378 (bellow 1.65), and the P-value of 0.706 (above 0.1) all support this. At a significance rate of 90% ($\pm 10\%$), social value is not shown to positively and significantly influence the use of halal cosmetics. This suggests that social values cannot influence the use of halal cosmetics. These results are in line with studies by Ajitha and Sivakumar (2017), Kim et al. (2013), and Rahim et al. (2015), which show that social values like family, friends, and media promotion have little effect on consumers' decisions to buy halal cosmetics (Ajitha & Sivakumar, 2017; Kim et al., 2013; Rahim et al., 2015). According to Putri's (2018) study, personal or individual demands are the main factors to consider when using halal cosmetics (Putri, 2018). Individual variables impact whether or not a person uses halal cosmetics; each person's compatibility with each form of cosmetic varies (Septiani & Indraswari, 2019). These considerations can be extraneous to the social value's negligible effect on halal cosmetics in this study.

The study's insights further reveal that students in UMY's Faculty of Engineering's Use of Halal Cosmetics are positively and significantly impacted by epistemic value. The original sample (β) value of 0.244 (indicating a positive direction), the T-statistic value of 2.930 (greater than 1.65), and the P-

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value of 0.004 (below 0.1) all support this, halal cosmetics usage is significantly and positively influenced by epistemic value, as demonstrated in the study at a significance level of 90% ($\pm 10\%$). Thus, the consumption of halal cosmetics can be quantified using Epistemic Value. These findings align with earlier research by [Hur et al. \(2012\)](#), which found that when new halal cosmetic goods hit the market, consumers show a high degree of curiosity and a strong desire to find as much information as possible about them ([Hur et al., 2012](#)).

The study's findings make it clear that students at UMY's Faculty of Engineering do not use halal cosmetics in a way that is positively or significantly influenced by their religiosity. At 90% ($\pm 10\%$) significance level, indicated that the use of halal cosmetics by respondents is not positively or significantly influenced by their religiosity values. The value of T-statistic is 0.889 (below 1.65), the original sample (β) value is 0.039 (indicating a positive direction), and the P-value is 0.374 (above 0.1). This suggests that halal cosmetics usage cannot be gauged by a person's level of religiosity. This aligns with the research conducted by Adiba and Wulandari which indicates that the primary motivation for using halal cosmetics is not religious conviction but rather the tendency of consumers to utilize particular brands to uphold and strengthen their identities ([Adiba & Wulandari, 2018](#)). When buying halal cosmetic items, young consumers—who are reactive and highly receptive to information from the internet—rely more on online sources for insights. The research published by [Zaharnita et al. \(2016\)](#), indicates that modern students use the internet to investigate topics since it makes material easily and rapidly accessible. Students are encouraged to use the internet as a source of information, mainly about halal cosmetics, due to its speed and accuracy of retrieval. The finding that religiosity did not significantly affect the use of halal cosmetics in this study is likely affected by the level of confidence individuals place in online sources.

According to the study, functional value (P-value = 0.089), conditional value (P-value = 0.001), emotional value (P-value = 0.001), and epistemic value (P-value = 0.004) have the most significant influence on students in the UMY Faculty of Engineering's use of halal cosmetics. This aligns with earlier studies, such as the one by Wei ([Wei et al., 2020](#)).

This study holds valuable insights for the cosmetic industry, particularly for companies focusing on halal-certified products in predominantly Muslim markets like Indonesia. Understanding that functional, conditional, emotional, and epistemic values significantly influence halal cosmetic usage among university students can guide industry stakeholders to tailor their product features, marketing strategies, and customer engagement approaches. Manufacturers can enhance product functionality, ensuring quality, durability, and safety, which are crucial elements of functional value. They can also consider the conditional value by launching limited-edition or occasion-specific halal products that cater to special events or cultural celebrations. The emotional connection consumers feel with halal cosmetics suggests that campaigns highlighting satisfaction, pride, and well-being from using halal-certified products could be effective. Since epistemic value impacts usage, educational campaigns sharing halal product benefits and uniqueness might appeal strongly to knowledge-seeking consumers.

The strength of the result is high predictive accuracy and target insight for a growing market segment. With an R-square value of 0.770, the model demonstrates strong explanatory power for halal cosmetic usage among UMY engineering students. This suggests the measured values (functional, conditional, emotional, epistemic, etc.) are highly relevant factors in predicting halal cosmetic adoption, providing a robust model for understanding young consumers' preferences. The study's focus on university students highlights a key demographic in the cosmetic market. Young consumers, who are tech-savvy and highly receptive to online information, represent a critical group with long-term purchasing potential. Understanding what influences this demographic enables companies to design products and campaigns specifically for younger, educated Muslim consumers.

The limitations of this study include several aspects, among others. (1) Limited population and sample: This study only involves students from the Faculty of Engineering at Muhammadiyah University Yogyakarta. The results may not represent the entire population of students or the general public in Indonesia, especially from non-technical backgrounds or other campuses with different

perceptions and preferences towards halal cosmetics. (2) Limited independent variables: This study only uses several perception values (functional, conditional, emotional, social, epistemic, and religiosity) as variables influencing the use of halal cosmetics. Other factors, such as price, product availability, or current beauty trends, may also play a role in purchasing decisions but are not included in model (3). Instruments measuring religious values also need to be modified and further developed because they do not directly link religious quality with cosmetic use. (4) Cannot measure changes in perception over time: This research is cross-sectional (data is collected at one point in time), so it cannot measure changes in consumer perception or value towards halal cosmetics in the long term. Consumer preferences and perceptions towards cosmetics can change with shifting trends, new product information, or social developments, which may require further research.

CONCLUSION

The study's results suggest that halal cosmetics are driven by functional, conditional, emotional, and epistemic values but not by social or religious values.

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