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Customer Loyalty as an Impact of Perceived Usefulness to Grab Users, Mediated by Customer Satisfaction and Moderated by Perceived Ease of Use

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ABSTRACT

The development of Internet users in Indonesia increases quite rapidly each year. This phenomenon makes new online-based businesses increase. Even when the data show that Grab has got the market share in Indonesia, business competition is ubiquitous. The research analyzed the impact of perceived usefulness and customer satisfaction on customer loyalty in Grab users. It also studied the impact of perceived usefulness on customer satisfaction and the customer satisfaction (moderated by perceived ease of use) as a mediator between perceived usefulness and customer loyalty. Perceived usefulness and perceived ease of use were dimensions of the Technological Acceptance Model (TAM), which influenced the user's choice of application usage. The phenomenon of interest in the research was Grab, as an online-based business application on smartphones. The research applied quantitative approach. About 204 samples from 250 respondents were obtained using purposive sampling with questionnaires in Surabaya. The measurement used the 7-category of the Likert scale and adapted from the previous researches. For data analysis, the research used Hayes's PROCESS model 7, and the reliability and validity tests were also conducted. The results show that all hypotheses are supported. Perceived usefulness influences customer satisfaction and customer loyalty positively. Then, customer satisfaction and perceived ease of use can work well as the mediator and moderator. These results contribute to the strategy formulation for business sustainability by Grab or other online-based businesses.

Keywords: customer loyalty, perceived usefulness, Grab users, customer satisfaction, perceived ease-of-use

INTRODUCTION

The development of Internet users in Indonesia increases quite rapidly each year. In 2017, Internet users reached more than 143 million people (Asosiasi Penyelenggara Jasa Internet Indonesia, 2017). This phenomenon makes new online-based businesses increase. Various services are offered through smartphone applications. Grab is one of them. Grab is a transportation booking application such as bike-taxis or taxicabs through an application with a ride-sharing scheme. Until now, it has developed its service features such as food delivery, couriers, and others. Grab has expanded to eight countries in Southeast Asia and more than 200 cities in Indonesia (Grab, 2018). With this achievement, Grab has become a start-up company that receives the first Decacorn status in Southeast Asia with a valuation of over US$10 billion (Jeko, 2019). In Vietnam, it can outperform its competitors with a market share above 70% (Soenarso, 2019).

The research is conducted in Indonesia, which records tight competition between two on-demand service providers: Grab and Gojek. Gojek is a local online-based application in Indonesia with similar services to Grab. The contribution of the merchant affiliated in the platform to Indonesian Gross Domestic Product (GDP) is IDR 44,2 trillion for Gojek and IDR 48,9 trillion for Grab (Setyowati, 2019). Furthermore,

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according to ABI Research in 2018, Grab had 62% market share of ride-booking in Indonesia (Andriyanto, 2018). Despite its leading number, Grab still felt the need to compete further by investing IDR 91 trillion more (Annur, 2019).

The challenge for application business is the capability to provide benefits (usefulness) to its users (Schmitz, Bartsch, & Meyer, 2016). In addition to the benefits received, application users also consider the ease of use. Perceived usefulness and perceived ease of use are known as the dimensions of the Technology Acceptance Model (TAM) (Davis, 1989; Lanlan, Ahmi, & Popoola, 2019). A customer may not accept an application that is hard to use. For example, OLX, an application for buying and selling used goods, has been heavily criticized and flooded with users' one-star ratings after the application update has confused its users (Iskandar, 2017).

Even when the data show that Grab has got the market share in Indonesia (Soenarso, 2019), business competition is ubiquitous. Not only Grab focuses on business sustainability, but also the ambition to win the competition, as mentioned by its CEO, Anthony Tan (Annur, 2019). Thus, the research result may contribute to Grab and other online business platforms to formulate further business strategy. The expected result is customer satisfaction and loyalty from the perceived usefulness and ease of use of the application.

Perceived usefulness is how much people believe that using technology makes their productivity better. People will use the technology if they feel its benefits when they use it. Conversely, they will leave technology if they believe the technology is less useful. It is also explained that technology can meet the rules of perceived usefulness if technology can help activities complete faster, improve activity performance, increase productivity, make activities effective, simplify activities, and bring benefits for users (Davis, 1989).

