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# Factors Affecting Online Purchase Decision, Customer Satisfaction, and Brand Loyalty: An Empirical Study from Indonesia's Biggest E-Commerce

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## Abstract

**Purpose:** The development of online shopping trends in Indonesia is increasing, and Tokopedia is becoming one of the most popular e-commerce websites. The purpose of this study is to obtain empirical evidence whether mobile shopping, customer review, perceived credibility, and Korean celebrity endorsement affect online purchase decision, whether online purchase decision affects customer satisfaction, and whether customer satisfaction affects brand loyalty of customers in Tokopedia e-commerce. **Research Design, data and methodology:** Quantitative survey with data was collected using an online questionnaire with sample characteristics were Tokopedia customers who lived in Jakarta by 385 samples using the purposive sampling method, and data analysis was conducted using the Smartpls application program version 3.0. **Results:** Mobile shopping, customer review, and perceived credibility had positive effects on online purchase decision at Tokopedia in Jakarta. However, Korean celebrity endorsement did not have a positive effect on online purchase decision at Tokopedia in Jakarta. Furthermore, online purchase decision had a positive effect on customer satisfaction at Tokopedia in Jakarta, and customer satisfaction had a positive effect on brand loyalty at Tokopedia in Jakarta. **Conclusions:** This study proposes significant implications for maintaining customer relationships to achieve purchasing decision, customer satisfaction, and brand loyalty in the e-commerce industry.

**Keywords:** Empirical Study, Online Purchase Decision, Customer Satisfaction, Brand Loyalty.

**JEL Classification Code:** M30, M31, M37

## 1. Introduction

The trend of people shopping online in Indonesia has changed significantly since its nascent days. Nowadays, in Indonesian society, the trend of people shopping online is considered as a new lifestyle. Consumer behavior has changed as a result of the growth of information technology

and e-commerce, moving from offline to online. Certain things can be purchased by customers without them having to leave their house and visit a physical store or shopping center. Online shopping offers a variety of advantages, like time savings, fantastic promotions, huge product selections, and cheaper, competitive rates (Dewi et al., 2020).

The COVID-19 pandemic has further shifted the trend of

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traditional shopping toward online shopping in Indonesia, attributed to the social distancing restrictions, or so-called PSBB (Large-Scale Social Restrictions) and other health protocols enforced by the government that has forced people to reduce mobility and do everything from home, including shopping. Currently, online shopping is a rapidly evolving industry because internet technologies and applications are providing customers with more suitable, more accessible, and cost-efficient way to look for a wider range of products rather than the traditional shopping. In addition, the growing of public interest in online shopping has affected the rapid development of the e-commerce industry in Indonesia. This is supported with the e-commerce growth in Indonesia which accelerated from fifty four percent in 2019 to ninety one percent in 2020 (Warganegara & Hendijani, 2022).

Today, one of the most popular e-commerce sites for online shopping in Indonesia is Tokopedia. The rise of Tokopedia e-commerce started when Tokopedia was officially launched publicly on August 17, 2009. Ten years later, Tokopedia listed on a gross merchandise value of 18,5 trillion rupiah. Nowadays, Tokopedia is ranked first as the e-commerce site with the highest monthly visitors in the first quarter of 2021. In detail, the number of visitors to the Tokopedia site is recorded to have reached 135 million in the first quarter of 2021. Tokopedia manages to outperform their competitors in the e-commerce industry. Tokopedia's rankings also point to an increasingly competitive business environment. Due to the high demand for online shopping, the e-commerce industry must choose appropriate strategies to discourage consumers from switching to other e-commerce products (Khurniasari & Rahyadi, 2021).

Tokopedia, as one of the most popular e-commerce sites today, is required to understand and learn what factors can affect customers' online purchase decisions. In one of the previous studies, an online purchase decision is defined as an action performed by someone to select the best option from a range of options. This choice is accompanied by a thorough follow-up and assessment of the choice made to ascertain the mindset of the subsequent purchase (Hidayat et al., 2021).

Understanding the factors that affect the customers' online purchase decisions will ensure the expected customer satisfaction and brand loyalty. Customer satisfaction is defined as an indication of customer beliefs about the probability of the service leading to positive feelings (Udo et al., 2010). In comparison, another study argues that brand loyalty is a deeply held commitment to re-buy a brand in the future regardless of situational factors (Ebrahim, 2020). In actual practice, online purchase decisions are affected by several factors such as mobile shopping, customer reviews, perceived credibility, and Korean celebrity endorsement. In one of the previous studies, mobile shopping is defined as online searching, browsing, comparing, and purchasing

goods and services by consumers through handheld mobile devices, in particular, smartphones and tablets (Marriott et al., 2017). The next factor is customer review. In one of the previous studies, customer review is defined as a customer evaluation of a product posted on a company website (Mudambi & Schuff, 2010). Then there is the perceived credibility factor. In one of the previous studies, perceived credibility is considered as the degree to which a user perceives the website as a dependable service provider with the necessary capabilities (Swaminathan et al., 2018). Furthermore, the Korean celebrity endorsement. A previous study defines celebrity endorsement as anyone who enjoys public recognition and uses this recognition on behalf of consumer goods by appearing with him in an advertisement (Chung & Cho, 2017). Celebrity endorsers are frequently used by advertisers in their marketing campaigns. Their reasoning may come down to the perceived economic value, higher sales, greater exposure to advertising, a positive attitude toward advertising, higher purchase intentions, giving a company an instant personality, and cutting through the noise. Celebrity endorsers were thought to be much more capable, trustworthy, and attractive. Additionally, compared to other ads, advertisements containing celebrity endorsers increased purchase intention and brand appraisal (Um & Lee, 2015).

