

The Effect of Data Protection, Digital Literacy and Cyber Security on the Security Risk of Social Engineering-Based Cyber Threats in E-Wallet Users (Study on Millennial Generation E-Wallet Users in Bandar Lampung City)

Aditia Dwi Kristianto¹, Muhammad Kurniawan², Citra Etika³

¹²³ Fakultas Ekonomi dan Bisnis Islam Program Studi Perbankan Syariah
Universitas Islam Negeri Raden Intan Lampung Indonesia

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ABSTRACT

The security risk of cyber threats on e-wallets can be influenced by data protection, digital literacy and cyber security among e-wallet users. This study aims to determine and explain whether Data Protection, Digital Literacy and Cyber Security affect the Security Risk of cyber threats in millennial generation e-wallet users in Bandar Lampung City. The method used is quantitative research method, using questionnaire data. The data analysis method used is multiple linear regression models. The sampling technique used accidental sampling techniques and data testing using validity tests, reliability tests, classical assumption tests with a 5% significance level, normality tests, multicollinearity tests, heteroscedasticity tests, multiple linear regression tests, t tests, f tests, and coefficient of determination tests. The results of this study in the (t) test show that the Data Protection variable has a significance of 0.001. This means that the tcount is 3,280 and the significance level is 0.001 (0.001 < 0.05). The Digital Literacy variable has a tcount of 5,132 with a significance of 0.000. The Cyber Security variable has a tcount of 4,134 with a significance of 0.000. Based on the results of the simultaneous test (F test) shows a significance value of 0.00 < 0.05 and an Fcount value of 118,930. the conclusion of this study, the Data Protection variable affects Security Risk, this is because, the higher the data protection, the higher the security risk when using an e-wallet. The Digital Literacy variable has an effect on Security Risk, this is because the increase in digital literacy affects the increase in security risks of using e-wallets. Cyber Security variables affect Security Risk, this is because the higher cyber security affects the high security risks of e-wallet users.



Corresponding Author:

Aditia Dwi Kristianto,
Fakultas Ekonomi dan Bisnis Islam Program Studi Perbankan Syariah
Universitas Islam Negeri Raden Intan Lampung Indonesia,
Jl. Letnan Kolonel H. Endro Suratmin, Sukarame, Kota Bandar Lampung, 35131.
Email: aditiadwi2001@gmail.com

1. INTRODUCTION

Indonesia is one of the countries with the largest population in the world. The high population rate is also one of the triggers for the development of the adoption of various types of technology in this

country, one of which is electronic wallet technology (E-wallet) which is a non-cash payment tool that is widely used today. The Indonesian government itself has been planning efforts to use non-cash payment instruments for a long time. In 2014, Bank Indonesia launched a program called the National Non-Cash Movement (GNNT) so that Indonesian people become Less Cash Society (LCS). Various examples of E-wallets that are widely used in Indonesia are OVO, Gopay, Dana, ShopeePay, and LinkAja which can be used for credit purchases, electricity payments, restaurant bills, BPJS, cable TV, online shopping, and education fees. Electronic wallets developed along with the emergence of e-commerce and marketplaces in Indonesia such as Shopee, Tokopedia, Bukalapak. Payment for products/services that consumers want to buy can be done anywhere and anytime using a smart phone, only by topping up the balance of the electronic wallet. Each e-commerce has a platform to top up its balance, such as ShoppePay, Gopay. Banks have also opened their electronic wallet platforms and collaborated with certain e-commerce to be able to make payment transactions without fees, such as DANA (TIX ID payment for movie tickets) in collaboration with BCA, Mandiri.

The rapid pace of technology in payments has been incorporated into the modern way of life. The cashless payment system has now become a trend among teenagers today. Now with the development of technology, payment systems are changing very quickly, making new opportunities for banks to develop cashless payment systems so that they can compete in the field of payment systems and other banking products. Speed, convenience, security, and comfort in transactions become its own advantages, according to the public's view for this reason the Indonesian people switch to a cashless payment system, and measuring the capacity of the payment system to generate a slight cost advantage can be used to measure how efficient the payment system is from buying and selling transactions.

Urban Indonesians seem to be quite familiar with digital wallet or e-wallet technology.

