

# The Effect of the Use of Augmented Reality (AR), Perceived Risk, and Trust on Online Shopping Behavior through Perceived Enjoyment on Local Cosmetic Products on Shopee

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## Abstrak

This study aimed to analyze the influence of the use of augmented reality, perceived risk, and trust through perceived enjoyment on online shopping behavior on local cosmetics on Shopee. The sampling in this research was purposive sampling of 157 respondents. The research employs quantitative data, with primary data collected through an online questionnaire that was tested for validity and reliability. The analysis tool used in this study had Structural Modelling-Partial Least Square (PLS-SEM). Hypothesis testing was conducted through path analysis. The R-square value for the Perceived Enjoyment variable obtained an R-square value of 0.533 and a customized R-square value of 0.524. Meanwhile, the Online Shopping Behavior variable obtained an R-square value of 0.593 and a customized R-square value of 0.585. The p-value results showed  $<0.05$  so that the data analysis showed that augmented reality had a positive and significant effect on online shopping behavior, perceived risk had a positive and significant effect on online shopping behavior, trust had a positive and significant effect on online shopping behavior, augmented reality had a positive and significant effect on perceived enjoyment, perceived risk had a positive and significant effect on perceived enjoyment, trust had a positive and significant effect on Perceived enjoyment, perceived enjoyment had a positive and significant effect on online shopping behavior. Augmented reality had a positive and significant effect on online shopping behavior through perceived enjoyment, and perceived risk had a positive and significant effect on online shopping behavior through perceived enjoyment. The results of this research can be useful for online business people, especially local cosmetics, to be able to improve the customer shopping experience. Local e-commerce players need to integrate engaging AR technology, build trust with product guarantees and transparent reviews, and leverage risk perception as an element that adds excitement to the online shopping experience to drive consumer loyalty.

**Keywords:** augmented reality; perceived risk; trust; perceived enjoyment; online shopping behavior

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## Introduction

The rapid development of technology has led to an increase in internet users. The existence of the internet allows for a rapid exchange of information. The Indonesian Internet Service Providers Association (APJII) (2024), announced that the number of Indonesian internet users in 2024 will reach 221,563,479 people out of a total population of 278,696,200 people in Indonesia in 2023.

Online shopping is one of the activities of using the internet that is inseparable from modern life. Easy access for consumers and the availability of various types of products at varying prices make consumers comfortable in shopping. In addition, online shopping platforms have a variety of interesting features. There are several popular e-commerce platforms in Indonesia, such as Shopee, Tokopedia, Lazada, Blibli, Bukalapak, and so on. However, there is an e-commerce platform that is most visited by the Indonesian people,

namely Shopee. Setyowati (2023), explained that beauty and body care products are in second place after fashion products and accessories with a percentage of 41% in the most purchased products on Shopee. Shopee offers a variety of features that support local brand marketing.

Basari and Dewanti (2024), stated that "AR can help online consumers to view, try, or test products virtually before buying them, thereby reducing the uncertainty, doubt, and risk they may feel". Putri et al. (2019), stated "Customer trust in e-commerce is one of the key factors in carrying out online buying and selling activities". Kristianti and Jannah (2024), stated "Perceived enjoyment can be interpreted as comfort, pleasure, and satisfaction.

Cosmetics is an interesting topic to research, especially local cosmetics which are now increasingly showing their potential amid the dominance of foreign products such as the very popular Korean cosmetics. This phenomenon opens up opportunities to explore consumer preferences, marketing strategies, and the quality of local products in the face of global competition. Wardhana (2024), shows that six out of ten brands with the highest sales value in e-commerce in the first half of 2024 are local brands.

Shopee provides a "make up try on" feature as an innovative effort to increase the effectiveness of its marketing communication. This feature allows users to try on various cosmetic products virtually, creating a more interactive and personalized shopping experience. Thus, Shopee not only facilitates more informed purchasing decisions, but also builds stronger consumer engagement with the products and brands offered. Isyabeliona and Santoso (2024), stated "This feature allows customers to try products virtually, using augmented reality technology. The local cosmetic brands used in the study were Luxcrime, Azarine, and Viva.