This study aims to empirically examine whether mobile shopping, customer review, perceived credibility, and Korean celebrity endorsement have positive effects on online purchase decision of Tokopedia customers in Jakarta; whether online purchase decision has a positive effect on customer satisfaction of Tokopedia customers in Jakarta; and whether customer satisfaction has a positive effect on brand loyalty of Tokopedia customers in Jakarta.

## 2. Literature Review

### 2.1. Mobile Shopping

Mobile shopping is defined as a factor that enables customers to shop online anytime and anywhere without any restrictions (Lu & Su, 2009). In addition, other researchers argue that mobile shopping is the use of wireless internet services for shopping activities via a mobile device (Ko et al., 2009). According to Marriott et al. (2017), mobile shopping is defined as online searches, browsing, comparing, and buying of goods and services made by customers using portable or mobile devices, particularly smartphones and tablets. A mobile shopping app main objective is to offer quality and adequate information that includes both general and specific (product-related) features, which in turn affects online purchases. This information would suggest that the content is up-to-date, accurate, clear, and comprehensive.

Additionally, mobile shopping app needs to provide customized customer service and material like customer policies (like privacy). Furthermore, using the app and trying to rapidly and easily search for desired products are also important factors (Patel et al., 2020).

## 2.2. Customer Review

Customer review is defined as any positive or negative statements made by potential, actual, or former customers on online platforms (Park & Kim, 2008). While the customers search online for a product, they will find tens or even hundreds of information about the product and its alternatives. Customer review gives more reasons for people to make decisions and increases decision-makers confidence in the decisions taken (Dwidienawati et al., 2020). Customer review provides additional information, expert reviews, and personalized advice, which can add value to prospective customers (Mudambi & Schuff, 2010). Customer review can reduce the risk perceived by consumers and improve the degree of satisfaction and their efficiency in making decisions (Yan et al., 2016). On the other hand, another opinion says that customer review is a key source of information for customers (Kostyra et al., 2016). Consumers perceive customer reviews to guide them in purchasing products on the internet (Jiménez & Mendoza, 2013). While another study considers customer review as an internet tool used by the global community to exchange information about products and brands (Beneke et al., 2016).

## 2.3. Perceived Credibility

Perceived credibility is defined as the prime determinant that determines the consumer decision-making process and reduces uncertainty in social and business interactions (Awad & Ragowsky, 2008). If an online recommendation is perceived to have a highly persuasive argument, the recipient will tend to have a positive attitude towards it (Zhang et al., 2014). A previous study finds out that the strength of the argument is the most important factor affecting credibility among consumers (Fang, 2014). Meanwhile, in another study, perceived credibility is defined as a limitation that determines a recommendation or a review is trustworthy, accurate, and factual (Cheung et al., 2014).

## 2.4. Korean Celebrity Endorsement

Celebrity endorsement is described as someone who is well-known in society and leverages that popularity to promote products by sharing the spotlight with them (Chung & Cho, 2017). Celebrity endorsements are widely used in marketing since marketers believe that celebrities attract

consumers, and celebrities' positive traits are transferred to the brands they endorse (Chung & Cho, 2017). Another study defines celebrity endorsement as persons who receive public recognition and have special characteristics, such as attractiveness and trustworthiness, so they have an important role in making advertisements visible, identifiable, and memorable (Um & Lee, 2015). Celebrity endorsement is expected to bring positive effects, such as increased brand awareness, favourable attitudes towards the brand, and increased sales and profits (Um & Lee, 2015). Celebrity endorsement is also expected to generate widespread publicity and help expose the new brand to the broader public. These potential benefits have made celebrity endorsement a popular tactic (Um & Lee, 2015).

## 2.5. Online Purchase Decision

Hidayat et al. (2021) define an online purchase decision as an action performed by someone to select the best option from a range of options. This choice is accompanied by a thorough follow-up and assessment of the choice made to ascertain the mindset of the subsequent purchase. Before making a purchase, a consumer must make a series of decisions that are based on his or her willingness to satisfy needs. The buyer should decide where to shop, what brand and model they want, how many items they want to buy, when they want to buy them, how much they want to spend, and how they want to pay for them (Hanaysha, 2018). One benefit of online purchases is that customers may visit owner's store whenever they want because it is open around-the-clock. Understanding the variables that affect consumers' decisions to make purchases online can help businesses forge close bonds with their clientele. To create and implement e-commerce strategies that will help it reach its long-term objectives, such as building strong relationships and winning over customers, purchase decision criteria are also helpful (Hidayat et al., 2021).

## 2.6. Customer Satisfaction

According to Udo et al. (2010), customer satisfaction is a sign of what customers believe about the likelihood that a service will make them feel good. Another study claims that customer satisfaction is a consequence of the customer experiences during the purchasing process and plays an important role in affecting the future behavior of customers, such as online repurchase intention and loyalty (Pereira et al., 2016). A satisfied online customer would likely shop again and recommend the online retailers to others, while a dissatisfied customer would leave his online retailers with or without any complaints (Pereira et al., 2017). Customer satisfaction is a vital key to enhancing customer retention, long-term growth, and purchase intention (Handoyo & Mani,

2021). Due to the long-term advantages of having satisfied customers, such as favorable word-of-mouth commentary, customer loyalty, and sustainable profitability, satisfying customers is one of the ultimate aims that service organizations seek to achieve (El-Adly, 2019). When customer satisfaction is achieved, it could create customer loyalty (Rita et al., 2019). Customer satisfaction needs to be prioritized in order for businesses to succeed consistently over the long term. In other words, customer satisfaction can only be attained when business performance exceeds expectations (Fida et al., 2020).

