

MEDIATING ROLE OF M-BANKING SATISFACTION ON THE RELATIONSHIP BETWEEN SERVICE QUALITY AND CUSTOMER LOYALTY DURING THE COVID-19 PANDEMIC

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Abstract

Providing high-quality m-banking services is considered a basic strategy for attracting and retaining customers with mobile-banking platforms. The purpose of this study is to empirically explore m-banking service quality and capture the impact of m-banking (mobile banking) service quality on customer loyalty through customer satisfaction during the COVID-19 pandemic times in Sri Lanka. The m-banking service quality is studied within a spectrum of 5 different factors: reliability, privacy & security, efficiency of m-banking app, responsiveness and user-friendliness. The study uses questionnaires with 5-point Likert scale to collect data from 260 m-banking users. The collected data are analyzed by using multivariate linear regression method. The finding of the study indicated that reliability, privacy & security and user-friendliness of m-banking service significantly and positively influence on customer loyalty particularly during the COVID-19 pandemic time. However, the indirect effect of the reliability, privacy & security and user-friendliness with m-banking loyalty was partially mediated by m-banking customer satisfaction. In strategic planning of m-banking mechanisms and the associated decision making, the results of this study can be helpful. In case of similar epidemics and natural calamities, the users may depict similar responses as shown during the lockdown and social distancing during COVID-19 in Sri Lanka.

Introduction

During the COVID-19 pandemic time it has been noticed that in the digital era of banking the m-banking is setting new heights in the business world and such banking trends are seemed to influence consumer behavior. Banks can play an immediate role in slowing the spread of COVID-19 by helping customers make better use of existing digital and remote channels. COVID-19 is making the need for m-banking services more urgent, and this situation is much different than a normal condition. According to health recommendations, one of the most effective ways to contain the current Covid-19 epidemic is to avoid personal contact. In line with these recommendations, most Sri Lankan commercial banks have reduced the opening hours of their branches and they recommend that their customers use mobile banking services more now. During this period, Central Bank, Lanka Clear and all the financial institutions have taken several initiatives and awareness programs like “Rata Purama QR” and “Cash Wade” to promote their mobile banking applications. However, there is less

tendency of continuous usage of those m-banking applications and there is a smaller number of mobile banking users when consider in relation to the total customer base of the banks or other financial institutions.

In contrast to traditional banking activities, online banking provides more features and functionalities at a lower cost (R. Anand 2020). The utilization of mobile apps has been constantly increasing because of the supply of large sort of smartphones. Online banking and mobile apps of financial entities allow users to enjoy many advantages such as they can access their account from any location at any time and it also helps us to follow the social distancing order issued without going to banks directly. However, there is less tendency of continuous usage of those m-banking applications and there is a smaller number of mobile banking users when consider in relation to the total customer base of the banks or other financial institutions.

Hence, there are unexplored reasons behind the customer loyalty of the mobile banking. Such reasons might include financial institution specific factors or the customer specific factors. There are different mobile banking service quality characteristics under COVID-19 as compared to normal conditions. The quality of service is the most vital element for the progress in the mobile banking service industry (Ozkan et al, 2020). In essence, the service providing firms offer various dimensions of service which leads to the customer satisfaction and customer satisfaction influence to enhance customer loyalty ([Heskett et al., 1997](#); [Kashif et al., 2015](#); [Kaur & Soch, 2018](#)). For sustaining in the competitive environment, service quality acts as key success factor ([Palmer, 2001](#)). For this reason, different types of service dimensions are required to sustain the financial stability during the COVID-19 situations.

Most of the previous studies have examined the internet banking and other types of digital banking services including applications for smart phones and e-banking robots. Many studies have investigated mobile banking service quality and its impact on customer loyalty. However, there are less studies done on the mediating effect of customer satisfaction on the relationship between mobile-banking service quality and customer loyalty in Sri Lanka. Customer loyalty is one of the ways to build a competitive advantage. There is a little knowledge about most effective factors of m-banking service quality which leads to create ultimate customer loyalty in m-banking. Finding what factors impact consumer satisfaction with service and lead to loyalty is invariably important for business ([Esmaeili et al., 2021](#)). However, it is important to begin with evaluating the aspects that are specific to the market and service.