The S-O-R (Stimulus-Organism-Response) theory is the most appropriate choice to explain the influence of the use of augmented reality (AR), risk perception, and trust on online shopping behavior through perceived enjoyment of local cosmetic products on Shopee. The S-O-R model/theory was put forward by Houland in 1953 (in Abidin, 2022) who stated that this theory originated from psychology which was then applied in communication science because the objects of psychology and communication are the same, namely humans who have components of attitudes, opinions, behavior, cognition (attitudes related to insight or understanding), affection (attitudes related to feelings), and conation (attitudes related to tendencies to act). In this context, S-O-R views that external stimuli, such as the use of AR that increases visual interaction, consumer perceived risk, and trust in brands and platforms, will affect consumers' internal conditions in the form of perceived enjoyment, namely the level of pleasure and satisfaction felt during the online shopping process. This perceived enjoyment then drives behavioral responses in the form of online purchasing decisions. In addition, trust can reduce risk perception and directly or indirectly increase enjoyment and shopping behavior. This model is able to combine the influence of technology, emotional factors, and consumer beliefs in one comprehensive framework. S-O-R is also relevant to explain interactive and immersive online shopping experiences, where consumer decisions are not only driven by technological functions alone, but also by pleasant psychological experiences. With the S-O-R framework, all research variables can be integrated systematically, including the use of AR, risk perception, and trust as stimuli, perceived enjoyment as organisms, and online shopping behavior as responses. Therefore, S-O-R is not only able to explain the influence of technology and emotions on consumer behavior, but also highlights the importance of building trust and mitigating risks in increasing consumer loyalty to local cosmetic brands

and the Shopee platform.

Previous research focused on the influence of augmented reality and perceived risk on online shopping behavior with perceived enjoyment as a mediating variable. Without using the role of trust as an independent variable with the same context. This study adds the trust variable as an independent variable

Basari and Dewanti (2024), stated "Augmented reality (AR) is a technology that combines virtual elements with real environments in real time, thereby creating new experiences for its users." Lovendra (2021), stated that, there are five indicators regarding the use of augmented reality: (1) Virtual Presence, (2) Convenience, (3) Enjoyment, (4) Usefulness, (5) WOM factor.

Andriyano and Rahmawati (2016), stated "Risk perception is an assumption of uncertainty and undesirable consequences in carrying out a certain activity." Pavlou (in Maulidiyah and Purwanti 2021), stated that there are several indicators used to measure perceived risk, namely: (1) Certain risks, (2) Losses, (3) Thinking that they are at risk.

Cahyani and Artanti (2023), stated "Online consumer trust is the belief that customers can rely on promises, information, and trust that businesses will not exploit customers through online media". Juniwati (2015), stated that there are several indicators used to measure trust, namely: (1) Online shopping is safe, (2) Trustworthy, (3) Honest, (4) The service is good.

Kian et al. (2017), stated "Perceived pleasure refers to the extent to which consumers feel pleasure when they buy products or services on the internet". According to Juniwati (in Isyarah 2023), stated that the indicators of perceived enjoyment are: (1) Online shopping is fun, (2) Online shopping is exciting, (3) Online shopping is interesting.

Tham et al. (2019), stated "Consumer online shopping behavior is the process of purchasing goods or services online through ecommerce platforms can be referred to as online shopping behavior." Deza and Lubis (2020), stated that to measure online shopping behavior, there are three indicators, namely: (1) Desire to browse, (2) Repatronage intention, (3) Switching intention.

## **Methods**

The data acquisition method in this study is the questionnaire method. Sugiyono (2022), stated "Questionnaire is a data collection technique that is carried out by giving a set of questions or written statements to respondents to answer them". In this study, independent variables, dependent variables, and mediating variables were used to find out whether each variable had a significant influence.