In addition to perceived usefulness, another variable that is also important for someone to consider in choosing a technology or application is the perceived ease of use. Even though people believe that technology can provide benefits (usefulness), they do not necessarily believe that the technology is easy to use. Perceived ease of use is how much people believe that by using technology, they do not need to spend extra effort. Technology can meet the requirements of ease of use if the application is easy to learn; easy to obtain what is desired, clear and easy to understand in interacting (with users), flexible to operate, easy to become skilled, and overall easy to use (Davis, 1989). Previous research in studying the consequences of perceived usefulness and perceived ease of use finds that perceived usefulness and ease of use have a positive impact on user acceptance (Hussain, Mkpojiogu, & Yusof, 2016; Hussein, 2017; Joo, Park, & Lim, 2018; Manis & Choi, 2019; Yeou, 2016), e-payment adoption, (Acheampong *et al.,* 2017), and behavioral intention to adopt (Boonsiritomachai & Pitchayadejanant, 2019). Moreover, those dimensions also positively influence the willingness to use the technology (Priambodo & Prabawani, 2016).

Next, customer satisfaction is happiness or regret after comparing the suitability of performance with what users expect previously (Kotler & Keller, 2016). It is measured by the feeling that service or product performance, presentation or service features, and spatial or appearance are satisfying (Susanty & Kenny, 2015). It comes from the perception of the product quality. The customer will evaluate the performance of the used product. After evaluating the product quality, the positive perception impacts satisfaction (Fornell, Johnson, Anderson, Cha, & Bryant, 1996). TAM has perceived usefulness and perceived ease of use as the dimension (Davis, 1989). According to previous research, TAM has a positive influence on customer satisfaction (Cho, 2017). Similarly, separated as different variables, perceived usefulness and perceived ease of use positively influence customer satisfaction (Ghani, Rahi, Yasin, & Alnaser, 2017; Zhao, Chen, & Wang, 2016). Moreover, perceived usefulness has a positive influence on customer satisfaction (Mandasari & Giantari, 2017; Tandon, Kiran, & Sah, 2016; Tulodo & Solichin, 2019).

Customer loyalty is someone's loyalty to a particular product or service as indicated by buying behavior (Babin, Boles, & Griffin, 2015). If customer satisfaction is an attitude, customer loyalty can be defined based on buying behavior. Adapted from the measurements proposed by Susanty and Kenny (2015), loyal customers can be indicated if they recommend the product to others, reuse it, and never switch to another product even they experience problems. Previous research suggests that customer satisfaction has a positive influence on customer loyalty theoretically (Fornell *et al.,* 1996). Empirical research proves that customer satisfaction has a significant effect on customer loyalty (Ahrholdt, Gudergan, & Ringle, 2019; Ali, Kim, Li, & Jeon, 2018; Canalejo & Río, 2018; Meesala & Paul, 2018; Mittal, 2016; Rychalski & Hudson, 2017; Widjaja & Nugraha, 2016; Yoo & Park, 2016). Moreover, perceived usefulness positively influences customer loyalty (Daud, Farida, Andriyansah, & Razak, 2018; Hamid, Razak, Bakar, & Abdullah, 2016). Then, perceived ease of use also positively influences customer loyalty (Ozturk, Bilgihan, Nusair, & Okumus, 2016).

Based on the explanation, the researchers propose the following hypotheses:

H1 : perceived usefulness has a significant positive effect on customer satisfaction.

H2 : customer satisfaction has a significant positive effect on customer loyalty.

H3 : perceived usefulness has a significant positive effect on customer loyalty.

H4 : moderated by perceived ease of use, customer satisfaction has a significant positive effect as the mediator between perceived usefulness and customer loyalty.

Empirically, the research aims to analyze the influence of perceived usefulness and customer satisfaction on customer loyalty. It also analyzes the influence of perceived usefulness on customer satisfaction. Perceived ease of use is also studied as a moderating variable for the relationship between perceived usefulness and customer satisfaction. Furthermore, customer satisfaction as a mediating variable between perceived usefulness and customer loyalty is also examined. Despite the idea that perceived ease of use affects customer satisfaction, its moderating effect is still open to be studied. Thus, the theoretical gap in the research is to study the moderating effect of perceived ease of use in the relation between perceived usefulness and customer satisfaction. The research model can be seen in Figure 1.