This study supported to the emerging concept of different m-banking service quality characteristics under the COVID-19 pandemic as compared to the normal condition. Currently, this pandemic has become the new normal situation. The horizon of this study area is quite large as studies on multiple contexts like retail industry, healthcare, tourism, education, online shopping etc. were found and there is less literature available in the banking context during pandemic times is discussed in the literature. This study analyzes the different m-banking service quality characteristics under COVID-19 as compared to the normal conditions. Therefore, this study mainly focuses on how the m-banking service quality factors influence on m-banking loyalty though customer satisfaction during this pandemic situation.

Objectives of the study

1. To identify the various factors of m-banking service quality.
2. To examine the relationship between the m-banking service quality factors and m-banking customer loyalty.
3. To examine the mediator impact of customer satisfaction on the relationship between m-banking service quality factors and m-banking customer loyalty.

Literature Review and Hypotheses Development

The main purpose of this study is to investigate the effects of mobile banking service quality among Sri Lankans during Covid-19 pandemic times on customer loyalty through customer satisfaction. Several previous researchers found the relations between mobile banking service quality and customer loyalty that indicates greater degree service quality leads to greater degree customer loyalty. There are five dimensions of m-banking service quality namely reliability, privacy and security, efficiency of m-application, responsiveness, and user friendliness of m-banking

Reliability is the most crucial part of mobile banking (Khatoun, Zhengliang and Hussain, 2020). Thus, “reliability” in true sense, is an essence of technology enabled banking channels (Nagar and Ghai, 2019). It is the ability to perform the promised service dependably and accurately (Arcand *et al.*, 2017). Banks should ensure that m-banking applications provide services within the promised time and that they contain required information to resolve customer problems and queries (Shankar, Datta and Jebarajakirthy, (2019). Customer perceives the mobile banking service to offer transaction that is free from error then they are likely to adopt such a service. With assured accuracy of transaction, more customers will tend to use the application (Kurniawan, 2017). Therefore, In order to enhance customer satisfaction and loyalty, mobile banking providers should start improving the dimensions of reliability, such as providing up-to-date and accurate information, and strengthening the security of banking transactions. Based on the above argument it is proposed that:

H1: Reliability in m-banking services positively influences m-banking customer loyalty.

Mobile banking providers have to operate sincerely and in the best interests of customers during the banking transaction processes (Puriwat and Tripopsakul, 2017). The components that influence brand loyalty are related to consumer safety; mechanisms of transmission of information, security of data in the transaction, financial guarantees in the transaction, payment security through the electronic system (Intyaswati, 2017). Reduction of risk related to day-to-day transactions performed through mobile device enables customers to build up trust in the banking services being offered (Saleem and Rashid, 2011). Banking also needs to include a guaranteed level of application security in the mobile banking application provided to gain the trust of users and be able to foster and increase their loyalty (Purwanto, Deviny and Mutahar, 2020).

Application security is an important factor for building trust, especially in mobile banking applications provided by banks because they relate to customers' personal and financial data (Purwanto, Deviny and Mutahar, 2020). Banks are therefore bound to establish safe and secure systems which will then enhance the uptake of different banking innovations created to enhance service provision (Kurniawan, 2017). Therefore, it is hypothesized that:

H2: Privacy and Security in m-banking services positively influences m-banking customer loyalty.

Efficiency of m-application is defined as various interactive features of the m-banking service helps to provide consumers with structure of transaction during and summary afterwards the structure of processing a transaction and more (Wolfenbarger and Gilly, 2003). Higher level of satisfaction can be achieved through an updated m-banking application (Kim et al., 2009) and enhanced interactive experience. Efficiency of m-banking applications also forms part of the customer perceptions and expectations of m-banking service quality. M-banking users expect quick and error-free banking services, accessible anytime from anywhere over m-banking platforms. Hence banks should ensure the availability of error-free banking services 24/7 via m-banking platforms(Shankar *et al.*, 2020). Banks need to implement banking applications that are efficient in carrying out transactions to the end, this is due to the fact that the quality of service a customer draws from the use of the mobile banking application have a great impact on their satisfaction levels(Kurniawan, 2017). The traits of interactive m-banking applications enhance trust, satisfaction, and loyalty toward the e-banking results (Lee et al., 2006). The user interface of customer's mobile banking application should be designed in a way that improves the usage of different banking application services (Kurniawan, 2017). Hence, this study hypothesizes that:

H3: Efficiency of M-Application in m-banking services positively influences m-banking customer loyalty.