The population in this study is an unknown number of Shopee users. This study uses non-probability sampling techniques, especially purposive sampling in sampling that meets certain criteria such as having shopped for local cosmetic products at Shopee, having used augmented reality or virtual try-on features at Shopee, and being at least 17 years old. To select respondents, this paper uses an online questionnaire as the main tool in distributing surveys. This study collected data from 157 respondents. Data collection was carried out through a questionnaire that was distributed online using the Google Form platform. The questionnaire was designed using a likert scale of 5 to make it easier for respondents to determine the level of approval for each statement presented.

## **Result and Discussion**

The hypothesis test in this study was carried out using the Structural Equation Modeling (SEM) method through the SMART-PLS software version 4.0. Before testing the hypothesis, the measurement model is tested through validity and reliability tests based on indicators from variables known as the outer model. The model measurement consists of: (1) Convergent validity measures the correlation between the indicator's score and its construct score. Chin (in Ghozali and Latan, 2015) The PLS-SEM model fulfills convergent validity if the value of outer loading or loader factor  $>0.7$ . (2) Discriminant validity using Heterotraid-Monotraid (HTMT) with a value of  $<0.85$  (Garson, 2016). (3) Composite reliability is qualified if the composite reliability value is  $>0.7$  (Ghozali and Latan, 2015).

**Table 1. Outer Model Test Result**

Variable	AVE	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Result
Augmented reality	0,778	0,929	0,929	0,946	Valid and reliable
Perceived risk	0,745	0,883	0,887	0,928	Valid and reliable
Trust	0,667	0,876	0,876	0,915	Valid and reliabel
Perceived enjoyment	0,810	0,746	0,759	0,856	Valid and reliable
Online shopping behavior	0,729	0,829	0,836	0,898	Valid andreliable

Source; SmartPLS Data Analysis, 2025

Based on the results of the PLS-SEM analysis above, it is known that all variables in this study are valid and reliable with a loading factor value of above 0.7 and an Average Variance Extracted (AVE) value of above 0.5. Which shows that each indicator in this study has adequate convergent validity and accurately presents the construct appropriately.

**Table 2. Validity Test with Heterotraid-Monotraid (HTMT)**

	Augmented Reality	Online Shopping Behavior	Perceived Enjoyment	Perceived Risk	Trust
Augmented Reality					
Online Shopping Behavior	0,785				
Perceived Enjoyment	0,777	0,819			
Perceived Risk	0,817	0,743	0,799		
Trust	0,644	0,737	0,743	0,630	

Source; SmartPLS Data Analysis, 2025

The results of discriminant validity show that HTMT is above 0.85 which indicates that the variable has good discriminant validity. The reliability test and Cronbach's Alpha showed a value of  $>0.7$  which means that each indicator has a high level of consistency. Thus, the measurement model in this study can be declared valid and reliable, so it is feasible to be used in future hypothesis testing.

The inner test model uses a determination coefficient that is used to determine the influence of independent variables on the dependent variables as a whole. The R-Squares

values of 0.75, 0.50 and 0.25 can be concluded that the model is strong, moderate and weak. It is declared reliable if the composite reliability value or Cronbach alpha >0.70 (Ghozali and Latan, 2015).

**Table 3. Test Result Coefficient of Determination**

	R-square	R-square adjusted	
Perceived Enjoyment	0,533	0,524	Perceived Enjoyment
Online Shopping Behavior	0,593	0,585	Online Shopping Behavior

Source; SmartPLS Data Analysis, 2025

Based on the results of the above test, the determination coefficient test showed that the R-square value for the Perceived Enjoyment variable obtained an R-square value of 0.533 and an adjusted R-square value of 0.524. Meanwhile, the Online Shopping Behavior variable obtained an R-square value of 0.593 and an adjusted R-square value of 0.585.