METHODS

The research applies a quantitative approach. The population is the users of the Grab application in Surabaya. The used sampling technique is purposive sampling. Then, the questionnaires are distributed to 250 users. The measurement uses the 7-category of the Likert scale. In the research, the measurements are adapted from previous research. Perceived usefulness and ease of use are adapted from Davis (1989). Then, customer satisfaction and loyalty are from Susanty and Kenny (2015). All used measurements in the research are presented in Table 1.

To test the measurements, reliability and validity tests are conducted. The cut-off of the reliability test is when Cronbach's alpha is bigger than 0,7. Meanwhile,

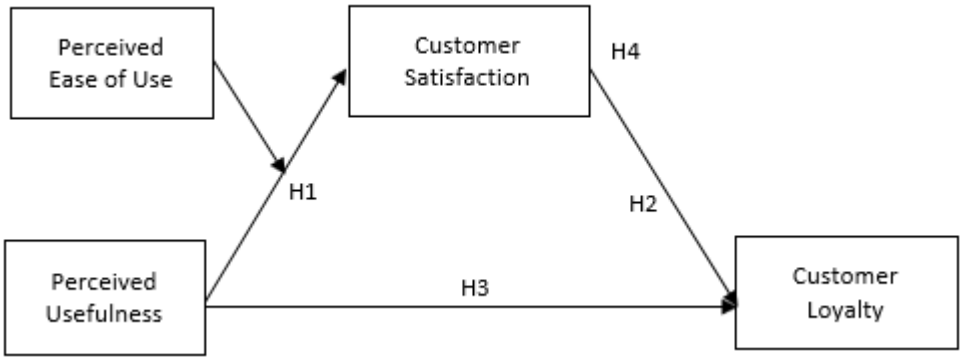

Figure 1 Research Model

Table 1 The Measurements in the Variables

PU1	Grab application makes me work faster.
PU2	Grab application makes me perform better.
PU3	Grab application makes me more productive.
PU4	Grab application makes my activity more effective.
PU5	Grab application makes my activities easier.
PU6	Grab application is very useful for my activities.
PE1	For me, it is easy to learn to operate the Grab application.
PE2	For me, it is easy to get the Grab application.
PE3	For me, it is easy to understand the Grab application.
PE4	For me, the Grab application is flexible to do various kinds of transactions.
PE5	For me, it is easy to be skilled in using the Grab application.
PE6	For me, it is easy to use the Grab application.
CS1	Overall, I am satisfied with the performance of the Grab application.
CS2	Overall, I am satisfied with the features of the Grab application.
CS3	Overall, I am satisfied with the appearance of the Grab application.
CL1	I will recommend the Grab application.
CL2	I will use the Grab application in the future.
CL3	I will stay to use the Grab application, even if there are other choices.

Note: perceived usefulness (PU), perceived ease of use (PE),
customer satisfaction (CE), customer loyalty (CL)

the validity test follows Pearson's correlation. The cut-off significance is smaller than 0,05 (Hair Jr., Black, Babin, & Anderson, 2014). The assumption is also tested for linearity, normality, and heteroscedasticity (Hair Jr. *et al.*, 2014; Hayes, 2018).

Furthermore, the hypothesis test uses Hayes's PROCESS model 7 (Hayes, 2013). It introduces Conditional Process Analysis as an analytical tool to understand the mechanism by which the effects of a variable with certain conditions (moderation) are transmitted to other variables. The advantage of this analysis tool is the ability to calculate models that involve moderation and mediation simultaneously (the single integrated analytical model in conditional process model). This calculation tool can obtain Coefficient, T, R^2, and F. Coefficient shows unstandardized regression coefficient (B) or the degree of the phenomenon exists in the population. T shows the significance of the Coefficient. R^2 or coefficient of determination shows the variance of the dependent variable explained by the independent variables. Meanwhile, F shows the significance of the model (Hair Jr. *et al.*, 2014; Hayes, 2015, 2018). T-test requires the significance value of $p < 0,05$. Meanwhile, the F-test needs a value of $p < 0,05$. Moreover, R^2 values range from $0 < R^2 < 1$.