Responsiveness can be explained as the rapidity of retort toward any delinquent reported by user during or after service experience. The users here can be referred as both individuals and organizations (Blut et al., 2015). Similar to the individual users, organizations are also much concerned, which sometimes also have a deeper impression on employees as well (Awan et al., 2017). The support provided by the banking professional are considered more secured and assured while any trouble is faced in India (Shankar and Jebarajakirthy, 2019) and similar case is expected in Sri Lanka as well.

Consumers face any problems relating to technical and functional issues while transacting, consumers expect quick and adequate service from m-banking service providers and their customer care teams. Consumers look for complaint tracking facilities as well as several options for contacting customer care team members; for example, via phone, online chat, email and SMS(Shankar *et al.*, 2020). Therefore, responsiveness dimension is hypothesized as follows,

H4: Responsiveness in m-banking services positively influences m-banking customer loyalty.

In banking sector, Joseph and Stone (2003) have highlighted that the availability of internet banking services delivery and user friendliness appears to be correlated with high customer satisfaction and retention. Similarly, Rod et al. (2009) found that when overall internet banking service quality is perceived to be high, customers are more likely to be satisfied with their online service and consequently will be more satisfied with their banks.

The consumers might be attracted and encouraged to adopt mobile banking services with more user-friendly interfaces. The icons and user interfaces were designed with the actual users' participations. Although ambiguous icons would raise various interaction problems, properly designed icons improve the performance of the end-users.(Merdenyan *et al.*, 2014).

Ease navigation means customer always link ease browse in mobile application (Asfour and Haddad, 2014a). M-banking applications should provide required information on banking services and offers, and should be well organized and easy to use(Shankar, Datta and Jebarajakirthy, 2019). Hence, banks should ensure that their m-banking application is attractive and easy to navigate (Shankar *et al.*, 2020). Therefore, it is hypothesized that:

H5: User Friendliness in m-banking services positively influences m-banking loyalty.

Mediating role of m-banking satisfaction

Customer loyalty was found to be directly and indirectly influenced by satisfaction(Lee and Wong, 2016). Therefore, banks should build their customer loyalty through providing satisfying m-banking services (Lee and Wong, 2016). Customer satisfaction has identified as an important influencer on customer loyalty(Leninkumar, 2017). Attitudinal loyalty is influenced by service quality, trust and creativity of the site, as well as by general satisfaction, which has a direct influence(Garcia *et al.*, 2020).

The users will not simply be loyal just by utilizing the mobile banking services. It is only when they are satisfied, then only they would be loyal to the mobile banking services (Masrek, Omar and Ahmad Uzir, 2012). Improving customer satisfaction has become a strategic imperative for managers and researchers given the benefits of developing customer loyalty for long-term financial success(Aksoy *et al.*, 2013). Those who are not willing to trust the bank in a competitive marketplace are unlikely to be loyal. Similarly, if the customer customers are satisfied with the services of the bank, they tend to be loyal to the bank (Leninkumar, 2017). Hence, the below empirical proposition was formulated and tested in this study.

H6: M-banking satisfaction positively mediates the relationship between m-banking service quality factors (Reliability, privacy & security, efficiency of m-application, responsiveness, user friendliness) and customer loyalty.

Methodology

This study attempts to explore an under-researched topic of banking practices of mobile banking in the prevailing COVID-19 pandemic in the country. This study uses a sample survey as described below and provides the primary data needed for the analysis. Gathered the data for the study through a consumer survey to understand not only the impact of factors of service quality on customer loyalty but also the mediation relationship of customer satisfaction on customer loyalty for m-banking in Sri Lanka during the pandemic times. The survey questionnaires have been sent to the responders mainly through LinkedIn network. Furthermore, the social media provides additional opportunities to conduct surveys far more efficiently. All respondents were Sri Lankans who had experienced using, and/or knowledge of m-banking. The survey questionnaire was designed in English and was randomly released to participants and 260 completed questionnaires were collected. The questionnaire consisted of eight sections and all the items were measured on a 5- point Likert scale.

