

## THE INFLUENCE OF THE HALAL LOGO ON PURCHASE DECISIONS OF 7-ELEVEN READY-TO-EAT FOOD BY BANGKOK MUSLIMS, MODERATED BY PRIMARY NEEDS IN THE PERSPECTIVE OF ISLAMIC BUSINESS

Hana Rolisa<sup>1</sup>, Muhammad Iqbal<sup>2</sup>, Yeni Susanti<sup>3</sup>

Raden Intan State Islamic University, Lampung, Indonesia<sup>123</sup>

Email: rolisahana123@gmail.com<sup>1</sup>, iqbalfebi@radenintan.ac.id<sup>2</sup>,

yenisusanti@radenintan.ac.id<sup>3</sup>

### ABSTRACT

*The halal logo is a certification label in the form of halal writing in Arabic to mark whether or not a product is halal in accordance with Islamic law. The purpose of this study is to analyze the influence of the halal logo on the purchase decision of 7-Eleven ready-to-eat food in Bangkok Muslims moderated by primary needs in the perspective of Islamic business. This type of research is descriptive with a quantitative approach. The population in this study is the Muslim community who buy and consume ready-to-eat food at 7-Eleven, Bangkok Thailand with a sample of 100 people, which was taken using the purposive sampling method. The research instrument in this scientific article uses questionnaires and analysis techniques with Sem PLS. The results of the study show that the halal logo has a significant positive influence on the decision to buy ready-to-eat food with the halal logo on the Muslim community in Bangkok. Primary needs have a positive and significant influence on the decision to buy ready-to-eat food with the halal logo on the Muslim community in Bangkok. Primary needs can moderate the influence of the halal logo on the decision to purchase ready-to-eat food with the halal logo on the Muslim community in Bangkok. This research is expected to be able to increase the insight of the Bangkok Muslim community to make purchases only on halal products in order to increase sales of halal products and provide the effect of increasing the sales volume of ready-to-eat food with halal logos in Bangkok, Thailand.*

### KEYWORDS

Halal Logo, Purchase Decision, Fast Food, 7-Eleven, Primary Needs



***This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International***

### INTRODUCTION

A purchase decision is where the consumer is aware and carries out the phase of making an honest purchase decision (Aandrian, 2022). Purchase Decision can also be said to be the action of a consumer to buy or not buy a product. In this study, the focus is on the decision to purchase ready-to-eat food at 7-Eleven, Bangkok, Thailand. Bangkok's Muslim community needs ready-to-eat food because some

people there are so busy that they don't have more time to cook for themselves. aamentioned that the Muslim community in Bangkok faces challenges in finding halal food that suits their needs, especially in the midst of daily hustle and bustle. With this, some Muslims there prefer to buy ready-to-eat food which of course has a halal logo. With ready-to-eat food that has a Halal Logo on the product packaging, it will make Muslims safe with the food they consume will also be more practical.

A halal logo is a halal image, sketch, or writing as a halal sign of a certain product from a company, and a small industry that is guaranteed that the product is in accordance with Islamic law (Rivki, Bachtiar, Informatics, Engineering, & Indonesia, 2019.). Halal certification in Thailand is overtaken by *Central Islamic Council of Thailand (CICOT)* which is an institution of Thai scholars associations at the national level and an institution that regulates the halal logo in Thailand. *CICOT* has an institution *Halal Standard Institute of Thailand* who are in charge of inspecting and certifying Thai products (Faridah, 2019). Thailand's halal logo uses the word "halal" in Arabic with a full green theme, inside a rhombus rectangle outside which there are green stripes. Thailand is a country that has a small or minority Muslim population in Southeast Asia. This is followed by the population level in the Bangkok area, Thailand. Based on a report on the United Nations – World Population Prospects, the number of people in Bangkok in 2024 is 11,234,000 people, while the number of Muslim people living in Bangkok is around 600,000 people (Pokhrel, 2024).

With this, the Muslim community in Bangkok is about 5.34% of the total population living in the Bangkok area, Thailand. Thailand is a country with a majority Buddhist population. However, halal certification, especially in terms of food, has been carried out well (Mania, 2019). The halal industry has grown rapidly along with other global companies around the world. This is reflected in the fact that more and more countries are interested in developing and accepting the halal concept for market reasons and product quality. Although Thailand is not a Muslim-majority country, the Government supports halal certification because of economic interests. For Muslims, consuming halal food is an obligation that must be fulfilled and cannot be abandoned. This is in accordance with Islamic teachings that prohibit its people from consuming haram foods (Hamdanah, 2023).