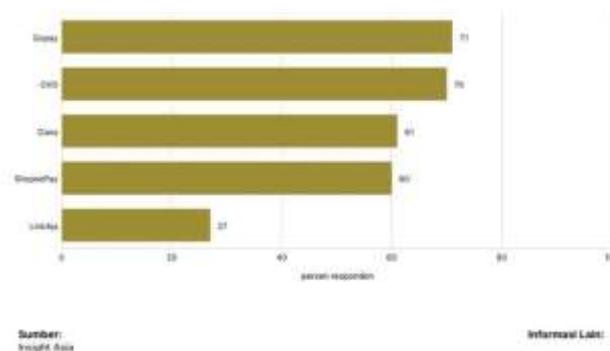


Figure 1.1. Insight Asia in 2023 E-Wallet User Data 2023

According to Insight Asia's E-wallet Industry Outlook 2023 report, of the 1,300 urban residents surveyed, 74% have used a digital wallet. In that group, about 61% use multiple digital wallet apps at once. The most widely used platform is Gopay, with 71% of users.

Judging from the current situation where more and more people want to use the QRIS payment system and follow the government's plan to carry out non-cash transactions, it shows that people are starting to realize the convenience, advantages and benefits of this payment method. But behind these conveniences and benefits, there are consequences that can arise when using e-wallets and when making transactions using QRIS.

Not only that, currently there are many crimes that arise by utilizing technological advances (cybercrime) such as hacking on user accounts (hacking), phishing, fraud (scam), and so on to steal users' personal information and personal information in it such as personal data, credit card and financial balance information which are some of the risks faced by e-wallets if users do not pay attention. In general, personal data is information about individual identity that should not be

disseminated without the permission of the owner of the information because it can be misused by irresponsible people.

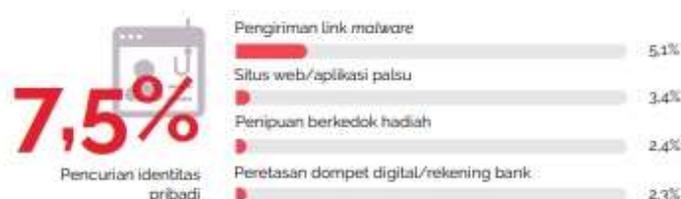


Figure 1.2. Types of fraud and personal data leaks

Sometimes victims do not see personal data leakage as a loss because it is not an immediate or tangible loss. However, when asked to fill out the questionnaire, they understood that personal data leakage is one of the losses in digital fraud, the consequences of which can be very real. In this research, identity theft victims were the group of victims who felt the loss of personal data leakage the most.



Figure 1.3. Number of victims by age

Based on the ranking shown in the table above, the most victimized age category is Baby Boomer, with 72.6% of respondents from that age group, followed by generation Z (68.1%), generation X (67%), and generation Y or Millennials (62.8%). The age group that is least likely to fall victim to digital fraud is generation Y or Millennials. However, the percentage of this group that falls victim to fraud is also high.

2. METHODS

A quantitative research approach was used by the authors. In order to evaluate the hypotheses that have been set, the quantitative approach is very similar to analyzing numerical data (numbers) using statistical techniques. In accordance with the technique, the researcher looks at the importance of the dependent variable and the independent variable by using numerical data and statistical methods. To find out the results of the influence of data protection, digital literacy and cyber security on the security risk of cyber threats to e-wallet users, researchers conducted this associative research. Researchers in this study used descriptive statistics. By using mathematical calculations of data originating from students and collected through questionnaires that have been filled out by respondents. Population is the main subject of research, and samples will be taken from various groups. The population of this research is the millennial generation of e-wallet users in the city of Bandar Lampung. Samples can be interpreted as part of the capacity and characteristics of the population. The sample is a member of the population used for the actual data source to study. So it can be said that the sample is part of the population. Sampling conducted by the author in this study is nonprobability sampling is a sampling technique by not providing equal opportunities for each element (member) of the population selected as sample members. The sample in this study were millennial generation e-wallet users in the city of Bandar Lampung as many as 100 millennial generation e-wallet users.

