

# The Effect of Technology Readiness, Service Quality and Perceived Risk on Relationship Quality, and the Implications for Continuance of Intention - Study on Users of BCA Mobile Banking Applications

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Many banks in Indonesia compete to provide a digital platform that is useful for conducting banking transactions by presenting mobile banking. To be able to compete, the presence of mobile banking must be able to build a good quality relationship with customers. BCA mobile banking (m-BCA) is a mobile banking service that comes from one of the largest banks in Indonesia. But field observation shows there are many complaints from m-BCA customers that can lead to discontinuation of using m-BCA. The study aims to determine the effect of Technology Readiness, Service Quality, and Perceived Risk that can affect Relationship Quality and provide implications for Continuance of Intention on m-BCA. The quantitative method is used in analysing this study, as well as collecting data by distributing questionnaires to 105 respondents. The data gathered is being examined by using the Structural Equation Model (SEM). The results in this study indicate that five proposed hypotheses have proven that there is a positive effect on continuance intention. Still, technology readiness isn't proven as a significant effect on perceived risk.

**Key words:** *Technology Readiness, Service Quality, Perceived Risk, Relationship Quality, Continuance Intention.*

## Introduction

Since industry 4.0 has entered Indonesia, computers have become connected, and can be used to communicate with another person, or make the decisions without human involvement.

Industry 4.0 combines cyber-physical systems, Internet of things (IoT), and the Internet of the system (IS) into a unified whole that can provide benefits in aspects of human life that are more efficient, productive, and less wasteful. Industry 4.0 has a good power to create and share the information from the network of these machines that are digitally connected. To be able to enter industry 4.0, humans must innovate continuously to create inventions that can be useful for human life in the future, such as saving production costs, speeding up the production process to reach the hands of consumers promptly, and make the process simpler to do. In banking industries, one of the innovations found in aspects of human life, especially banking, is mobile banking. The phenomenon that is happening right now is the number of cellular devices used to conduct banking transactions, and this is made easier by the applications developed for the smartphone. The PWC research institute accordingly has released a report on a survey entitled "Digital Banking in Indonesia 2018". The survey respondents numbered 53 people and included CEOs, Vice CEOs, C-Levels (Top Executive Levels) from 43 banking institutions in Indonesia. The results of this survey explain that the biggest component in digital strategy is mobile banking based on smartphone applications which reached 86%, followed by the percentage use of Internet banking 68%, use of ATMs 48%, collaboration with fintech 46%, digital branches 44%, chatbots 38%, mobile banking – SMS/USSD based 38%, and Robot Assistants 18%. So, banks and other banking services need to take advantage of digital strategies by developing information technology and the Internet in launching cost-effective mobile banking. Real-time interaction has diversified products that have competitive advantages that connect mobile banking with other mobile banking.

In general, the mobile banking application can be used to carry out balance checks, the transaction of a banking account, payment through devices such as a mobile phone or personal digital assistant (PDA), or mobile banking services via a messaging service (SMS). To be able to attract mobile banking users to continue to use their mobile banking without intending to switch to another mobile banking, the bank must be able to provide the necessary benefits to mobile banking users. The bank must participate in a way to establish quality relationships that will increase the continuance intention and their antecedents in the adoption of mobile banking. The purpose of this study is to assess the relationship quality established by mobile banking with users and the level of importance for continuance intention and their antecedents, including technology readiness, service quality, and perceived risk.

## **Literature Review**

### **Technology Readiness**

For a long time, many researchers discussed how consumers adopt the behaviour of innovation. Technology Readiness also has positive and negative understanding, according to experts. According to Parasuraman (2000), technology readiness has been defined as people's propensity to embrace and use new technology in achieving a life goal both at home and at

work. Technology readiness has been divided into four components: optimism, innovativeness, discomfort, and insecurity. Optimism is a positive view and belief that technology offers increased control, flexibility, and efficiency in a person's life. Innovativeness means the tendency to become a pioneer and technology leader. Meanwhile, the definition of discomfort is a perceived perception of the lack of control over technology, and the inability to face the presence of technology. Insecurity refers to a sense of distrust and doubts about the ability of technology to work properly (Taylor, Celuch, & Goodwin, 2002; Thomianathan, & Ramayah, 2013). Another view about technology readiness defines it as the possibility of a consumer using products or services and services provided online and automatically in line with changes in new technology (Ratchford & Barnhart, 2012).