Allah SWT. It is said in Surah Al-Maidah verse 88:

وَكُلُوا مِمَّا رَزَقَكُمُ اللَّهُ حَلَالًا طَيِّبًا وَاتَّقُوا اللَّهَ الَّذِي أَنْتُمْ بِهِ مُؤْمِنُونَ

*Meaning: Eat what Allah has bestowed upon you as a halal and good sustenance, and fear Allah in whom you believe. (Q.S. Al-Maidah [5]: 88).*

In Bangkok, despite efforts for halal certification, halal-certified ready-to-eat food options are still limited (Lutfee Hayeuma, 2022). This creates difficulties for consumers, especially Muslims, who want to ensure that the food they consume is in accordance with Islamic teachings. Even though in the research (Li et al., 2020) shows that adolescents in low- and middle-income countries consume fast food, Thailand is the highest country with the prevalence of consuming ready-to-eat food 4-7 times a week, which is 43.3%; 40.4–46.1%. So it can be concluded that Thailand needs quite a lot of ready-to-eat food with a halal logo. The Halal logo has

the potential to influence the food purchase decision by the Muslim community in 7-Eleven Thailand. According to statista data, in 2023 there will be around 14,545 7-Eleven outlets in Thailand, which shows an increase from the previous year. Meanwhile, many Muslims need halal food, for example products sold by minimarkets 7-Eleven. 7-Eleven is one of the minimarkets that offers a franchise business, by selling several types of products including ready-to-eat food with halal logos. This makes 7-Eleven as one of the places often visited by Muslims to buy food. One of the main reasons for this study is that halal logos give Muslim consumers confidence, which has a big impact on their decision to buy goods. This study will show that consumers are more likely to buy goods with halal logos because it shows that the goods meet sharia standards.

By considering primary needs as a moderation variable, this study emphasizes that the influence of halal logos on purchasing decisions becomes stronger when basic consumer needs are met. This means that the influence of the halal logo on purchasing decisions does not stand alone, but is influenced by other factors, namely primary needs. Primary needs are basic human needs such as food, drink, and clothing. In this context, the primary need for food is a factor that moderates the relationship between the halal logo and the purchase decision. According to psychologist *Abraham Maslow*, primary needs are the most basic level of needs in the hierarchy of human needs (Maslow, 1943). These needs must be met first before humans can focus on higher needs, such as compassion, appreciation, and self-actualization. Primary needs are basic needs that must be met to ensure human survival and welfare. Therefore, what is used as a variable in this study is primary needs. This shows that spiritual and practical aspects are interconnected in Muslim consumer behavior.

Based on research (Harahap, 2020) Empirical evidence was found that halal labels have a positive effect on the purchase needs of food and beverage products. In line with Harahap's findings, (Alfaini & Suprpti, 2023) It also states that the halal label has a positive and significant effect on purchasing decisions. As for (Alfiah & Muflikha, 2022) It also shows that the halal label has a positive and significant effect on consumer purchasing decisions of Samyang noodle products in Prigen District. However, contrary to the findings (Sitompul, 2021) which states that halal labels have a negative and significant effect on moderating knowledge on purchasing decisions. The same is true for the sitompul research, (Rahayu & Resti, 2023) It was also found that the results of the halal label did not have a positive effect on the purchase decision. Based on the background and previous research contained in this study, it can be concluded that the halal logo on purchase decisions has been inconsistent in previous research. Therefore, the researcher wants to add primary needs as a moderation variable for novelty in this study. So the following hypothesis is obtained:

**H1:** Halal logos have a positive influence on purchasing decisions

**H2:** Primary needs moderate the relationship between the halal logo and the purchase decision

### **Logo Halal**

A halal logo is a halal image, sketch, or writing as a halal sign of a certain product of a company, and a small industry that is guaranteed that the product is in accordance with Islamic law (Rivki et al., 2019.). In this study, the halal logo was

measured using several factors, including; Knowledge, Trust, and Judgment. This halal logo is useful for providing accurate, clear, and complete information to the public (Greetings, 2020). With the halal logo, customers can get the correct information about the quality of the goods and services in circulation, so they can make a decision before buying or consuming the product. The Halal logo is able to moderate if a Muslim has awareness of the sharia taught in Islam.