So from the R-square results that have been obtained, it can be said that the Perceived Enjoyment variable can be used to see the magnitude of the influence of the Augmented Reality, Perceived Risk, and Trust variables on Perceived Enjoyment by 53.3%, while the remaining 46.7% is explained by other variables in the proposed model area.

The R-square value for the Online Shopping Behavior variable is 0.593. It can be concluded that the online shopping behavior variable can be used to see the magnitude of the influence of the Augmented Reality, Perceived Risk, Trust, and Perceived Enjoyment variables on Online Shopping Behavior by 59.3%, while the remaining 40.7% is explained by other variables outside the proposed model.

After conducting the inner model test, the next stage is to conduct a hypothesis test using the bootstrapping path coefficient. This test is used as a basis for accepting or rejecting a hypothesis by looking at several criteria such as the original sample, t-statistic, and p-value. The criteria in this hypothesis test are if the p-value result has a significance level  $\leq 0.05$  and the t value  $\geq 1.96$ , then the indicator variable is declared significant. Meanwhile, if the p-value result has a significance level  $\geq 0.05$ , then the indicator variable is declared insignificant (Haryono, 2016).

**Table 4. Hypothesis Test Result**

Hypothesis	Original Sample	t-statistik	p-value	Result
AR>OSB	0,317	4,123	0,000	Accepted
PR>OSB	0,139	1,834	0,033	Accepted
T>OSB	0,246	3,686	0,000	Accepted
AR>PE	0,254	2,652	0,004	Accepted
PR>PE	0,300	3,280	0,001	Accepted
T>PE	0,289	4,519	0,000	Accepted
PE>OSB	0,203	2,536	0,006	Accepted
AR>PE>OSB	0,052	1,828	0,034	Accepted
PR>PE>OSB	0,061	2,008	0,022	Accepted

Source; SmartPLS Data Analysis, 2025

Based on the results of the research that has been carried out using validity tests which include convergent validity and discriminant validity and reliability tests, it can be concluded that:

- a) H1 is accepted because augmented reality has a positive and significant effect on online shopping behavior.
- b) H2 is accepted because perceived risk has a positive and significant effect on online shopping behavior.
- c) H3 is accepted because trust has a positive and significant effect on online shopping behavior.
- d) H4 received augmented reality has a positive and significant effect on perceived enjoyment.
- e) H5 is accepted as perceived risk has a positive and significant effect on perceived enjoyment.
- f) H6 received trust has a positive and significant effect on perceived enjoyment.
- g) H7 received perceived enjoyment has a positive and significant effect on online shopping behavior.
- h) H8 is accepted by augmented reality to have a positive and significant effect on online shopping behavior through perceived enjoyment.
- i) H9 is perceived risk to have a positive and significant effect on online shopping behavior through perceived enjoyment.

Theoretically, the positive influence of risk perception on online shopping behavior through perceived enjoyment does sound unusual, because generally the risk perceived by consumers will reduce their interest or enjoyment. However, the research results showing this relationship can be explained using the concept of risk involvement effect. This concept explains that for some consumers, especially those with an innovative or adventurous orientation (variety seeking), the presence of risk actually triggers a higher sense of curiosity and involvement. In the context of augmented reality (AR) for cosmetic shopping, the experience of trying on products virtually may be considered a new and challenging experience, although there is uncertainty whether the virtual results will match reality. This uncertainty can create curiosity and excitement, which actually strengthens perceived enjoyment. In this case, the perceived risk is not merely a threat, but also part of the interactive experience that enhances consumers' enjoyment in trying AR. In addition, consumers who have high trust in brands and platforms can interpret risks as fun challenges, not as obstacles. In other words, even though there are risks, if consumers already have strong trust, they will actually enjoy the online shopping process more, which then increases their intention to make transactions. Therefore, the positive influence of perceived risk on shopping behavior through enjoyment can be accepted theoretically by considering the dynamics of risk involvement, curiosity, and the level of stimulation sought by consumers.