3. RESULTS AND DISCUSSION

1. Validity and Reliability Test Results

a. Validity Test Results

Table 1. Validity Test Results

Variabel	Variabel	Indikator	r_{hitung}	Sig	r_{tabel}	Status
X1	<i>Data Protection</i>	X1.1	0.760	0.000	0.196	Valid
		X1.2	0.739	0.000	0.196	Valid
		X1.3	0.639	0.000	0.196	Valid
		X1.4	0.669	0.000	0.196	Valid
		X1.5	0.681	0.000	0.196	Valid
		X1.6	0.685	0.000	0.196	Valid
		X1.7	0.726	0.000	0.196	Valid
		X1.8	0.667	0.000	0.196	Valid
		X1.9	0.563	0.000	0.196	Valid
X2	<i>Digital Literacy</i>	X2.1	0.761	0.000	0.196	Valid
		X2.2	0.624	0.000	0.196	Valid
		X2.3	0.610	0.000	0.196	Valid
		X2.4	0.661	0.000	0.196	Valid
		X2.5	0.653	0.000	0.196	Valid
		X2.6	0.723	0.000	0.196	Valid
		X2.7	0.683	0.000	0.196	Valid
		X2.8	0.761	0.000	0.196	Valid
		X2.9	0.752	0.000	0.196	Valid
		X2.10	0.736	0.000	0.196	Valid
		X2.11	0.599	0.000	0.196	Valid
		X2.12	0.703	0.000	0.196	Valid
X3	<i>Cyber Security</i>	X3.1	0.688	0.000	0.196	Valid
		X3.2	0.587	0.000	0.196	Valid
		X3.3	0.641	0.000	0.196	Valid
		X3.4	0.696	0.000	0.196	Valid
		X3.5	0.636	0.000	0.196	Valid
		X3.6	0.719	0.000	0.196	Valid
		X3.7	0.734	0.000	0.196	Valid
		X3.8	0.692	0.000	0.196	Valid
		X3.9	0.744	0.000	0.196	Valid
		X3.10	0.747	0.000	0.196	Valid
		X3.11	0.763	0.000	0.196	Valid
		X3.12	0.704	0.000	0.196	Valid
Y	Risiko Keamanan	Y.1	0.702	0.000	0.196	Valid
		Y.2	0.685	0.000	0.196	Valid
		Y.3	0.569	0.000	0.196	Valid
		Y.4	0.384	0.000	0.196	Valid
		Y.5	0.625	0.000	0.196	Valid
		Y.6	0.649	0.000	0.196	Valid
		Y.7	0.624	0.000	0.196	Valid
		Y.8	0.725	0.000	0.196	Valid
		Y.9	0.731	0.000	0.196	Valid
		Y.10	0.652	0.000	0.196	Valid
		Y.11	0.602	0.000	0.196	Valid
		Y.12	0.727	0.000	0.196	Valid

Based on table 1, the results of the validity test above, the questionnaire or questionnaire consists of 4 variables, 3 independent variables and 1 dependent variable and with 45 statement indicators that have been filled in by 100 respondents. It is known that the r count above is the result of data processing through SPSS v26 software, while the r -table is obtained from the formula $(df) = n-2$ so $100-2 = 98$ so that r table = 0.196. Based on the results of the validity test in the table above, it is stated that 45 statement indicators are declared valid because r count > r table. x

b. Reliability Test Results

Table 2. Reliability Test Results

Variabel	Simbol Variabel	Cronbach's Alpha	N of item	Standar	Status
Data protection	X1	0.843	9	0.60	Reliabel
Digital Literacy	X2	0.902	12	0.60	Reliabel
Cyber Security	X3	0.898	12	0.60	Reliabel
Risiko Keamanan	Y	0.852	12	0.60	Reliabel

Based on table 2 above, the table above shows that the Cronbach Alpha value for the data protection variable (X1) is 0.843, the digital literacy variable (X2) is 0, 902, the cyber security variable (X3) is 0, 898 and the security risk variable (Y) is 0, 852. So each variable shows a Cronbach alpha value greater than 0.60. This means that all variables in this study are reliable. This means that the questionnaire as a tool for measuring variables in this study shows consistency.