### **Purchase Decision (Theory of Planned Behaviour (TPB))**

A purchase decision is where the consumer is aware and carries out the phase of making an honest purchase decision (Andrian, 2022). A purchase decision can be interpreted as an intention/action/behavior of a consumer. This study refers to the Theory of Planned Behaviour (TPB), based on the assumption that behavioral intention is not sufficiently influenced by attitude towards behavior and subjective norms, but is also influenced by perceived behavioral control (Ajzen, 1991). TPB is a development of Theory Reasoned Action (TRA) which is used in consumer behavior. In TRA, explaining that behavior is only influenced by intentions, attitudes, and subjective norms, TRA explains that attitudes affect behavior through a careful and reasoned decision-making process (Ummah, 2019).

### **Primary Needs**

Primary needs are the main needs that humans must meet for their lives. Living humans will need clothing, food, and boards to continue their proper lives (Zamroni, 2015). When a person is hungry and feels like they need food urgently, they are more likely to make decisions impulsively. Various factors, such as urgent needs, minimal availability of options, and customer perception of halal logos greatly influence the decision to buy ready-to-eat food with halal logos. Therefore, companies should understand how the halal logo and the needs of primary needs are things that are needed by humans, especially Muslims.

## **RESEARCH METHOD**

Based on the background of this article, the method used in this study is descriptive with a quantitative approach. It was obtained by conducting research on the Muslim community in Bangkok who buy or become consumers of ready-to-eat food at *7-Eleven* in the Bangkok area, Thailand. The time of this research is a month, namely October 2024. The researcher took the location of the study because in Thailand, especially Bangkok, there are Muslim communities who consume ready-to-eat food.

With this, the researcher wants to see how much the halal logo influences the decision to purchase ready-to-eat food with the halal logo and whether primary needs moderate the influence of the halal logo on the purchase decision. Meanwhile, the object of this research is the halal logo as an independent variable, purchasing decisions as a dependent variable and primary needs as a moderation variable. In this study, data was collected through a questionnaire method, with the total Muslim population living in the Bangkok area being around 600,000 people (Pokhrel, 2024). The sample to be taken uses the formula:

The Influence of The Halal Logo on Purchase Decisions of 7-Eleven Ready-To-Eat Food by Bangkok Muslims, Moderated by Primary Needs in The Perspective of Islamic Business

$$N = \frac{N}{1 + Ne^2}$$

Remarks: n = Minimum number of samples

N = Total Population

e = margin of error (usually set at 0.5)

Dik: Thai Muslim population = 600,000

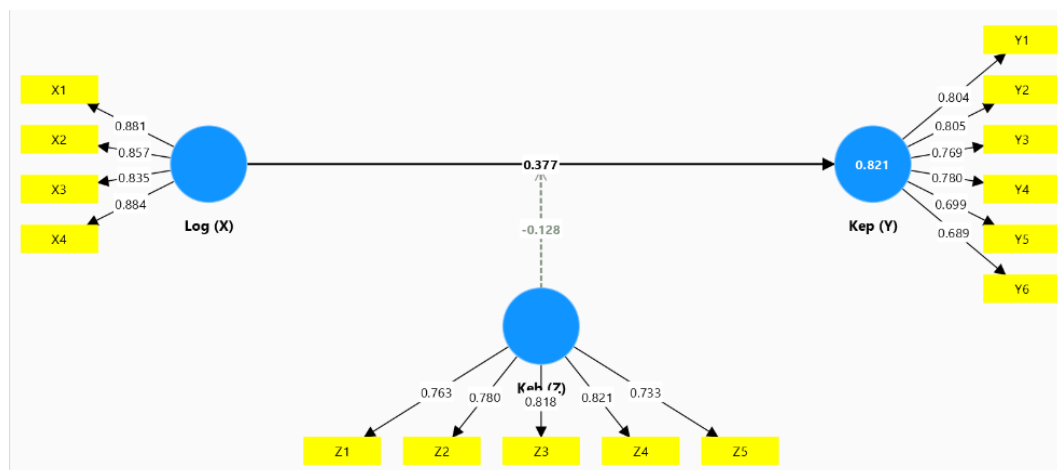
So it can be found,  $n = \frac{N}{1 + Ne^2}$

$$N = 6.66 \frac{600.000}{1 + 600.000(0,5)^2}$$

It can be concluded that the sample in this study was taken from at least 66 respondents and a sample of 100 respondents was obtained in this study. Data and data sources in this study used primary and secondary data, such as questionnaires, report data, journals and scientific articles.