### 2.7. Brand Loyalty

Brand loyalty, according to Ebrahim (2020), is a fervent desire to continue purchasing a brand in the future, regardless of external circumstances. According to this concept, loyalty mindset leads to significantly higher brand value, whereas loyalty action tends to lead to high market

share (Ebrahim, 2020). On the other hand, brand loyalty is defined by Esmacilpour (2015) as a consumer's commitment to a brand even when the brand alters the price of the goods or the product's attributes. Because they think the brand is superior to the alternatives, loyal customers have a strong devotion to it. Consumers' ideas, attitudes, and intention structures for a specific brand have been used to describe brand loyalty (Esmacilpour, 2015). Building powerful and positive brands typically results in customers favoring a specific brand, which may eventually result in brand loyalty. A strong link between a customer and a brand constitutes loyalty. Businesses that have brand-loyal customers have an advantage in the market (Shin et al., 2019).

### 2.8. Previous Research

Below is the summary of several previous research or studies that relate the variables in this study:

**Table 1:** Summary of Previous Research

Source	Research Objectives	Main Findings
Patel et al. (2020)	Investigated the effect of mobile shopping app interface quality on customer purchase intention.	The finding implies that the quality of the user interface in mobile shopping apps influences purchase intention.
Chou et al. (2013)	Investigated the impact of online customer review configurations on customers purchase decision.	Customers purchase decision is influenced by the quantity of online customer reviews only when the price level is high.
Kim & Song (2020)	Investigated and evaluated a model that connects customers' perceived credibility of a restaurant's competency, perceived competence, perceived authenticity, and purchase intention.	The perceived credibility of authenticity claims is influenced by the authenticator of those claims and the type of restaurant ownership. Additionally, through restaurant competency and created authenticity, the perceived credibility of authenticity claims indirectly affects customers purchase intention to eat out.
Osei-Frimpong et al. (2019)	This study examines how celebrity endorsement affects consumer purchase intention or views in a developing market, as well as how bad publicity might be moderated.	The results show that a celebrity endorser's influence on consumers' perceptions of quality, purchase intentions, and brand loyalty is beneficial when they have traits like attractiveness, trustworthiness, and familiarity. Negative news about a celebrity endorser, however, had no moderate impact on consumer purchase intentions.
Hossain et al. (2018)	This study's objective is to assess how quick response (QR) codes affect customer satisfaction and purchase decisions in the context of online shopping based on perceived flow.	This study demonstrated that QR codes had a significant impact on purchase decision and customer satisfaction. The research in this paper supported the notion that QR codes affect perceived flow, which in turn affects online shoppers' satisfaction and their decision to make an online purchase.
Javed et al. (2021)	Investigated the interaction effect of social trust on the relationship between customers' satisfaction and brand loyalty in addition to evaluating the combined effects of drivers and consequences of customers' satisfaction, particularly in quick-meal restaurants.	The results show that restaurant stimuli, such as cuisine, service, atmosphere, location, price, and food variety, have significant effects on customer satisfaction and, ultimately, brand loyalty. Social trust strongly influences how customers' satisfaction and brand loyalty are related.

## 3. Hypothesis Development

There are various variables that can affect online purchase decision, customer satisfaction, and brand loyalty. However, this study only focused on a few variables with criteria of having a positive effect on the intervening and dependent variables. Several independent variables used in this study are mobile shopping ( $X_1$ ), customer review ( $X_2$ ), perceived credibility ( $X_3$ ), and Korean celebrity

endorsement ( $X_4$ ). While the intervening variable used is online purchase decision ( $Z$ ), and the dependent variables are customer satisfaction ( $Y_1$ ) and brand loyalty ( $Y_2$ ). An independent variable is one that influences the dependent variable either positively or negatively. Then, the dependent variable is the variable of primary interest for research and is influenced by the independent variable. Furthermore, the intervening variable is the variable that surfaces between the time the independent variable starts operating to influence

the dependent variable. The intervening variable helps to conceptualize and explain the influence of the independent variable on the dependent variable (Sekaran & Bougie, 2016).

A hypothesis is a tentative statement, which is testable and predicts what is expected to be found in the empirical data of a study (Sekaran & Bougie, 2016). In this study, hypothesis testing, processing, and analysis of the collected data were undertaken using the PLS or Partial Least Square statistical method by the SmartPLS application program version 3.0. The reason for using PLS is the advantages of this software compared to other software. PLS does not require certain distribution assumptions for parameter estimation. Therefore, it does not require parametric methods for testing or estimating significance (Chin, 1998). Based on the literature review and research model in figure 1, the following are the hypothesis in this study:

- H<sub>1</sub>:** Mobile Shopping positively affects Online Purchase Decision.
- H<sub>2</sub>:** Customer Review positively affects Online Purchase Decision.
- H<sub>3</sub>:** Perceived Credibility positively affects Online Purchase Decision.
- H<sub>4</sub>:** Korean Celebrity Endorsement positively affects Online Purchase Decision.
- H<sub>5</sub>:** Online Purchase Decision positively affects Customer Satisfaction.
- H<sub>6</sub>:** Customer Satisfaction positively affects Brand Loyalty.