2. Classical Assumption Test Results

a. Normality Test Results

Table 3. Normality Test Results

One-Sample Kolmogorov-Smirnov Test		Unstandardized Residual
N		100
Normal Parameters ^{a,b}	Mean	.0000000
	Std.	2.61284752
	Deviation	
Most Extreme Differences	Absolute	.080
	Positive	.068
	Negative	-.080
Test Statistic		.080
Asymp. Sig. (2-tailed)		.114 ^c

- Test distribution is Normal.
- Calculated from data.
- Lilliefors Significance Correction.

Based on table 4.7 above, it can be concluded that the Kolmogorov-smirnov test of the X1, X2, X3 and Y variables produces a probability value of 0.114, where the value is greater than 0.05, it can be concluded that the data tested is normal distribution.

b. Multicollinearity Test Results

Table 4. Multicollinearity Test Results

Model	Coefficients ^a			Collinearity Statistics			
	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.	Tolerance	VIF
1 (Constant)	1.012	2.503		.404	.687		
Data Protection (X1)	.264	.080	.216	3.280	.001	.511	1.958
Digital Literacy (X2)	.416	.081	.415	5.132	.000	.337	2.967
Cyber Security (X3)	.333	.081	.347	4.134	.000	.314	3.189

a. Dependent Variable: Risiko Keamanan (Y)

Based on table 4 above, it can be seen that Data Protection, Digital Literacy, and Cyber Security are 0.511; 0.337; 0.314 showing a tolerance value > 0.1 and a variance inflation factor (VIF) value of 1.958; 2.967; 3.189 < 10. So it can be concluded that the independent variables in this study are free from multicollinearity problems or there is no correlation between the independent variables.

c. Heteroscedasticity Test Results

Table 5. Glejser Test Results

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	.660	1.597		.413	.680
Data Protection (X1)	.002	.051	.005	.039	.969
Digital Literacy (X2)	.072	.052	.243	1.396	.166
Cyber Security (X3)	-.047	.051	-.165	-.917	.361

a. Dependent Variable: Abs_Ress

Based on table 5 above, it can be seen that the independent variables consisting of Data Protection, Digital Literacy, and Cyber Security have sig values of 0.969, 0.166, 0.361. So that the sig value of each independent variable is above 0.05, which means that there is no heteroscedasticity problem in the regression model.

3. Multiple Linear Regression Test Results

Table 6. Multiple Linear Test Results

Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.
	B	Std. Error			
1 (Constant)	1.012	2.503		.404	.687
Data Protection (X1)	.264	.080	.216	3.280	.001
Digital Literacy (X2)	.416	.081	.415	5.132	.000
Cyber Security (X3)	.333	.081	.347	4.134	.000

a. Dependent Variable: Risiko Keamanan (Y)

$$Y = a + \beta_1X_1 + \beta_2X_2 + \beta_3X_3$$

$$Y = 1.012 + (0.264X_1) + (0.416X_2) + (0.333X_3)$$

a = Konstanta b₁ = koefisien X₁

X₁ = Data Protection b₂ = Koefisien X₂

X₂ = Digital Literacy b₃= koefisien X₃

X₃ = Cyber Security

Based on the value of the regression equation above, the constant value of 1.012 states that the consumptive behavior variable is considered constant. In addition, from the results of the table above, namely:

- The Data Protection regression coefficient of 0.264 states that for every 1% increase in the value of Data Protection, the average Security Risk value will decrease by 0.264%.
- The Digital Literacy regression coefficient of 0.416 states that every 1% increase in Digital Literacy value, the average Security Risk value will decrease by 0.327%.
- The Cyber Security regression coefficient of 0.333 states that every 1% increase in Cyber Security value, the average Security Risk value will decrease by 0.333%.