## **Discussion**

The results showed that the overall independent variables, such as the use of augmented reality, perceived risk, and trust, significantly influenced online shopping behavior with perceived enjoyment as a mediating variable. The use of augmented reality has been proven to increase consumers' perceived enjoyment when shopping for local cosmetics on Shopee, as it allows them to try products virtually, making the experience more interactive and enjoyable.

However, even though AR technology provides convenience, perceived risk is still a factor that affects shopping behavior, especially if consumers feel unsure of the compatibility of the products tried virtually with reality, so consumers will further improve



shopping behaviors such as viewing desired product reviews. On the other hand, trust in local cosmetics brands and e-commerce platforms like Shopee plays a very important role in shaping consumer purchasing decisions. Trust is the main foundation in online transactions because consumers cannot see or touch the product directly. When consumers believe that the brand provides quality products and that the Shopee platform is able to guarantee the security of transactions and timely delivery, then the level of worry or risk perception will decrease. This encourages consumers to be more confident in making purchases. In addition, trust can also strengthen consumer loyalty and increase the likelihood of future repurchases.

Overall, perceived enjoyment serves as an important bridge that connects the influence of technology and psychology to online purchasing decisions. The greater the pleasure and convenience of trying AR, the higher the likelihood of consumers making a purchase.

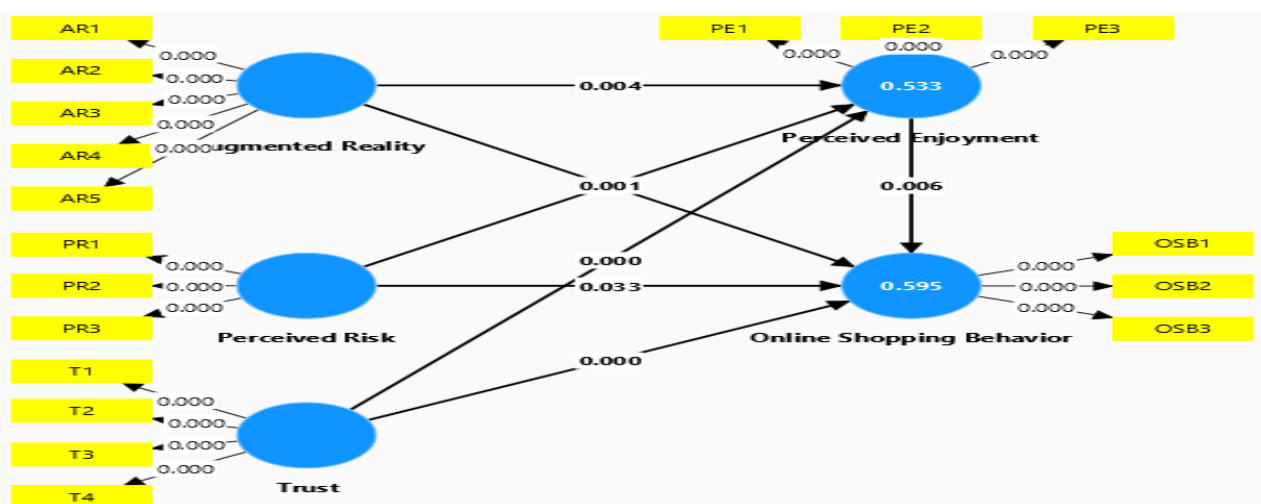


Image 1. Framework

The results showed that the overall independent variables, such as the use of augmented reality, perceived risk, and trust, significantly influenced online shopping behavior with perceived enjoyment as a mediating variable. The use of augmented reality has been proven to increase consumers' perceived enjoyment when shopping for local cosmetics on Shopee, as it allows them to try products virtually, making the experience more interactive and enjoyable.