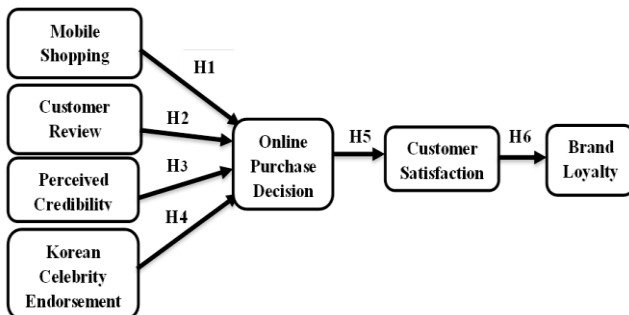


Figure 1: Research Model

## 4. Methodology

The paradigm used in this research is Positivism. The type of research was explanatory quantitative research. Explanatory research was used to examine whether or not one variable causes another variable to change (Sekaran & Bougie, 2016). Specifically, this study used explanatory

research to examine the causal relationship between the independent variable and the dependent variable.

Then, the research method used was the survey. This method was used to provide a numeric or quantitative description of attitudes, trends, or opinions of a population by studying a sample of that population (Creswell, 2009). The data collection technique used was a questionnaire in the Google form that respondents could fill out easily and quickly. A questionnaire is a preformulated written set of questions to which respondents record their answers (Sekaran & Bougie, 2016). This study also employed cross-sectional data collection where data was collected once.

Furthermore, the sampling technique used was the non-probability sampling technique. The non-probability sampling technique is the sampling technique in which the chance or probability of each sample to be selected is unknown (Rahi, 2017). The non-probability sampling technique used, in particular, was purposive. The purposive sampling technique is confined to a specific group because they have the desired information or conform to specific predetermined criteria (Sekaran & Bougie, 2016). Specific criteria as samples in this study were customers or users of the Tokopedia e-commerce application in the Jakarta area.

The population in this study were customers or users of e-commerce applications in the Jakarta area. The population can be defined as all people or data that the researcher wishes to understand by conducting research (Rahi, 2017). The samples were confined to customers or users of the Tokopedia e-commerce application in the Jakarta area. A sample is defined as the member selected based on all elements of the population (Sekaran & Bougie, 2016). Due to the unknown population in this study, the Lemeshow formula was used to determine the number of samples. Based on the calculation of the Lemeshow formula, the number of samples used was 385 people. Respondents voluntarily answered questionnaires in the Google form distributed through social media, such as Instagram, Facebook, Twitter, Line, and Whatsapp.

### 4.1. Scale of Measurement

There are a total of seven variables in this study including mobile shopping ( $X_1$ ), customer review ( $X_2$ ), perceived credibility ( $X_3$ ), Korean celebrity endorsement ( $X_4$ ), online purchase decision ( $Z$ ), customer satisfaction ( $Y_1$ ) and brand loyalty ( $Y_2$ ). These variables were examined using SmartPLS version 3.0. The scale in this study was taken from previous literature and published research. Responses to each statement in the questionnaire were measured using a Likert scale. This measurement scale was divided into 5 points: 1. Strongly disagree; 2. Disagree; 3. Neutral; 4. Agree, and; 5. Strongly agree.

**Table 2:** Variable Measurement Indicators

Variables	Measurement Indicators Items	Sources
Mobile Shopping	Tokopedia always provides adequate information. It is easy to find the desired product on Tokopedia. The product classification on Tokopedia is very clear. Tokopedia provides customized customer service.	Patel et al. (2020)
Customer Review	Customers often read other customer reviews to find out what other people think about a product on Tokopedia. To make sure customers buy the right product on Tokopedia, customers often read other customer reviews. Customers often collect information from other customer reviews to help them choose the right product on Tokopedia. When customers buy a product on Tokopedia, other customer reviews make them confident in buying the product.	Dwidienawati et al. (2020)
Perceived Credibility	Tokopedia provides real information. Tokopedia provides accurate information. Tokopedia has trustworthy credibility.	Fang (2014), Cheung et al. (2014)
Korean Celebrity Endorsement	After seeing Korean celebrity endorsement, customers are interested in shopping at Tokopedia. Korean celebrity endorsement gave customers a positive impression of Tokopedia. Korean celebrity endorsement makes customers believe in shopping at Tokopedia. Korean celebrity endorsement makes customers see the value of shopping at Tokopedia. Korean celebrity endorsement attracted customers attention to shop at Tokopedia.	Cheah et al. (2019)
Online Purchase Decision	Customers are happy with their decision to buy products at Tokopedia. Customers would positively recommend Tokopedia to others. Customers often buy products on Tokopedia. Customers intend to buy more products at Tokopedia in the future. Overall, Customers are satisfied with purchasing products at Tokopedia.	Hanaysha (2018)
Customer Satisfaction	Customers feel satisfied shopping at Tokopedia. Tokopedia is an ideal shopping place for Customers. Tokopedia always fulfils customers's needs.	Rita et al. (2019)
Brand Loyalty	Customers intend to shop again at Tokopedia in the near future. Customers will actively look for the product they need on Tokopedia. Customers intend to repurchase various products from Tokopedia.	Esmailpour (2015)

## 5. Results

### 5.1. Descriptive Information

Of the 385 respondents who participated in this survey, it was found that 70.9% of the respondents were women, and 29.1% were men. Furthermore, 51.7% of respondents were aged 19-22 years, 37.7% were 23-26 years, 7.8% were over 26 years, and the remaining 2.9% were aged 15-18. Based on the education level, 48.6% of the respondents were Senior High School/equivalent graduates, 44.2% were undergraduates, 4.9% were diplomas, and the remaining 2.3% were postgraduates. Based on the profession, 52.2% of respondents were students, 24.4% of respondents worked as private employees, 13.5% were entrepreneurs, 4.4% were civil servants, 2.3% were unemployed, and 3.2% have professions spread across various fields such as legal consultants, traders, bloggers, freelancers, insurance agents, and part-timers. Based on the frequency of shopping at Tokopedia, 44.4% of respondents occasionally shopped, 38.4% frequently shopped, 10.1% rarely shopped, and the remaining 7% very frequently shopped at Tokopedia.