4. Hypothesis Test Results

a. Results of the t-test

Table 7. Results of the t-test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.012	2.503		.404	.687
	Data Protection (X1)	.264	.080	.216	3.280	.001
	Digital Literacy (X2)	.416	.081	.415	5.132	.000
	Cyber Security (X3)	.333	.081	.347	4.134	.000

a. Dependent Variable: Risiko Keamanan (Y)

Based on the results from table 7, the following conclusions can be drawn:

1. It can be seen in the Data Protection variable, the significance value is $0.001 < 0.05$ and the tcount is $3,280 > 1.984$ so it can be concluded that H1 is accepted, which means that there is a partial influence given by Data Protection (X1) on Security Risk in millennial generation e-wallet users in Bandar Lampung (Y).
2. It can be seen in the Digital Literacy variable, the significance value is $0.00 < 0.05$ and the tcount is $5.132 > 1.984$ so it can be concluded that H2 is accepted, which means that there is a partial influence given by the Digital Literacy variable (X2) on Security Risk in the millennial generation of e-wallet users in Bandar Lampung (Y).
3. It can be seen in the Cyber Security variable, the significance value is $0.00 < 0.05$ and the tcount is $4.134 > 1.984$ so it can be concluded that H2 is accepted, which means that there is a partial influence given by the Cyber Security variable (X3) Security Risk on the millennial generation of e-wallet users in Bandar Lampung (Y).

b. F Test Results

Table 8. F Test Results

Model		Sum of Squares	df	ANOVA ^a		Sig.
				Mean Square	F	
1	Regression	2511.920	3	837.307	118.930	.000 ^b
	Residual	675.870	96	7.040		
	Total	3187.790	99			

a. Dependent Variable: Risiko Keamanan (Y)

b. Predictors: (Constant), Cyber Security (X3), Data Protection (X1), Digital Literacy (X2)

Based on table 8, it can be seen that the significance value is less than $0.000 < 0.05$ and the Fcount is $118.930 > 3.09$ so it can be concluded that there is an influence of the Data Protection, Digital Literacy, and Cyber Security variables (Variable X) on Security Risks in millennial generation e-wallet users in Bandar Lampung (Variable Y).

b. Test Results of the Coefficient of Determination (R2)

Table 9. Test Results of the Coefficient of Determination

Model	R	R Square	Adjusted R Square	Model Summary	
				Std. Error of the Estimate	
1	.888 ^a	.788	.781		2.653

a. Predictors: (Constant), Cyber Security (X3), Data Protection (X1), Digital Literacy (X2)

Based on the results of the determination test calculation shown in the table above, the coefficient of determination or adjusted R2 is 0.788, this means that 78.8% of the Security Risk variable can be explained by variations in the three independent variables Data Protection, Digital Literacy, and Cyber Security which affect Security Risk. While the rest ($100\% - 78.8\% = 21.2\%$) is explained by other variables that are not included in the research model equation.

4. DISCUSSION

1. The Effect of Data Protection on the Security Risk of social engineering-based cyber threats in millennial generation e-wallet users

In the results of hypothesis testing conducted by researchers, the results show that the data protection variable has an effect on security risk. And the hypothesis proposed is that the data

protection variable affects the security risk of cyber threats in millennial generation e-wallet users. So it can be concluded that H1 is accepted.

This can be seen in the results of hypothesis testing on the data protection variable, it is known that in the data protection variable the significance value is $0.001 > 0.05$ and t count is $3.280 < 1.984$ so it can be concluded that H1 is accepted, which means that there is a partial influence given by the data protection variable (X1) on the security risk of cyber threats in millennial generation e-wallet users (Y).

This is in accordance with the hypothesis and in line with previous research conducted by Adisya Poeja Kehista, Achmad Fauzi, Annisa Tamara, Ivanida Putri, Nurul Afni Fauziah, Salma Klarissa, Vivi Bunga Damayanti entitled "Analysis of Personal Data Security in E-Commerce Users: Threats, Risks, Security Strategies.", which has research results that threats, risks, and security strategies affect the security of personal data of e-commerce users."

2. The influence of Digital Literacy on the Security Risk of social engineering-based cyber threats on millennial generation e-wallet users

The digital literacy variable has a positive and significant effect on security risk, with the proposed hypothesis being that digital literacy has a positive effect on the security risk of cyber threats in millennial generation e-wallet users. So it can be concluded that H2 is accepted.

It can be seen from the results of the digital literacy variable hypothesis test with a significance value of $0.000 < 0.05$ and a tcount of $5,132 > 1.984$ so it can be concluded that H2 is accepted, which means that there is a partial influence given by the digital literacy variable (X2) on the security risk of cyber threats in millennial generation e-wallet users (Y).