The use of augmented reality (AR) has been proven to increase consumers' perception of pleasure when shopping for local cosmetics on Shopee. By utilizing this technology, consumers can try products virtually, which makes the shopping experience more interactive and enjoyable. The AR feature allows consumers to see how the color and texture of the product will look on their face, providing a more realistic experience than simply looking at a product image. However, even though this technology provides convenience and entertainment, risk perception remains a factor influencing shopping decisions. Consumers may still doubt the extent to which the products displayed virtually will match the reality when received, so they will be more careful by looking for reviews and testimonials from other users to ensure the authenticity and quality of the product. On the other hand, trust in local cosmetic brands and e-commerce platforms such as Shopee plays an important role in shaping purchasing decisions. This trust includes the belief that the products offered are of high quality, safe to use, and that the shopping platform is able to provide guaranteed transaction security and on-time delivery. When consumers feel

confident in the brand's reliability and the platform's security, their level of concern decreases, which encourages them to be more confident in making purchases. In addition, this strong trust can also strengthen consumer loyalty, increase their likelihood of making repeat purchases in the future, and encourage them to recommend the product to others.

The implications of these findings suggest that for local cosmetic brands, it is important to continue building and maintaining consumer trust by providing assurance of product authenticity, displaying honest reviews from previous buyers, and consistently highlighting product quality and safety. For AR developers, it is necessary to develop more realistic and accurate AR features, for example by improving the ability to simulate colors, textures, and lighting effects that resemble real conditions. Additionally, developers can add interactive elements, such as combining review features with AR, where users can see real results from other consumers. For Shopee, the comprehensive integration of AR features into the platform is not only a technological innovation, but also a crucial strategy to create a more engaging, immersive, and enjoyable shopping experience for consumers, thereby differentiating Shopee from competitors and increasing user loyalty to the platform. The implication of this move is that Shopee can build stronger relationships with consumers, reduce concerns about product authenticity, and increase purchase conversions by leveraging consumers' increasing trust in the platform, especially in the context of local cosmetic products that require high levels of consumer confidence.

Shopee is advised to develop more realistic and interactive augmented reality (AR) features to enhance the consumer shopping experience, especially for local cosmetic products. In addition, Shopee needs to strengthen consumer trust through seller verification programs, authentic product marking, credible user reviews, and reliable transaction and delivery security systems. These steps will minimize risk perception and increase consumer enjoyment when shopping online, thereby encouraging loyalty and repeat purchases in the future.

## **Conclusions and Suggestions**

The results of this study aim to determine the effect of the use of augmented reality, perceived risk, trust, and perceived enjoyment on online shopping behavior on local cosmetic products on Shopee as measured by PLS-SEM. All hypotheses in this study are accepted. Proving that the influence of the use of augmented reality, perceived risk, trust, and perceived enjoyment will have an impact on online shopping behavior.

The findings of this study are limited to local cosmetics, so they cannot be used in external cosmetics. The data collection of this researcher also only uses questionnaires, so it cannot ensure the level of honesty of the respondents. Further research should be able to conduct research other than the cosmetics industry. Future research can be done on other industries such as fashion and furniture, further research should be able to conduct research on other e-commerce platforms such as Lazada, Tiktok shop, or Bukalapak.

## **Reference**

Abidin, M. (2022). The Urgency of Stimulus Organism Response (S-O-R) Communication Model in Improving the Quality of Learning. *Nivedana: Journal of Communication & Language*, 3(1), 47-59.