### 5.2. Evaluation of Measurement (Outer) Model

#### 5.2.1. Validity Test

Validity tests how well an instrument that is developed measures a particular concept intended to measure. The tests aim to ensure scientific research (Sekaran & Bougie, 2016). Moreover, there is convergent and discriminant validity in Partial Least Square-Structural Equation Modeling (PLS-SEM) (Sekaran & Bougie, 2016). In measuring the convergent validity value, it was used the Average Variance Extracted (AVE) and Loading Factor analysis. In an adequate model, the AVE value should be greater than 0.5 (Garson, 2016). While in an adequate Loading Factor model, individual indicators are declared valid if they have a correlation coefficient greater than 0.7 (Garson, 2016). However, it can still be valid if it has correlation coefficients of 0.5 to 0.6 (Garson, 2016).

Based on Table 3 regarding the results of the Average Variance Extracted (AVE) analysis, it can be concluded that AVE coefficients in each variable are greater than 0.5. Therefore, each variable is considered valid based on the results of the Average Variance Extracted (AVE) analysis.

**Table 3:** The Results of Average Variance Extracted (AVE) Analysis

Variables	Average Variance Extracted (AVE)
Mobile Shopping	0.537
Customer Review	0.589
Perceived Credibility	0.684
Korean Celebrity Endorsement	0.838
Online Purchase Decision	0.597
Customer Satisfaction	0.687
Brand Loyalty	0.747

Source: Data Processing Results (2022).

Based on Table 4, the results of the factor loading analysis, it can be concluded that the loading factor value for each indicator is greater than 0.7. Therefore, based on the results of the Loading Factor analysis, each variable is classified as valid.

**Table 4:** The Results of Factor Loading Analysis

Code	MS (X <sub>1</sub> )	CR (X <sub>2</sub> )	PC (X <sub>3</sub> )	KCE (X <sub>4</sub> )	OPD (Z)	CS (Y <sub>1</sub> )	BL (Y <sub>2</sub> )
MS1	0.763						
MS2	0.701						
MS3	0.760						
MS4	0.705						
CR1		0.731					
CR2		0.801					
CR3		0.770					
CR4		0.764					
PC1			0.853				
PC2			0.832				
PC3			0.794				
KCE1				0.903			
KCE2				0.905			
KCE3				0.932			
KCE4				0.918			
KCE5				0.917			
OPD1					0.810		
OPD2					0.741		
OPD3					0.735		
OPD4					0.815		
OPD5					0.756		
CS1						0.813	
CS2						0.861	
CS3						0.811	
BL1							0.847
BL2							0.854
BL3							0.892

Source: Data Processing Results (2022).

Note: MS = Mobile Shopping, CR = Customer Review, PC = Perceived Credibility, KCE = Korean Celebrity Endorsement, OPD = Online Purchase Decision, CS = Customer Satisfaction, BL = Brand Loyalty

Furthermore, Heterotrait-Monotrait Ratio (HTMT) and Fornell-Larcker Criterion approaches can be used to assess the discriminant validity value. In an adequate HTMT model, the heterotrait correlation should be less than the monotrait correlation, meaning that the Heterotrait-Monotrait ratio should be less than 1 (Garson, 2016). In an adequate Fornell-Larcker Criterion model, the square root of AVE for any latent variable should be greater than its correlation with any

other latent variable (Garson, 2016).

Based on Table 5 of the results of the Heterotrait-Monotrait Ratio (HTMT) analysis, it can be concluded that the Heterotrait-Monotrait Ratio (HTMT) value contained in each variable is less than 1. Therefore, each variable is classified as valid based on the Heterotrait-Monotrait Ratio (HTMT) analysis.

**Table 5:** The Results of Heterotrait-Monotrait Ratio (HTMT) Analysis

Code	MS (X <sub>1</sub> )	CR (X <sub>2</sub> )	PC (X <sub>3</sub> )	KCE (X <sub>4</sub> )	OPD (Z)	CS(Y <sub>1</sub> )	BL (Y <sub>2</sub> )
MS (X <sub>1</sub> )							
CR (X <sub>2</sub> )	0.537						
PC (X <sub>3</sub> )	0.760	0.466					
KCE (X <sub>4</sub> )	0.507	0.082	0.482				
OPD (Z)	0.705	0.634	0.733	0.251			
CS (Y <sub>1</sub> )	0.776	0.492	0.684	0.275	0.925		
BL (Y <sub>2</sub> )	0.656	0.400	0.591	0.282	0.852	0.834	

Source: Data Processing Results (2022).

Based on Table 6 about the results of Fornell-Larcker Criterion analysis, it can be concluded that the square root of AVE for each construct is greater than its correlation with

another construct. Therefore, based on the results of the Fornell-Larcker Criterion analysis, each variable is considered valid.