This is in accordance with the hypothesis and in line with previous research conducted by Ridwa, Yusran, and Cut Addis Maulidia entitled "Analysis of Understanding Digital Literacy in Uin Arraaniry Students Against Digital Skills and Digital Safety", which has research results that digital literacy has a positive and significant effect on security risks.

3. The influence of Cyber Security on the Security Risk of social engineering-based cyber threats on millennial generation e-wallet users

The cyber security variable has a positive and significant effect on work readiness, with the proposed hypothesis being that cyber security has a positive effect on the security risk of cyber threats in millennial generation e-wallet users. So it can be concluded that H3 is accepted.

It can be seen from the results of the cyber security variable hypothesis test with a significance value of $0.000 < 0.05$ and a tcount of $4.134 > 1.984$ so it can be concluded that H3 is accepted, which means that there is a partial influence given by the cyber security variable (X3) on the security risk of cyber threats in millennial generation e-wallet users (Y).

This is in accordance with the hypothesis and in line with previous research conducted by Febyola Indah, Arista Sidabutar, and Nurul Annisa entitled "The Role of Cyber Security on the Security of Indonesian Citizen Data (Case Study: Hacker Bjorka)", which has research results that cyber security has a positive effect on security risk.

4. The influence of Data Protection (X1), Digital Literacy (X2), and Cyber Security (X3) on Security Risk (Y) of social engineering-based cyber threats on millennials who use e-wallets.

The results of this study indicate that together the variables of data protection, digital literacy and cyber security have an effect on the security risk of cyber threats in millennial generation e-wallet users. This can be seen in the anova calculation table in the calculated F value of $118.930 > 3.09$ with a significant value of $0.000 < 0.05$ with these results, the fourth hypothesis (H4) states that data protection, digital literacy and cyber security have an effect on the security risks of cyber threats in the millennial generation of e-wallet users, it is concluded that H4 is accepted.

5. Islamic perspective on the Security Risks of cyber threats to e-wallet users among the millennial generation

In the Islamic view, security risk means the possibility of encountering danger, loss or injury. Risk comes from uncertainty (ghoror). Ghoror means uncertainty. In the course of daily life, there are many risks, such as calamities, disasters and disasters. Calamities, catastrophes and natural disasters, if they come, not only threaten human life, but often result in destruction and loss of property. As a Muslim, they must intend and believe that whatever form of calamity, catastrophe or natural disaster that comes upon them is the qada and qadar of Allah SWT.

Therefore, all designs and efforts made by humans will only be achieved with the permission of Allah SWT. However, this does not mean that we should not or do not need to make plans for each of our activities and actions, in fact, every day we cannot avoid making a plan in addition to hoping and praying to be saved from danger.

5. CONCLUSIONS

The conclusions from the results of the study “The Effect of Data Protection, Digital Literacy and Cyber Security on the Security Risks of Social Engineering-Based Cyber Threats in E-wallet Users (Case study on millennial generation of e-wallet users in Bandar Lampung City)” are as follows: Variable Data Protection (X1) partially affects the Security Risk of Social Engineering-Based Cyber Threats in E-wallet Users (Y), it can be concluded that the higher the security of personal data on e-wallets, the lower the security risk that occurs. The Digital Literacy variable (X2) partially has a positive and significant effect on the Security Risk of Social Engineering-Based Cyber Threats to E-wallet Users (Y). It can be concluded that high Digital Literacy affects users to prioritize their security risks. The Cyber Security variable (X3) partially has a positive and significant effect on the Security Risk of Social Engineering-Based Cyber Threats to E-wallet Users (Y). Thus high Cyber Security influences users to prioritize their security risks. The results showed that the variables Data Protection (X1), Digital Literacy (X2) and Cyber Security (X3) simultaneously affect the Security Risk of Social Engineering-Based Cyber Threats in E-wallet Users. This means that Security Risk is influenced by variables simultaneously, namely Data Protection, Digital Literacy and Cyber Security. The results of research based on an Islamic perspective concluded that Security Risk is something that is required in life, where all creatures really need it in fulfilling matters related to their mashlahat interests, both worldly and religious in nature. A human being achieves bodily safety and breadth of sustenance, so it is not valuable and has no benefit except with security and tranquility.

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