Collected data was analyzed with help of IBM SPSS Statistics 23.0 software. Descriptive statistics were used for the presentation of demographic data. They were described in frequencies and percentages. In dealing with the relationship between the m-banking service quality factors and customer loyalty the regression analysis has been applied. The mediation effect of the customer satisfaction between the m-banking service quality and the m-banking customer loyalty was analyzed using the SPSS PROCESS version 3.0 written by Andrew F. Hayes method.

Reliability of the Measurements

Data were screened clean to and to ensure the reliability of measurements, The test was conducted on the new modified model consisting of the five mobile banking service quality factors shown in the following table.

Table 1: Reliability of the Measurements

	Number of Items	Chronbach's Alpha
Reliability	05	0.846
Privacy & Security	05	0.911
Efficiency of the m-banking app	06	0.886
Responsiveness	05	0.907
User-Friendliness	06	0.888
Customer Satisfaction	05	0.914
Customer Loyalty	06	0.908

In order to test the reliability of research scale, Cronbach’s Alpha coefficient was calculated. For this instrument Cronbach’s Alpha was above 0.8 and the research tool was reliable and will give credible results. What can be seen from Table 4.9 is that the α scores on all the 5 independent variables are higher than 0.7, which indicates that those constructs are highly reliable and that the items pertaining to each of these constructs can be used to measure the constructs to which they pertain.

Data Analyses and Findings

Demographics analysis

The surveyed m-banking users had a larger ratio of males (62.69%) as compared to females (37.31%). Most of the users (117) were young adults, with an age range 28–37 years, which makes 45% of the total followed by 79 respondents with age range 18– 27 years. The least (9) were in the age range 58 and above years. The monthly income ranged from a minimum of 30,000 or lesser to 91,000 or higher considering much variations in the remuneration system in Sri Lanka. The respondents with a salary of 91,000 or higher encompassed 42.69% of the total which shows that they are working on higher wage rate in the private sector. Least of them (13) fall under the income level ranging from 81,000 to 90,000. More than half of the respondents (60.77%) are working in private sector and least (10.38 %) were self-employed in the sample. There was also a representation of students (34) in the sample.

Descriptive Analyses

The detailed In Table 2, descriptive analysis of independent variables is shown. In this study, researcher has collected 260 (Two Hundred Sixty) responses from the m-banking users in Sri Lanka. In the survey, respondents were asked to mark their responses on the Likert scale. The survey process involves the design of individual questions, the list of responses options for each item and one of the responses should be selected. Participants in the survey, while responding to a question indicate their level of agreement or disagreement on a range of responses. If a respondent is strongly disagreeing with the given statement, he or she should mark 1 and if strongly agree mark 5.

Table 2: Descriptive Analyses

	N	Minimum	Maximum	Mean	Std. Deviation
Reliability (IV) - REL	260	2	5	4.22	.684
Privacy & Security (IV) -PS	260	1	5	4.16	.737
Efficiency of the m-banking app (IV) -EFF	260	2	5	4.01	.725
Responsiveness (IV) -RES	260	1	5	3.72	.837
User-Friendliness (IV) - USF	260	1	5	3.87	.767

As far as service quality factors are concerned, the highest mean of 4.22 is recorded for Reliability (REL) variable followed by Privacy & Security and Efficiency of m-banking App. That indicates respondents have high concern on above three factors when they are using m-banking services. The lowest mean of 3.72 is recorded for the Responsiveness (RES). This reflects that respondent has less concern on Responsiveness compared to other service dimensions.

Outcome of Multiple Regression Analysis

Multiple regression analysis was conducted to determine the significance of the independent variables to the dependent variables.