**Table 6:** The Results of Fornell-Larcker Criterion Analysis

Code	MS (X <sub>1</sub> )	CR (X <sub>2</sub> )	PC (X <sub>3</sub> )	KCE (X <sub>4</sub> )	OPD (Z)	CS(Y <sub>1</sub> )	BL (Y <sub>2</sub> )
MS (X <sub>1</sub> )	0.733						
CR (X <sub>2</sub> )	0.397	0.767					
PC (X <sub>3</sub> )	0.565	0.359	0.827				
KCE (X <sub>4</sub> )	0.425	0.066	0.415	0.915			
OPD (Z)	0.546	0.511	0.588	0.224	0.772		
CS (Y <sub>1</sub> )	0.578	0.385	0.529	0.235	0.746	0.829	
BL (Y <sub>2</sub> )	0.510	0.327	0.476	0.250	0.709	0.670	0.864

Source: Data Processing Results (2022).

### 5.2.2. Reliability Test

A reliability test is a test of how consistently a measuring instrument measures a particular concept it is measuring (Sekaran & Bougie, 2016). The reliability test also aims to ensure the research is scientific (Sekaran & Bougie, 2016). In assessing the reliability value, Cronbach's alpha and composite reliability approaches can be used. In an adequate model, the minimum acceptable value of Cronbach's alpha is 0.7 (Garson, 2016). Then, in an adequate model, the composite reliability value should be greater than 0.7 (Garson, 2016). Based on Table 6, the results of the analysis of Cronbach's alpha and composite reliability, it can be concluded that the value of Cronbach's alpha and composite reliability contained in each variable is greater than 0.7. Therefore, it shows that the measuring instrument of each variable is classified as reliable.

**Table 7:** The Results of Cronbach's Alpha and Composite Reliability Analysis

Variables	Cronbach's Alpha	Composite Reliability
Mobile Shopping	0.713	0.823
Customer Review	0.767	0.851
Perceived Credibility	0.768	0.866
Korean Celebrity Endorsement	0.952	0.963
Online Purchase Decision	0.830	0.881
Customer Satisfaction	0.772	0.868
Brand Loyalty	0.831	0.899

Source: Data Processing Results (2022).

### 5.3. Evaluation of Structural (Inner) Model

#### 5.3.1. Coefficient Determination (R<sup>2</sup>) Test

In assessing the structural model using Partial Least Square (PLS), it begins by looking at the R<sup>2</sup> value for each endogenous latent variable as the predictive power of the structural model. Changes in the R<sup>2</sup> values can be used in order to explain the effect of an exogenous latent variable on an endogenous latent variable and whether it has a substantive effect. The R<sup>2</sup> value of 0.67 can be interpreted as the model is strong, R<sup>2</sup> value of 0.33 can be interpreted as a moderate model, and an R<sup>2</sup> value of 0.19 can be interpreted as a weak model (Garson, 2016).

Based on the coefficient of determination (R<sup>2</sup>) test used to predict the strength of a model, it can be concluded that the coefficient of determination (R<sup>2</sup>) value of 0.484 is interpreted that the online purchase decision variable of 48.4% can be explained by the variables of mobile shopping, customer review, perceived credibility, Korean celebrity endorsement, whereas the remaining 51.6% is explained by other variables. The value of R<sup>2</sup> shows that the model is moderate. Then, the value of the coefficient of determination (R<sup>2</sup>) of 0.556 is interpreted as the customer satisfaction variable can be explained by 55.6% of the variables of mobile shopping, customer review, perceived credibility, Korean celebrity endorsement, online purchase decision, whereas the remaining 44.4% is explained by other variables. R<sup>2</sup> values show that the model is moderate. Furthermore, the value of the coefficient of determination (R<sup>2</sup>) of 0.450 is

interpreted that the brand loyalty variable can be explained by 45% by the variables of mobile shopping, customer review, perceived credibility, Korean celebrity endorsement, online purchase decision, customer satisfaction, while the remaining 55% is explained by the other variables. R<sup>2</sup> values show that the model is moderate.

**Table 8:** The Test Results of Coefficient of determination (R<sup>2</sup>)

Variables	Coefficient of Determination (R <sup>2</sup> )
Online Purchase Decision	0.484
Customer Satisfaction	0.556
Brand Loyalty	0.450

Source: Data Processing Results (2022).

**5.3.2. Predictive Relevance (Q<sup>2</sup>) Test**

The predictive relevance (Q<sup>2</sup>) test is used to determine the predictive power using the blindfolding procedure. Q<sup>2</sup> value greater than 0 indicates that the model has predictive relevance. By the same token, Q<sup>2</sup> value of less than 0 can indicate that the model lacks predictive relevance. If the value obtained is 0.02, it can be interpreted that the model is weak. If the value is 0.15, it can be interpreted that the model is moderate, and if the value is 0.35, it can be interpreted that the model is strong (Garson, 2016). Based on the predictive relevance (Q<sup>2</sup>) test, which is used when to obtain the predictive power using the blindfolding procedure, it can be concluded that the predictive relevance (Q<sup>2</sup>) values of 0.280, 0.371, and 0.327 indicate that the model has predictive relevance because the Q<sup>2</sup> value is greater than 0. Q<sup>2</sup> of 0.280 and 0.327 indicates that the model is moderate, and the value of Q<sup>2</sup> of 0.371 indicates that the model is strong.

**Table 9:** The Test Results of Predictive Relevance (Q<sup>2</sup>)

Variables	Predictive Relevance (Q <sup>2</sup> )
Online Purchase Decision	0.280
Customer Satisfaction	0.371
Brand Loyalty	0.327

Source: Data Processing Results (2022).