The antecedent variable is perceived usefulness. The mediator variable is customer satisfaction for the relation between perceived usefulness and customer loyalty. Then, the dependent variable is customer loyalty. The perceived ease of use is a moderator variable in the relationship between perceived usefulness and customer satisfaction. The confidence interval is set at 95%, and bootstrap is at 5.000. The mean centering test is performed on perceived usefulness and ease of use to make the moderation variable (interaction term).

RESULTS AND DISCUSSIONS

After distributing 250 questionnaires, only 204 are returned. Table 2 presents the respondents' profile. It can be seen that most of them live in West Surabaya. Then, for age, they are mainly 20-24 years old. Most of them are students, followed by private employees, entrepreneurs, civil servants, and others.

The reliability test shows that Cronbach's alpha is 0,898 for perceived usefulness, 0,893 for perceived ease of use, 0,856 for customer satisfaction, and 0,965 for customer loyalty. Thus, all Cronbach's alpha values are bigger than 0,7. It means that all the measurements are reliable. Next, the validity test suggests the results are smaller than 0,05. Hence, all measurements are valid (Hair Jr. *et al.,* 2014).

Moreover, the assumption test also implies that all requirements are met. Then, the value of linearity is smaller than 0,05. The result of the normality test with Kolmogorov-Smirnov is 0,200 (> 0,05). It shows that residuals are normally distributed. Meanwhile, the heteroscedasticity test has a bigger significance than 0,05. It means there are no symptoms of heteroscedasticity in the regression model in the research.

Table 3 shows customer satisfaction as

Table 2 Respondents' Demographic Profile

Description		Percentage
Area of residence in Surabaya		
	Central Surabaya	17,2%
	North Surabaya	10,8%
	South Surabaya	17,6%
	East Surabaya	24%
	West Surabaya	30,4%
Age		
	< 20 years	14,7%
	20 – 24 years	59,3%
	25 – 29 years	16,2%
	> 30 years	9,8%
Occupation		
	Students	59,8%
	Private employees	18,6%
	Entrepreneurs	8,8%
	Civil servants	8,3%
	Others	4,5%

the dependent variable. Meanwhile, perceived usefulness is the independent variable (H1). It also presents perceived ease of use as the independent variable. Moreover, it shows the moderating variable (interaction between perceived ease of use with perceived usefulness). The regression coefficient in Table 3 and 4 shows that all hypotheses are accepted. It shows perceived usefulness has a significant positive effect on customer satisfaction (Coefficient = 0,3834, CI = 0,3093 to 0,4575, and p < 0,001). Thus, H1 is accepted. Similarly, Table 4 shows customer loyalty as the dependent variable. Perceived usefulness (H3) and customer satisfaction (H2) are the independent variables.

Table 4 shows customer satisfaction has a significant positive effect on customer loyalty (Coefficient = 0,4977, CI = 0,3236 to 0,6718, and p < 0,001). H2 is accepted. Next, perceived usefulness has a significant positive effect on customer loyalty (Coefficient = 0,2028, CI = 0,0412 to 0,3644, and p < 0,05). So, H3 is accepted. Meanwhile, H4 is tested using the Sobel test with T = 4,9323, SE = 0,0386, p < 0,001, and coefficient of indirect effect = 0,1908. H4 is accepted. Moreover, the R^2 of customer satisfaction in Table 3 is 76% with F(3,200) = 218,6017 and p < 0,001. Meanwhile, R^2 of customer loyalty in Table 4 is 37% with F(2,201) = 60,2042 and p < 0,001.

Following Hair Jr. *et al.* (2014), the R^2 value in Table 3 means perceived usefulness and ease of use explain 76% of the customer satisfaction. The remaining 24% is explained by other variables that are not studied in the research. Furthermore, the R2 value in Table 4 means perceived usefulness, customer satisfaction, and perceived ease of use explain 37% of the customer loyalty. The other 63% of the variance is explained by other variables.