Technology readiness can be considered as a determining factor for service quality, because the higher the level of optimism and innovation, the lower the inconvenience and insecurity needed, the better the perception will be of the services provided (Chen, 2012; Chen, Jong, & Lai, 2014). Other research also says that a higher level of consumer readiness to use new technology will indicate lower risk. In contrast, a low level of consumer readiness to use new technology will lead to higher risk (Smith, 2005). In a study conducted by Kuo (2013), technology readiness can represent a perspective and tendency of an individual in using products and services in daily life, and technology readiness associated with new technology is seen to help someone in completing goals by utilising it.

Technology readiness is needed because when customers already have the readiness to use new technology in mobile banking and mobile banking can provide technological sophistication, then customers will feel satisfied and trust the performance of mobile banking, so that a good relationship quality is created (Chen, 2012; Lee, 2009). Based on the related research above, we posit the hypotheses that:

- H1: Technology readiness has positive influences on Service Quality
- H2: Technology readiness has negative influences on Perceived Risk
- H3: Technology readiness has positive influences on Relationship Quality

## **Service Quality**

Service Quality is commonly defined as a degree of difference between perceptions and expectations held by a consumer about certain services that have been provided by a company compared to the reality faced (Chuang, 2010; Rosander, 1985; Boon-itt, 2015). Meanwhile, according to Boulding et al., (1993), service quality has a meaning as a comparison between expectations and perceptions of all differences in the components that exist in service. Chen & Chen (2009) defined service quality as a benchmark in comparing the extent to which the services provided can be as expected by consumers. Wong & Sohal (2002) explained that when consumers' perceptions of the level of service provided by companies are high, it would be

logical if consumers' perceptions of the quality of a relationship would be high. This is supported by research conducted by Chang (2012), which states that service quality has a positive influence on relationship quality. The higher the quality of service perceived by consumers, the higher the level of satisfaction possessed by consumers. So, we can conclude the hypothesis that:

H4: Service Quality has positive influences on Relationship Quality

### **Perceived Risk**

Featherman & Pavlou (2003) proposed a perceived risk that negative feelings related to problems that occur after using products and services. Besides that, Chen (2012) also states that perceived risk is a potential loss along with uncertainty arising from the negative results of the adoption of mobile banking. In the banking world, perceived risk has a meaning as an expectation of loss felt by banking customers in thinking about banking transactions that have been carried out. In the study of Shih Chih Chen (2012), the perception of risk that can be experienced by customers on the use of mobile banking can be anticipated with the satisfaction and trust obtained from customers, which will result in improving the quality of a relationship. Thus, risk perception has an inverse relationship with the quality of the relationship.

Kim et al. (2008) also researched the relationship between perceived risk and relationship quality. Consumers will feel the perceived risk will be smaller if consumer confidence increases. This perception of risk and trust will affect consumers' intention to use or repurchase. Besides, Kesharwani & Bisht's research (2011) states that the perception of risk exists when conducting a transaction can be reduced by the existence of a trust factor, so that trust in electronic banking institutions can reduce the risk that occurs when conducting online banking transactions. Based on the related research above, we posit the hypothesis that:

H5: Perceived Risk has positive influences on Relationship Quality

### **Relationship Quality**

Relationship quality, according to Lages et al. (2005), can be understood as a relationship quality that reflects the intensity of information sharing, quality communication, and relationship satisfaction in a long-term orientation. Another opinion says that relationship quality refers to the depth of a relationship as a whole that will affect each other (Johnson, 1999). Relationship quality is built by having two elements, namely satisfaction and trust. When customers feel satisfied and have a sense of trust in the mobile banking that is used, then the strength of intention will emerge from within the customer to always continue to use mobile banking. Research presented by Chen & Chen (2009) proves that customer satisfaction significantly influences the intention to use repeatedly. Continuous use of online services is

related to the satisfaction received by consumers in an application that is used. Customer satisfaction can occur when consumers gain good experiences that can improve the efficiency and performance of the consumers themselves. Research conducted by Zhou (2013) strengthens the relationship between relationship quality and continuance intention: this study says that trust has a positive relation to continuance intention. Trust can be identified as a significant factor influencing user behaviour as represented by continuance intention. Furthermore, Zhou (2013) also states that satisfaction has a positive relationship with continuance intention. If the customer does not experience satisfaction with the phone banking system, the customer will stop using mobile banking.