**5.3.3. Effect Size (F<sup>2</sup>) Test**

The effect size (F<sup>2</sup>) test is used to determine how good the model is or the goodness of the model. The greater the F<sup>2</sup> value, the stronger the correlation between variables. The F<sup>2</sup> value of 0.02 indicates that the model has a weak effect. The F<sup>2</sup> value of 0.15 indicates a moderate effect, and the F<sup>2</sup> value of 0.35 is a strong effect (Garson, 2016). Based on the effect size (F<sup>2</sup>) test, which was used to determine the strength of correlation between variables, it can be concluded that the F<sup>2</sup> values of 0.069, 0.124, and 0.004 are

interpreted that the model shows a weak effect. Then, the effect size (F<sup>2</sup>) value of 0.160 is interpreted as the model shows a moderate effect. Then, the F<sup>2</sup> values of 1.253 and 0.817 are interpreted that the model shows a strong effect.

**Table 10:** The Test Results of Effect Size (F<sup>2</sup>)

Variables	Effect Size (F <sup>2</sup> )
Mobile Shopping → Online Purchase Decision	0.069
Customer Review → Online Purchase Decision	0.124
Perceived Credibility → Online Purchase Decision	0.160
Korean Celebrity Endorsement → Online Purchase Decision	0.004
Online Purchase Decision → Customer Satisfaction	1.253
Customer Satisfaction → Brand Loyalty	0.817

Source: Data Processing Results (2022).

**5.3.4. Path Coefficient Test and Hypothesis Test (t-statistics)**

The Path Coefficients are used when you want to obtain the hypothesis testing results. Given standardization, the path coefficient weights vary from -1 to +1. Weights closest to +1 reflect a positive effect, then weights closest to -1 Reflect a negative effect (Garson, 2016). Based on the path coefficient test used to determine the correlation between the independent variables and the dependent variable, whether the correlation reflects a positive or negative, it can be concluded that online purchase decision is a variable that has the largest coefficient and has a positive direction that affects the customer satisfaction variable by 0.746. Then, the customer satisfaction variable has the second-largest coefficient and has a positive direction, which affects the brand loyalty variable of 0.670. Then, perceived credibility is a variable with the third-largest coefficient and has a positive direction, which affects the online purchase decision variable of 0.367. Furthermore, the customer review variable has the fourth-largest coefficient and positive direction, affecting the online purchase decision variable by 0.284. Then, mobile shopping is a variable with the fifth largest coefficient and has a positive direction which affects the online purchase decision variable of 0.247. However, the Korean celebrity endorsement variable has the smallest coefficient and has a negative direction of -0.052, which does not affect the online purchase decision variable.

Model evaluation is used by looking at the significance level to determine the effect between variables with the bootstrapping procedure. If the t-statistics values are greater than 1.96 and the p-values are less than 0.05, it can be interpreted that the hypothesis is supported and has a direction of positive correlation (Garson, 2016).

**Table 11:** Path Coefficient Test and Hypothesis (t-statistics) Testing Results

Hypothesis	Path Coefficient	t-statistics	p-value	Description
H <sub>1</sub> : Mobile Shopping → Online Purchase Decision	0.247	4.748	0.000	Hypothesis is supported
H <sub>2</sub> : Customer Review → Online Purchase Decision	0.284	5.843	0.000	Hypothesis is supported
H <sub>3</sub> : Perceived Credibility → Online Purchase Decision	0.367	7.471	0.000	Hypothesis is supported
H <sub>4</sub> : Korean Celebrity Endorsement → Online Purchase Decision	-0.052	1.203	0.229	Hypothesis is not supported
H <sub>5</sub> : Online Purchase Decision → Customer Satisfaction	0.746	22.997	0.000	Hypothesis is supported
H <sub>6</sub> : Customer Satisfaction → Brand Loyalty	0.670	15.774	0.000	Hypothesis is supported

Source: Data Processing Results (2022).

Based on Table 11 on the results of path coefficient test and hypothesis testing (t-statistics), the results of the test can be concluded that the first hypothesis, the second hypothesis, the third hypothesis, the fifth hypothesis, and the sixth hypothesis are supported. Meanwhile, the fourth hypothesis is not supported. The detailed explanation of the hypothesis testing results are explained furthermore in the discussion section.

## 6. Discussion

The results of testing the first hypothesis (H<sub>1</sub>) prove that Mobile Shopping positively affects Online Purchase Decision. This is proven by the t-statistics value of 4.748, greater than 1.96, and the p-value of 0.000, less than 0.05. Therefore, it can be concluded that the first hypothesis (H<sub>1</sub>) is supported. This result conforms to a previous study by Patel et al. (2020). In this study, Mobile Shopping is important and positively affects Online Purchase Decision at Tokopedia because Tokopedia users or customers feel that Tokopedia always provides the latest and adequate information. As a result, the customers are greatly helped and facilitated in terms of online information, finding desired products as the product classification on Tokopedia is very unambiguous and detailed, personal customer service, and shopping at Tokopedia can be done anytime, anywhere.

The results of testing the second hypothesis (H<sub>2</sub>) prove that Customer Review positively affects Online Purchase Decision. This is proven by the t-statistics value of 5.843, greater than 1.96, and the p-value is less than 0.05, which is 0.000. Therefore, it can be concluded that the second hypothesis (H<sub>2</sub>) is supported. The results of testing this hypothesis align with the results of previous research conducted by Chou et al. (2013) and Wang et al. (2020). In this study, Customer Review is important and positively affects Online Purchase Decision at Tokopedia because users or customers often read other customer reviews to find out what other people think about a product on Tokopedia and to make sure they buy the right product. Thus, collecting information from customer reviews can help the customers and make them more confident in choosing the right product

on Tokopedia.