## RESULT AND DISCUSSION

The results of the questionnaire data collection in this study were as many as 100 respondents of halal ready-to-eat food consumers in the Muslim community in Bangkok. The profiles of the respondents who participated in this study, in the form of personal identity including age, gender, occupation, income and frequency of shopping for ready-to-eat food with halal logos by the Muslim community in Bangkok, Thailand.



Gambar 1. Graphical Output Sem PLS

Table 1. Results of Measurement Model Evaluation (Outer Model)

Variable	Indicators	Outer Loadings	AVE	Cronbach's alpha	rho_c	Requirement (OL)	Explanation
Logo Halal (X)	X1	0.881	0.748	0.888	0.922	>0.6	Valid
	X2	0.857					

	X3	0.835					
	X4	0.884					
Purchase Decision (Y)	Y1	0.804					
	Y2	0.805					
	Y3	0.769	0.576	0.852	0.890	>0.6	Valid
	Y4	0.780					
	Y5	0.699					
	Y6	0.689					
Primary Needs(Z)	Z1	0.763					
	Z2	0.780					
	Z3	0.818	0.614	0.843	0.888	>0.6	Valid
	Z4	0.821					
	Z5	0.733					

*Source: Primary data processed (2024)*

Based on the table above, it can be seen that the loading factor value of all statement items is  $>0.6$ , then it can be concluded that all statement items are declared valid convergent (Mardian & Faqih, 2018). It can also be seen that the AVE value above  $>0.5$  overall, then the latent factor can explain well and at least half of the variance of each indicator. Then Value *Cronbach's Alpha* and *Composite Reliability* ( $r_{cho}$ ) above the entire variable  $>0.70$ , then all variables tested are reliable. With this, all tests can be produced and the results of the evaluation of the measurement model (outer model) are declared valid as a whole.

**Table 2. Determination Coefficient Test Results & Simultaneous Tests**

Variable	R2	Requirement	F Square	Requirement	Conclusion
Logo Halal (X)			0.293	$>0.15$	Medium Effect
Purchase Decision (Y)	0.815	$>0.5$			Moderate
Primary Needs (Z)			0.503	$>0.35$	Big Effect

*Source: Primary data processed (2024)*

Value  $R^2$  The purchase decision variable is 0.815, which indicates that the purchase decision variable and primary needs are able to explain the purchase decision variable of 8.15%. Then it can be concluded that the model is considered robust. Because, the  $R^2$  value ranges between 0 and 1 with a value of  $>0.67$  is generally considered good and moderate. Then the value of the F Square Halal Logo to the Purchase Decision got a result of  $0.295 > 0.15$ , then it was stated that the relationship between constructs was medium. Meanwhile, primary needs moderate the influence of the Halal Logo Towards Purchase Decision got a result of  $0.503 > 0.35$ , then it was stated that the relationship between constructs was strong. This study shows that halal labels have a significant positive influence on consumer purchasing decisions (Maura & Hidayatullah, 2023). With this, the entire

determination coefficient (R<sup>2</sup>) test can be produced with a large effect and the F Square test is declared Simultaneous.

**Table 3. Hypothesis Test**

Path	Original Sample	T Statistics	P Values	Description
Halal Logo → Purchase decision	0.377	2.698	0.003	Significant
Primary Needs X Halal Logo → Purchase Decision	-0.128	1.816	0.035	Significant

*Source: Primary data processed (2024)*

Based on the table above, it was found that:

- a. The Influence of the Halal Logo on Purchase Decisions  
The original sample value was 0.377. It is also known that the P-Value (0.003) <0.05 and the T-Statistics (2,698), show that the Halal Logo has a positive and significant effect on the purchase decision. This explains that the more Halal Logos, the bigger the Decision to Buy.
- b. The Effect of the Halal Logo on Purchase Decisions with Primary Needs as a Moderation Variable  
The original sample value was -0.128. It is also known that the P-Value (0.035) <0.05 and T-Statistics (1.816), shows that primary needs can strengthen the significant positive influence of the halal logo on purchasing decisions. This explains that the more people are aware of the primary behavior, the greater the influence of the halal logo on the purchase decision.

### **The Influence of the Halal Logo on Purchase Decisions**

The test results show that the halal logo influences the purchase decision. The halal logo has a statistically significant effect on purchasing decisions ( $p < 0.05$ ). Test results AVE above  $> 0.5$  overall, then the latent factor can explain both and at least half of the variance of each indicator, the value of *Cronbach's Alpha* and *Composite Reliability* ( $r_{cho}$ ) above the entire variable  $> 0.70$ , then all variables tested are reliable. This is a good number because it shows that the halal logo greatly influences the purchase decision. This supports the idea that halal logos help consumers make purchasing decisions. Consumers are more likely to buy goods with halal logos. As this study shows, the halal logo has a significant positive effect on consumers' decision to buy an item, especially ready-to-eat food with a halal logo. Research shows that halal labels have a significant positive influence on consumer purchasing decisions (Putri, Satria, & Setiawan, 2022).