Table 5 reports the role of perceived ease of

Table 3 Unstandardized Regression Coefficients Ordinary Least Square (OLS) with Confidence Interval (Standard Error in Parentheses)

	Customer Satisfaction					
	Coefficient (SE)		**T**	**P**	**95 % CI**	
Perceived Usefulness (X)	0,3834	(0,0376)	10,2030	0,0000	0,3093	0,4575
Perceived Ease of Use (W)	0,6396	(0,0456)	14,0122	0,0000	0,5496	0,7296
X × W	0,0526	(0,0261)	2,0175	0,0450	0,0012	0,1039
Constant	5,6758	(0,0315)	180,2371	0,0000	5,6137	5,7379
	R^2 = 0,7663					
	F(3,200) = 218,6017, p < 0,001					

Note: customer satisfaction is dependent variable. Perceived usefulness and perceived ease of use are Mean Centered for the interaction.

Table 4 Unstandardized Regression Coefficient Ordinary Least Square (OLS) with Confidence Interval (Standard Error in Parentheses).

	Customer Loyalty					
	Coefficient (SE)		**T**	**P**	**95 % CI**	
Perceived usefulness (X)	0,2028	(0,0820)	2,4743	0,0142	0,0412	0,3644
Customer Satisfaction	0,4977	(0,0883)	5,6360	0,0000	0,3236	0,6718
Constant	2,9977	(0,5059)	5,9252	0,0000	2,0001	3,9953
	R^2 = 0,3746					
	F(2,201) = 60,2042, p < 0,001					

Note: customer loyalty is dependent variable

use as the moderator between perceived usefulness and customer satisfaction. Following Hayes (2018), the conditional effect is when the moderating and mediating variables exist in the model. Hayes's PROCESS calculates the impact simultaneously. It shows the floodlight analysis of customer satisfaction with perceived usefulness as an independent variable moderated by perceived ease of use. The results show that the higher perceived ease of use is, the more effect of perceived usefulness is toward customer satisfaction. It proves that perceived ease of use positively moderates the relation of perceived usefulness and customer satisfaction.

Moreover, Table 6 reports the conditional effect of customer satisfaction, moderated by perceived ease of use, as the mediator between perceived usefulness and customer loyalty (H4). It shows the indirect effect of perceived usefulness toward customer loyalty, mediated by customer satisfaction and moderated by perceived ease of use. Tables 5 and 6 show three values of perceived ease of use as the moderator, which are standard deviation (-), standardized mean (0), and standard deviation (+).

The findings show that the higher perceived ease of use is, the higher the indirect effect of perceived usefulness which is mediated by customer satisfaction, on customer loyalty. The lower level and upper level confidence intervals are both on the positive side of zero. It means the correlations are positively significant. The finding supports H4 by following Hayes (2018) to use the conditional effect to analyze rather than using the Sobel test.

The results indicate that perceived usefulness has a significant positive effect on customer satisfaction. It can be interpreted that the higher the perceived usefulness of the Grab application will cause higher customer satisfaction. The perceived usefulness is measured by measurement from Davis (1989). The finding is in line with Fornell *et al.* (1996). Customer satisfaction comes from the perception of the product quality itself. The customers evaluate the performance of the used product. Once they perceive the good quality, they will be satisfied. The research also supports the previous research by Cho (2017), Mandasari and Giantari (2017), and Tandon *et al.* (2016). They found that the perceived usefulness could affect the level of customer satisfaction towards the obtained services. It also supports the empirical finding that perceived usefulness has a positive impact on technology acceptance (Hussain *et al.*, 2016; Hussein, 2017; Joo *et al.,* 2018; Manis & Choi, 2019; Yeou, 2016), adoption (Acheampong *et al.,* 2017), intention to adopt (Boonsiritomachai & Pitchayadejanant, 2019), and willingness to use a product (Priambodo & Prabawani, 2016). The results show that the obtained benefits influence the respondents' satisfaction level in using the Grab application.

Similarly, customer satisfaction influences customer loyalty positively and significantly. It means that the higher the customer satisfaction is, the higher the customer loyalty in Grab application will be. The finding supports Fornell *et al.* (1996), who said that customer satisfaction positively impacted customer loyalty. Then, the result is also in line with previous research conducted by Widjaja and Nugraha (2016), Ali *et al.* (2018), Mittal (2016), Rychalski and Hudson (2017), Yoo and Park (2016), Meesala and Paul (2018), Canalejo and Río (2018), and Ahrholdt *et al.* (2019). Users' satisfaction will bring their loyalty.