Based on the third hypothesis (H<sub>3</sub>) testing results, it is proven that Perceived Credibility positively affects Online Purchase Decision, proven by the t-statistics value is 7.471, greater than 1.96, and the p-value is 0.000, less than 0.05. Therefore, it can be concluded that the third hypothesis (H<sub>3</sub>) is supported. This result is in line with the previous research results conducted by Kim and Song (2020). In this study, Perceived Credibility is important and positively affects Online Purchase Decision at Tokopedia because Tokopedia users or customers perceive Tokopedia as one of the leaders of the largest and leading e-commerce platforms in Indonesia, which has good credibility and reputation and is reliable as Tokopedia, is a company engaged in e-commerce, always provides actual, accurate, and fact-based information for its users.

Based on the fourth hypothesis (H<sub>4</sub>) testing results, it is proven that Korean Celebrity Endorsement does not have any positive effect on Online Purchase Decision. This is proven by the t-statistics value of 1.203, less than 1.96, and the p-value is 0.229, greater than 0.05. Therefore, it can be concluded that the fourth hypothesis (H<sub>4</sub>) is not supported. This result contradicts the previous research conducted by Osei-Frimpong et al. (2019). In this study, Korean Celebrity Endorsement does not positively affect Online Purchase Decision at Tokopedia because Tokopedia's users or customers do not feel that the positive image of Korean Celebrity Endorsement affects their perspective on Tokopedia, which makes them interested, trusting, and seeing the value of shopping in Tokopedia because it already has a positive image in their sights since the beginning.

The fifth hypothesis (H<sub>5</sub>) testing results prove that Online Purchase Decision positively affects Customer Satisfaction, proven by the t-statistics value 22.997, greater than 1.96, and the p-value is 0.000, less than 0.05. Thus, it can be concluded that the fifth hypothesis (H<sub>5</sub>) is supported. The results of this hypothesis testing align with the results of previous research conducted by Hossain et al. (2018). In this study, Online Purchase Decision is important and positively affects Customer Satisfaction at Tokopedia because Tokopedia users or customers feel happy with their decision to buy products at Tokopedia. Therefore, Tokopedia customers intend to buy products at Tokopedia

more often in the future and will positively recommend Tokopedia to others. Overall, Tokopedia customers are satisfied with purchasing products at Tokopedia.

Based on the results of the sixth hypothesis ( $H_6$ ) testing, it is proven that Customer Satisfaction positively affects Brand Loyalty, proven by the t-statistics value is 15.774, which is greater than 1.96, and the p-value is 0.000, less than 0.05. Thus, it can be concluded that the sixth hypothesis ( $H_6$ ) is supported. The results of testing this hypothesis are in line with the results of previous research conducted by Javed et al. (2021). In this study, Customer Satisfaction is important and positively affects Brand Loyalty at Tokopedia because Tokopedia users or customers are satisfied shopping at Tokopedia and feel that Tokopedia is an ideal shopping site for them since it always fulfills their needs, so Tokopedia customers are committed and intend to shop again for various kinds of products in the near-future and actively look for the desired products at Tokopedia.

## 7. Conclusions

This study aims to empirically examine whether mobile shopping, customer review, perceived credibility, and Korean celebrity endorsement have positive effects on online purchase decision of Tokopedia customers in Jakarta; whether online purchase decision positively affects customer satisfaction of Tokopedia customers in Jakarta; and whether customer satisfaction has a positive effect on brand loyalty of Tokopedia customers in Jakarta. Respondents in this study were 385 Tokopedia customers who live in Jakarta. Hypothesis testing, processing, and data analysis were undertaken using the PLS or Partial Least Square statistical method using the SmartPLS version 3.0 application program.

Based on the results of the analysis and discussion described above, the conclusions that can be drawn from this research are that mobile shopping positively affects online purchase decision at Tokopedia in Jakarta, customer review positively affects online purchase decision at Tokopedia in Jakarta, perceived credibility positively affects online purchase decision at Tokopedia in Jakarta, Korean celebrity endorsement does not positively affect online purchase decision at Tokopedia in Jakarta, online purchase decision positively affects customer satisfaction at Tokopedia in Jakarta, and customer satisfaction positively affects brand loyalty at Tokopedia in Jakarta.

The implications of this study can provide significant contributions and benefits to the research literature. The theoretical implications of this study are providing academic contributions as an empirical research by examining the variable relationship complexity that affect online purchase decision, customer satisfaction, and brand loyalty on

Indonesia's biggest e-commerce Tokopedia, such as mobile shopping, customer review, perceived credibility, and Korean celebrity endorsement in specific, thereby increasing online purchase decision customers that lead to customer satisfaction and brand loyalty as the end goal. Meanwhile, the practical implication of this study is to contribute to the development of e-commerce business in the industry and to provide useful insights to e-commerce players. It is expected that players in the e-commerce industry can follow the success of Tokopedia e-commerce by identifying and providing various factors that could create customer online purchase decision in building customer satisfaction, and increasing customer brand loyalty in order to contribute to the development of the e-commerce industry in Indonesia.

There are several limitations to this study. First, limitations in terms of cost, effort, and a short time have resulted in researchers limiting research subjects to Tokopedia users or customers who only live in Jakarta, with the variables investigated limited to mobile shopping, customer review, perceived credibility, Korean celebrity endorsement, online purchase decision, customer satisfaction, and brand loyalty. Therefore, further research in the future is recommended to expand the sampling area's scope to reach out to Tokopedia users who live outside Jakarta, for example, throughout Indonesia, so that it can complement previous research due to the broader diversity of respondents' characteristics. Further research is also suggested to add other relevant research variables.

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