Therefore, this latest study confirms and strengthens the theory and empirical studies that state that halal logos have a significant effect on purchasing decisions. The correlation between the halal logo and the purchase decision is due to the fact that the available and good halal logo provided by *7-Eleven* can meet the needs of ready-to-eat food with the halal logo. So that it gives rise to the decision



to buy Muslim consumers who buy ready-to-eat food with halal logos in Bangkok, Thailand. This can also cause repurchase behavior by Muslim consumers there.

H1: Halal logo affects Purchase Decisions

### **The Effect of Halal Logo on Purchase Decisions with Primary Needs as a Moderation Variable**

Based on the second hypothesis test, to test whether the primary need variable can strengthen the influence of the halal logo on the purchase decision, the original sample value of -0.128 was obtained in this study. It is known that P-Values (0.035) < 0.05 and T-Statistics (1,816). This suggests that primary needs can amplify a significant positive influence between the halal logo and the purchase decision. This explains that the greater the primary needs of the Muslim community in Bangkok, the greater the influence of the halal logo on purchasing decisions.

This latest research confirms and strengthens the theory and empirical studies that state that primary needs can strengthen the influence of the halal logo on purchasing decisions. Primary needs can be a moderation variable because everyone wants ready-to-eat food that is practical and is considered to be able to provide convenience for busy Muslims when carrying out daily activities. This is one of the commitments given by *7-Eleven*. The convenience provided by *7-Eleven* can certainly create more purchasing decisions for consumers of ready-to-eat food with halal logos in Bangkok, Thailand.

H2: Primary needs can moderate the relationship between halal logos and purchasing decisions

## **CONCLUSION**

The halal logo not only serves as a sign of the halalness of the product, but also affects the choice of Muslim consumers in Bangkok to buy goods, especially ready-to-eat food. With a small Muslim population in Thailand, halal certification in the ready-to-eat food industry is becoming increasingly important to meet the demand of Muslim customers looking for products that conform to the teachings of Islam. Moreover, food is included in the type of primary needs. With the existence of ready-to-eat food with a halal logo at *7-Eleven* and the convenience you get when buying ready-to-eat food. The Muslim community there feels more efficient and practical. So when the halal logo is multiplied again, the decision to buy ready-to-eat food will increase. Moreover, food is a necessary need every day and halal is a Muslim sharia that must be carried out.

Therefore, the results of the analysis that the researcher has conducted in this study, it can be concluded that the halal logo can affect the purchase decision of the Muslim community who consume ready-to-eat food with the halal logo in Bangkok. With this result, the first hypothesis is accepted. Primary needs can moderate between the halal logo and the purchase decision of the Muslim community who consume ready-to-eat food with the halal logo in Bangkok. With this result, the second hypothesis is also accepted. Overall, the results of this study show that the halal logo is a very important factor in influencing consumer



purchasing decisions and the role of moderating primary needs between halal logos and primary needs is very strong.