Based on the related research above, we posit the hypothesis that:

H6: Relationship Quality has positive influences on Continuance Intention

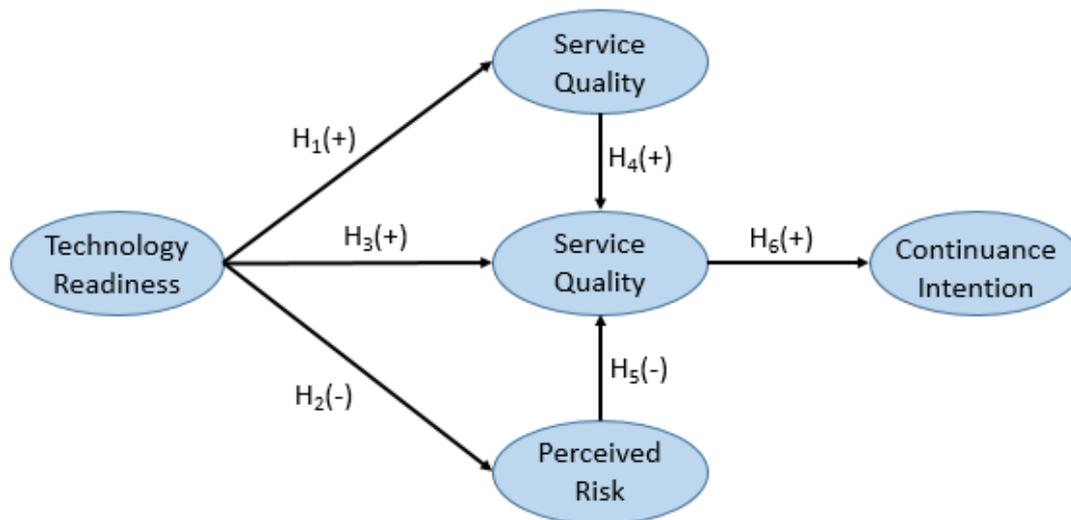
### **Continuance Intention**

Chen (2012), in the context of mobile banking, says that continuance intention has a definition that is the strength of consumer intentions on an ongoing basis to use mobile banking through various mobile devices. Continuance intention can be interpreted as the extent to which an individual is willing to use a product or service in the future and is willing to recommend the product or service to others (Yuan et al., 2016; Chiu et al., 2014). June Lu (2014) defines continuous intention as a mental condition that reflects an individual's decision to repeat the behaviour to repurchase, especially in the marketing world.

### **Methods**

#### **Measurement**

This research will refer to a research model that was conducted previously by Chen (2012) entitled "To Use or Not To Use: Understanding The Factors Affecting Continuation of Mobile Banking." The following is an illustration of the research model contained in important components in the form of technology readiness, service quality and perceived risk, which results in continuance intention by mediating the relationship quality.



**Figure 1. Research Model**

Data collection will be carried out by distributing questionnaires. To ensure that the questionnaire can be declared valid and reliable, this study uses a five-point Likert scale, which has ranges from strongly disagree (1) through (3) to agree and (5) to agree strongly. Technology readiness was measured adopting 5 items modified from Lin (2012). Service quality with 4 items measured was modified from Ndubisi (2012). Besides that, perceived risk has four items measured that was based on Featherman & Pavlou (2003), and relationship quality was measured by adopting four items from Ndubisi (2012). Finally, continuance intention was measured using four items modified from Chen (2012).