Furthermore, the result indicates that perceived

Table 5 Conditional Effect of the Perceived Usefulness
at Values of the Perceived Ease of Use as The Moderator

Perceived Ease of Use	Effect	Standard Error	T	P	Lower Level Confidence Interval	Upper Level Confidence Interval
-0,8390	0,3393	0,0425	7,9928	0,0000	0,2556	0,4230
0,0000	0,3834	0,0376	10,2030	0,0000	0,3093	0,4475
0,8390	0,4275	0,0445	9,6137	0,0000	0,3398	0,5152

Table 6 Conditional Indirect Effect of Perceive Usefulness
on Customer Loyalty Mediated by Customer Satisfaction with Perceived Ease of Use as The Moderator

Perceived Ease of Use	Effect	Boot Standard Error	Boot Lower Level Confidence Interval	Boot Upper Level Confidence Interval
-0,8390	0,1689	0,0364	0,1022	0,2444
0,0000	0,1908	0,0392	0,1163	0,2709
0,8390	0,2128	0,0439	0,1281	0,3009

usefulness has a significant positive effect on customer loyalty. The higher the perceived usefulness is, the more customers become loyal. This result supports the previous research conducted by Hamid *et al.* (2016), who also showed similar findings. Then, it also reinforces the theory put forward by Davis (1989). The perceived usefulness does not merely affect the interest in using technology. However, perceived usefulness can affect the users' loyalty in using technology.

The results show that perceived usefulness mediated by customer satisfaction has a significant positive effect on customer loyalty. Moreover, the effect of perceived usefulness on customer satisfaction is strengthened by perceived ease of use, which acts as a moderator. In the research, the Grab application is considered to bring benefits to its users. The perceived usefulness of the Grab application can influence satisfaction, and it is also considered easy to use.

The research proves that if perceived usefulness is supported by perceived ease of use, customer satisfaction will increase. It supports the theory by Davis (1989). Although people believe that technology can provide benefits (usefulness), they do not necessarily believe that it is easy to use. Moreover, people will consider the perceived ease of use in addition to the perceived usefulness in choosing a technology. Thus, it can be concluded that perceived ease of use cannot be ruled out. In this case, Grab cannot only rely on the benefits that it offers because the users do not necessarily want to use the application if it is difficult to use. Previous empirical research examining perceived ease of use as a moderator in the relationship between perceived usefulness and customer satisfaction has not been found. Thus, the research contributes to the theory of Davis (1989), especially in the evidence of the influence of perceived ease of use as the moderating variable. The results also strengthen previous research that customer satisfaction mediates the relationship between perceived usefulness to customer loyalty. However, many researchers separately link the relationship of perceived usefulness to customer satisfaction (Mandasari & Giantari, 2017; Tandon *et al.,* 2016) and customer satisfaction to customer loyalty (Canalejo & Río, 2018; Widjaja & Nugraha, 2016).

CONCLUSIONS

The research has four conclusions. First, the perceived usefulness has a significant influence on customer satisfaction. It means that if the Grab application is considered to bring benefits, users' satisfaction will increase. Second, customer satisfaction significantly influences customer loyalty. If Grab users are satisfied, they will become loyal to use the application. Third, perceived usefulness has a significant effect on customer loyalty. If the Grab application is considered to bring benefits, the users will be more loyal. Fourth, perceived usefulness, mediated by customer satisfaction and moderated by perceived ease of use, significantly influences customer loyalty. It means that perceived ease of use will support perceived usefulness in increasing customer satisfaction. Then, further customer satisfaction will increase customer loyalty.

It can be suggested that the application developers should focus on the usefulness and ease of use from the users' perspectives. The application must be easy to learn, understand, use, and get. It must also have flexibility in doing the transaction. In the long run, perceived ease of use may result in a loyal customer, even though the competition among the application developers grows tighter in the future. The perceived usefulness is crucial in the development of an application. Facing the tighter competition, the developers must create and offer an application that makes the users feel more effective and productive and easier to do their activities.

The research limitation opens the opportunity to further studies. The research only analyzes the effect of customer satisfaction and loyalty from the application users' perspectives. Other things that contribute to the research development, such as drivers' friendliness and comfort in the vehicle, have not been taken into account. For further research, other variables than the application can be added by considering that the Grab is not only limited to the application.

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