- Andriyano, Y., and Rahmawati, D. (2016). Influence Of Perceived Ease Of Use, Perceived Usefulness, Perceived Risk And Trust To Interest For Using Mobile Accounts (A Case Study On Cimb Niaga Special Region Yogyakarta Customers).
- Basari, A. S. A., and Dewanti, R. L. (2024). The Effect of Augmented Reality and Perceived Risk on Online Shopping Behaviour with Perceived Enjoyment as Mediating Variable. *International Journal For Multidisciplinary Research*, 6(2). <https://doi.org/10.36948/ijfmr.2024.v06i02.14955>
- Cahyani, S., and Artanti, Y. (2023). The influence of online customer trust and online store environment on online impulse buying of fashion products through perceived enjoyment in TikTok shop consumers. 253–265.
- Deza, M., and Lubis, P. H. (2020). The Effect of Price Discounts on Purchase Intentions Mediated by Consumer Confidence in Online Sports Shoes Purchases in the City of Banda Aceh. [www.zalora.co.id](http://www.zalora.co.id),
- Garson, D. (2016). Partial Least Squares: Regression & Structural Equation Models. [www.statisticalassociates.com](http://www.statisticalassociates.com)
- Ghozali, I., and Latan, H. (2015). Partial Least Squares Concepts, Techniques and Applications Using SmartPLS 3.0 For Empirical Research (2nd Edition).
- Haryono, S. (2016). SEM Method for AMOS LISREL PLS Management Research.
- Indonesian Internet Service Providers Association (APJII). (2024). APJII The Number of Indonesian Internet Users Reaches 221 Million People. <https://shorturl.asia/oTkrq>
- Isyabeliona, S. A., and Santoso, B. (2024). Consumer Perception of Try On Shopee Make Up as Maybelline's Marketing Communication Media.
- Isyaroh, E. N. (2023). The Effect of Perceived Ease of Use, E-Service Quality, and Perceived Enjoyment on Repurchase Intention and Customer Satisfaction.
- Juniwati. (2015). The Effect of Perceived Ease of Use, Enjoyment and Trust on Repurchase Intention with Customer Satisfaction as Intervening in Online Shopping (Study on Students of Tanjungpura University Pontianak). In *Journal of Business Economics and Entrepreneurship* (Vol. 4, Issue 1).
- Kian, T. P., Fong, L., Wee, S., Kian1, T. P., Goh, H., Boon2, S., Wee, L., Fong3, Y., and Jian, A. (2017). Factors that influence the consumer purchase intention in social media websites. In *Int. J. Sup. Chain. Mgt* (Vol. 6, Issue 4). <https://www.researchgate.net/publication/322447949>
- Kristianti, D., and Jannah, K. D. (2024). Perception of Usability, Online Social Interaction, Perceived Enjoyment and Trust in the Online Shopping Experience (Case Study on Online Customers in Indonesia).
- Lovendra, S. (2021). The Effect of the Use of Augmented Reality Marketing on Buying Behavior of Maybelline Official Shop Beauty Products on Shopee with Consumer Engagement as an Intervening Variable.
- Maulidiyah, N., and Purwanti, L. (2021). The Effect of Risk Perception, Trust and Security on Online Buying Interest through Social Media (Study on Online Shop Consumers).
- Putri, I. G. A. A. M., Sri, D., and Muhammad, M. D. (2019). The Influence of Trust and Easy of Use on Repurchase Interest on the Shopee Marketplace in Mataram City.
- Setyowati, D. (2023). List of Best-Selling Products on Shopee, Tokopedia, Blibli, and Lazada. [Katadata.Co.Id](http://Katadata.Co.Id).

Sugiyono. (2022a). Qualitative Research Methods.

Tham, K. W., Omkar, D., Johari, Z., dan Ismail, N. B. (2019). Perceived Risk Factors Affecting Consumers' Online Shopping Behaviour. Nurlida Binti ISMAIL / Journal of Asian Finance, 6(4), 249–260. <https://doi.org/10.13106/jafeb.2019.vol6.no4.249>

Wardhana, B. (2024). Kompas.co.id FMCG Report Semester I 2024: Boycott Triggers Changes in Global & Local Product Competition Map in E-commerce in the FMCG Sector. <https://kompas.co.id/article/fmcg-report-2024-boikot-picu-perubahan-peta-persaingan-produk-global-lokal/>