### **Data Collection and Sample Characteristics**

In this study, researchers will adopt a conclusive design research model with a descriptive research type. The data collection that researchers will do is a cross-sectional design (single cross-sectional design) through survey methods. Researchers will distribute questionnaires that researchers have made to 105 respondents (samples representing a population) by the provisions of Hair Jr et al., (2014). The sample units needed in this study consisted of men and women aged 17 years to 36 years with the following criteria: have been registered on the m-BCA application within the past one month, using the m-BCA application more than three times in one last week, understand how to transact on the m-BCA application, and have experienced problems during the use of the m-BCA application. Table 1 will explain the results of demography samples in this research.

**Table 1. Demography Samples**

<b>Characteristics</b>	<b>(Percentage %)</b>
<b>Gender</b>	
<b>Male</b>	47%
<b>Female</b>	53%
<b>Age</b>	
<b>17-20 years</b>	6%
<b>21-24 years</b>	71%
<b>25-28 years</b>	21%
<b>29-32 years</b>	2%
<b>Education</b>	
<b>Senior High Schools</b>	62%
<b>College Degree</b>	38%
<b>Profession</b>	
<b>Entrepreneurs</b>	9%
<b>Employees</b>	29%
<b>Students</b>	62%

## **Results and Discussion**

### **Measurement Model**

This research uses the Structural Equation Model (SEM) through Lisrel. The first step is to measure the validity and reliability through Confirmatory Factor Analysis (CFA), then the second step is to use a structural model to test the existing hypothesis. Data analysis uses SPSS and Lisrel. Based on the results of Goodness of Fit on the measurement model it can be noted that the acceptable level of Match of RMSEA 0.063, CFI 0.96, and PNFI 0.77 that exceed the standards of the GOF Test match criteria is RMSEA of 0.08, CFI 0.95, and PNFI 0 to 1. It can be concluded that the test of goodness of fit from this research in its entirety can be expressed well, and this research can be considered worthy of continuing.

According to Hair Jr et al., (2014), validity has a sense of the extent to which a scale and measurement can represent the condition that researchers want to research accurately. A measurement can be considered valid if the statement submitted in a questionnaire can represent what a researcher wants to measure – while reliability refers to a sense of the extent to which a variable is observed to measure an actual value (true value) and free of error (error free) (Joseph Jr et al., 2010). Usually, a better level of reliability in a study can be seen when measurement is made in a questionnaire that when asked repeatedly to the respondents, will still produce a consistent answer.

A variable can be said to be valid if it has a standardised loading factor  $\geq 0.5$  and has t-values of  $\geq 1.65$ . In contrast, a variable can be expressed as reliable if it has a construct reliability (CR) value of  $\geq 0.7$  and Variance Extracted of  $\geq 0.5$ . Therefore, based on the result of data processing contained in table 2 and table 3, it can be stated that all variables are valid and reliable.

**Table 2. Validity Measurement Model**

Latent Variable	Standardised Loading Factor $\geq 0.5$	t-values $\geq 1.65$	Conclusion
<b>Technology Readiness (TR)</b>	TR1 (0.92), TR2 (0.85), TR3 (0.87), TR4 (0.93), TR5 (0.93)	TR1 (12.14), TR2 (10.66), TR3(11.20), TR4 (12.56), TR5 (12.37)	Valid
<b>Service Quality (SQ)</b>	SQ1 (0.89), SQ2 (0.84), SQ3 (0.77), SQ4 (0.84)	SQ1 (11.23), SQ2 (10.34), SQ3 (9.06). SQ4 (10.26)	Valid
<b>Perceived Risk (PR)</b>	PR1 (0.88), PR2 (0.76), PR3 (0.84), PR4 (0.80)	PR1 (10.92), PR2 (8.78), PR3 (10.25), PR4 (9.50)	Valid
<b>Relation-ship Quality (RQ)</b>	RQ1 (0.94), RQ2 (0.74), RQ3 (0.84), RQ4 (0.78)	RQ1 (12.37), RQ2 (8.66), RQ3 (10.40), RQ4 (9.34)	Valid
<b>Continuance Intention (CI)</b>	CI1 (0.86), CI2 (0.88), CI3 (0.71), CI4 (0.85)	CI1 (10.61), CI2 (11.18), CI3 (8.09), CI4 (10.52)	Valid