Table 3 - Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin - Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.731 ^a	.534	.525	.490	.534	58.295	5	254	.000	1.959

a. Predictors: (Constant), USF, PS, RES, REL, EFF

b. Dependent Variable: CL

Table 4- ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	70.017	5	14.003	58.295	.000 ^b
	Residual	61.015	254	.240		
	Total	131.032	259			

a. Dependent Variable: CL

b. Predictors: (Constant), USF, PS, RES, REL, EFF

The ANOVA table shows that F value is 58.295 and it is significant at 1% level of significance. This indicates that the combination of the predictors significantly predicts m-banking customer loyalty. On the other hand, the R² statistics of 53,4% suggests that the 53.4% of the variation in the Customer Loyalty(outcome) was explained by the level of m-banking service quality factors (predictors). The adjustment is also affected by the magnitude of the effect and the sample size(Leech, Barrett and Morgan, 2005). The Adjusted R Square indicates that we have a fairly good model, explaining about 53% of the variance in m-banking customer loyalty. The Durbin Watson statistic was 1.959 shows that, the assumption of autocorrelation has not been violated,

Table 5-**Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.827	.207		3.990	.000
	REL	.286	.067	.275	4.281	.000
	PS	.147	.056	.152	2.633	.009
	EFF	.095	.074	.097	1.284	.200
	RES	.023	.051	.027	.448	.655
	USF	.280	.071	.302	3.965	.000

The regression coefficients reveal that ‘reliability (REL), is the best predictor for customer loyalty with a beta weight of 0.286. This value is significant at 1% level of significance. It shows that customers with higher reliability enhanced customer loyalty to m-banking. The results also show that, Privacy & Security and User-Friendliness has significance positive influence on Customer Loyalty. However, other two predictors (Efficiency of m-banking app and Responsiveness) have no significance influence on Customer Loyalty. Therefore, according to regression results, out of five hypotheses, H1, H2 and H5 are accepted. It means that Reliability, Privacy & Security and User-Friendliness affect customer loyalty.

Analysis of Mediator effect

A bootstrapping method was performed using SPSS Process Macro version 3 through Andrew F Hayes’s model 4 to examine if Customer Satisfaction mediated the relationship between independent variables (M-Banking service quality factors) and m-banking Customer Loyalty. The indirect effect of customer satisfaction is tested only for impact of Reliability, Privacy & Security and User-Friendliness on customer loyalty because other two independent variables have no significance influence on dependent variable.

Table 6 - **Reliability**

Variable Effect	b	SE	t	p	95%	Confidence Level
REL→CL	0.2624	0.0548	4.7919	.0000	0.1546	0.3703
REL→CS	0.719	0.0499	14.4081	.0000	0.6207	0.8173
REL→CS→CL	0.5668	0.05	11.1442	.0000	0.4667	0.667
Effects	b	SE	t	p	95% Confidence Level	
Direct	0.2624	0.0548	4.7919	.0000	0.1546	0.3703
Indirect	0.4075	0.0631			0.2957	0.5433
Total	0.67	0.0496	13.5198	.0000	0.5724	0.7676

Table 1.0 - Bootstrap Estimates of Direct, Indirect, and Total Effects of Reliability on Customer Loyalty, * Based on 5000 bootstrap samples

Here we test the hypothesis that whether the customer satisfaction mediates the relationship between reliability and m- banking customer loyalty. The indirect effect is tested using non-parametric bootstrapping. If the null of 0 falls between the lower and upper bound of the 95% confidence interval, then the inference is that the population indirect effect is 0. If 0 falls outside the confidence interval, then the indirect effect is inferred to be non-zero. Here the indirect effect was .4075 and it is statistically significant at 95% confidence interval= (.2957, .5433). According to the data it can be concluded that there is a partial mediation effect of customer satisfaction on the relationship between Reliability and customer loyalty.

Table 7 - *Privacy & Security*

Variable Effect	b	SE	T	p	95%	Confidence Level
PS→CL	0.1641	0.0479	3.4268	.0007	0.0698	0.2584
PS→CS	0.5912	0.0501	11.7925	.0000	0.4925	0.6899
PS→CS→CL	0.6323	0.0479	13.1901	.0000	0.5379	0.7267
Effects						
Direct	0.1641	0.0479	3.4268	.0007	0.0698	0.2584
Indirect	0.3738	0.0537			0.2742	0.4848
Total	0.5379	0.0499	10.7817	.0000	0.4397	0.6362

Table 2.0 - Bootstrap Estimates of Direct, Indirect, and Total Effects of Privacy and Security on Customer Loyalty. * Based on 5000 bootstrap samples.