## REFERENCES

- Alfaini, Atthala Adeliana, & Suprapti, Isdiana. (2023). The Effect of Halal Labeled Products in Purchase Decisions. *Journal of Cefir Agriculture*, 20(1), 45–55. <https://doi.org/10.24929/fp.v20i1.2545>
- Alfiah, Alfiah, & Muflikha, Nur Rismatul. (2022). The Effect of Halal Labels and Prices on Consumer Purchase Decisions on Samyang Noodle Products, Prigen District. *GUARANTEE: Journal of Management Applications and Business Innovation*, 5(1), 54. <https://doi.org/10.47201/jamin.v5i1.130>
- Andrian, et al. (2022). Perilaku Konsumen. In *Rena Cipta Mandiri* (Vol. 3). Retrieved from <https://medium.com/@arifwicaksanaa/pengertian-use-case-a7e576e1b6bf>
- Deme, Maria Yasinta, Sunardi, Sunardi, & Yuniarti, Sari. (2022). The Effect Of Capital Structure And Company Size On Company Value With Profitability As Moderating Variables. *Eduvest - Journal of Universal Studies*, 2(1), 75–80. <https://doi.org/10.59188/eduvest.v2i1.345>
- Faridah, Hayyun Durrotul. (2019). Halal certification in Indonesia; history, development, and implementation. *Journal of Halal Product and Research*, 2(2), 68. <https://doi.org/10.20473/jhpr.vol.2-issue.2.68-78>
- Hamdanah, Syahritha Yuliatul. (2023). Qs. Al-Maidah verse 88: Halal Label as an Influence of Purchase Decisions. *JAHE: Journal of Economic Verses and Hadiths*, 1(1), 72–79.
- Harahap, Raja Sakti Putra. (2020). The influence of halal labels on people's decisions to buy food and beverage products. *Journal of Islamic Economics*, 5(2), 354–376.
- Li, Lian, Sun, Ning, Zhang, Lina, Xu, Guodong, Liu, Jingjing, Hu, Jingcen, Zhang, Zhiying, Lou, Jianjun, Deng, Hongxia, Shen, Zhisen, & Han, Liyuan. (2020). Fast food consumption among young adolescents aged 12–15 years in 54 low- and middle-income countries. *Global Health Action*, 13(1). <https://doi.org/10.1080/16549716.2020.1795438>
- Lutfee Hayeuma. (2022). *HALAL (Case Study of Muslims in Yala Region, Thailand)*.
- Mania. (2019). The Development of Islamic Society in Thailand. *AL MA'ARIEF : Journal of Social and Cultural Education*, 1(1), 80–101. <https://doi.org/10.35905/almaarief.v1i1.783>
- Mardiana, Novi, & Faqih, Ahmad. (2018). Structural Equation Modelling-Partial Least Square to Measure the Quality of Discrete Mathematics Learning with LMS. *Proceedings of the National Seminar on Mathematics and Its Application*, 1–12.
- Maura, Meidyna Syafa, & Hidayatullah, Maulana Syarif. (2023). The Effect of Halal Labels, Price and Product Quality on Purchasing Decisions of Scarlett Whitening Products (Case Study: Generation Z Adolescents). *Bisnis-Net*

- Journal of Economics and Business*, 6(2), 478–487.  
<https://doi.org/10.46576/bn.v6i2.3415>
- Pokhrel, Sakinah. (2024). No TitleELENi. *Agae*, 15(1), 37–48.
- Prastiwi, Yuanita Nur. (2018). The Influence of Halal Labels and Brand Image on Behavior. *The Influence of Halal Label and Brand Image on Sari Ayu Cosmetics Purchasing Behavior with Religiosity as a Moderating Variable*, 1–25. Retrieved from <https://dspace.uui.ac.id/handle/123456789/8429>
- Putri, Shinta Dewi, Satria, Chandra, & Setiawan, Bagus. (2022). The Effect of Halal Labels and Prices on Consumer Decisions (Case Study of Mutiara Indah Talang Kelapa Mini Market, Palembang). *Scientific Journal of Sharia Economics Students (JIMESHA)*, 2(1), 23–38.  
<https://doi.org/10.36908/jimesha.v2i1.102>
- Rahayu, Tri Septin Muji, & Resti, Handayani. (2023). The Influence of Halal Labels, Promotions on Social Media, and Word of Mouth (WOM) on Ms Glow's Purchase Decision in Cilacap. *Derivatives : Journal of Management*, 17(1), 64–76.
- Rivki, Muhammad, Bachtiar, Adam Mukharil, Informatics, Engineering, Engineering, Faculty, & Indonesia, Computer University. (n.d.). *No Covariance Structural Analysis of Health-Related Indicators in Elderly People at Home Focusing on Subjective Health PerceptionTitle*.
- Greetings, Karta. (2020). *Marketing Management and Consumer Behavior book*.
- Sitompul, Saleh Sitompul. (2021). The Effect of Halal Label Knowledge and Brand Awareness on Cosmetic Purchase Decisions through Group Recommendations as a Moderating Variable. *Shar-E : Journal of Sharia Legal Economic Studies*, 7(1), 50–64. <https://doi.org/10.37567/shar-e.v7i1.402>
- Ummah, Masfi Sya'fiatul. (2019). No 主観的健康感を中心とした在宅高齢者における健康関連指標に関する共分散構造分析Title. In *Sustainability (Switzerland)* (Vol. 11). Retrieved from [http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484\\_Sistem\\_Pembetulan\\_Terpusat\\_Strategi\\_Melestari](http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_Sistem_Pembetulan_Terpusat_Strategi_Melestari)