The above results revealed that the indirect effect was 0.3738 and it is statistically significant at 95% confidence interval= (0.2742, 0.4848). This result support our hypotheses that the customer satisfaction mediates the relationship between Privacy & Security and m- banking customer loyalty. Furthermore, the direct effect of service quality on customer loyalty in presence of the mediator was also found significant. Hence, Customer satisfaction partially mediated the relationship between privacy & security and loyalty.

User-Friendliness

Variable Effect	b	SE	t	p	95%	Confidence Level
USF→CL	0.157	0.0601	2.6112	.0096	0.0386	0.2754
USF→CS	0.7512	0.0372	20.1729	.0000	0.6779	0.8246
USF→CS→CL	0.6017	0.0626	9.6087	.0000	0.4783	0.725
Effects						
Direct	0.157	0.0601	2.6112	.0096	0.0386	0.2754
Indirect	0.452	0.0582			0.3396	0.567
Total	0.609	0.0436	13.9735	.0000	0.5232	0.6948

Table 3.0 - Bootstrap Estimates of Direct, Indirect, and Total Effects of User-Friendliness on Customer Loyalty. * Based on 5000 bootstrap samples.

The indirect effect of customer satisfaction on the relationship between user- friendliness and customer loyalty was 0.452 and it is statistically significant at 95% confidence interval= (0.3396, 0.567). According to the data it can be concluded that there is a partial mediation effect of customer satisfaction between the relationship between User-Friendliness and customer loyalty.

Discussion on Findings

This study was conducted not only to improve the m-banking loyalty through utilizing and offering high-quality services to m-banking users during the COVID-19 pandemic times. The findings are consistent with earlier researchers (Shankar and Jebarajakirthy, 2019) with some exceptions probably because of this hard time of COVID-19. The insignificant relationship between Efficiency of m-banking app and Responsiveness was observed, mediation wasn't expected (UI Haq and Awan, 2020). The findings are novel as people usually do not pay attention toward efficiency of m-banking app because of their busy schedules; however, they are concerned about Reliability, Privacy & Security and User-Friendliness. The m-banking users need to be satisfied with the efficiency of m-banking app and with Responsiveness which are then become sources of loyalty during COVID-19. Therefore, the indirect effect of Reliability, Privacy & Security and User Friendliness on Customer Loyalty via Customer Satisfaction proved to be partially mediated. However the Efficiency of m-banking app and Responsiveness also partially mediates the relationship with Customer Loyalty. The rejected indirect effects Efficiency of m-banking app and Responsiveness on m-banking loyalty via m-banking satisfaction may be due to the reason that people do not find their problems fully resolved by the customer service and support department and the m-banking app development teams effectively and efficient manner during the pandemic times. The structured responses recorded or generated through ICT or artificial intelligence applications have a limited amount of information and may not solve the problem (UI Haq and Awan, 2020). Hence, this study helped to enhance the literature and supported M-banking service quality to be used in these epidemic studies also. M-banking facilities and services should be offered in a way which attract users with cost efficiency and convenience as the main focus.

Conclusions

The purpose of this study is to empirically explore m-banking service quality and capture the impact of m-banking (mobile banking) service quality on customer loyalty through customer satisfaction during the COVID-19 pandemic times in Sri Lanka. The m-banking service quality is studied within a spectrum of 5 different factors: reliability, privacy & security, efficiency of m-banking app, responsiveness, and user-friendliness. Customer loyalty is winning the confidence of the customer in favor of an organization such that the relationship becomes a win-win situation for both the organization as well as the customer. The results confirmed, three predictors (Reliability, Privacy & Security and User-Friendliness) influence positively on Customer Loyalty and the other two predictors (Efficiency of m-banking app and Responsiveness) not influencing positively on Customer Loyalty.

The indirect effect of the reliability, privacy & security and user-friendliness with m-banking loyalty was partially mediated by m-banking customer satisfaction. This shows that, m-banking service providers should understand customer's perception and factors which make them more satisfied and loyal toward m-banking services. And they can improve their services accordingly to have a continuous usage of m-banking (customer loyalty). A more satisfied customer means a more loyal customer, which eventually flows through to the bank's profit. Combined these are key to operating a successful service business.

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