**Table 3. Reliability Measurement Model**

Latent Variable	(CR) $\geq 0.7$	(VE) $\geq 0.5$	Conclusion
<b>Technology Readiness (TR)</b>	0.96	0.95	Reliable
<b>Service Quality (SQ)</b>	0.90	0.87	Reliable
<b>Perceived Risk (PR)</b>	0.89	0.85	Reliable
<b>Relationship Quality (RQ)</b>	0.90	0.86	Reliable
<b>Continuance Intention (CI)</b>	0.90	0.86	Reliable

### Structural Model

Based on the results of Goodness of Fit on the structural model it can be noted that the acceptable level of Match of RMSEA 0071, CFI 0.95, and PNFI 0.78 that exceed the standards of the GOF Test match criteria is RMSEA of 0.08, CFI 0.95, and PNFI 0 to 1. It can be concluded that the goodness of fit test of this research in its entirety can be expressed well, and this research can be considered worthy of continuing.

**Table 4. Analysis Results of Structural Model**

Hyphotheses	Path	Estimates	t-value	t-table	Conclusion
<b>H1</b>	Technology Readiness -> Service Quality	0.27	2.58	1.65	Supported
<b>H2</b>	Technology Readiness -> Perceived Risk	-0.12	-1.12	1.65	Not Supported
<b>H3</b>	Technology Readiness -> Relationship Quality	0.25	2.51	1.65	Supported
<b>H4</b>	Service Quality-> Relationship Quality	0.19	1.88	1.65	Supported
<b>H5</b>	Perceived Risk -> Relationship Quality	-0.31	-3.17	1.65	Supported
<b>H6</b>	Relationship Quality -> Continuance Intention	0.33	3.13	1.65	Supported

Based on the calculation results for structural model H2 in Table 4, it can be noted that the T-values value is at H2 of 1.12. The T-values are smaller than the minimum criteria in the T-table by 1.65. The result of this calculation proves that the readiness technology variable does not influence perceived risk. Because of the number of respondents aged 21-24 years, it has properties that tend to be prepared and sensitive to the use of technology. Sensitivity to technology encourages respondents to more easily understand and access m-BCA features. Hence, there is no impact on the perception of risk gained, where the perception of risk comes from unpreparedness to technology. Besides, m-BCA has also been designed with a good security system and can overcome the problem of losing money when using m-BCA, so this technology readiness does not affect the existence of perceived risk.

### Managerial Implication

Research results that have been obtained by researchers prove that the variable technology readiness and service quality influences relationship quality, that have a positive influence on continuity intention. There are also other variables such as technology readiness that have a negative influence on perceived risk and perceived risk also has a negative influence on relationship quality. Below is a description covering some of the managerial implications that can be applied to this study:

## **Efforts to improve Service Quality and Relationship Quality with the existence of Technology Readiness**

### **1. Video Tutorials from YouTube**

YouTube can be one tool that can be used by m-BCA to increase consumer readiness in using new technology provided by m-BCA. Video tutorials can be varied, such as videos about how to transact m-BCA on the keyboard, videos about the features of m-BCA, video on how to make a cash deposit without an ATM. A video about the introduction of m-BCA can be made as interesting as possible so many people will watch it. Hopefully, after watching the video tutorial on m-BCA, the community will be increasingly educated in using m-BCA. It can reduce the problem of client confusion when accessing m-BCA, especially when distinguishing features such as m-payment and m-commerce, and how to make a mutation account.

### **2. Instagram Ads**

Instagram Ads can serve as one of the media to advertise or provide information about the products offered. It is not impossible if banking products such as m-BCA make Ig ads that will be displayed on Instagram users of mobile banking so that users can indirectly know the service of new m-BCA products and will even try using the new m-BCA product service.

## **Efforts to improve Relationship Quality with improved Service Quality**

### **1. Finger Scan**

Finger Scan can be rated as one new technology that can be used by mobile banking features. This feature not only serves to maintain security, but finger scan is considered to simplify the process of signing in when you want to access mobile banking. Customers no longer need to type the alphanumeric code that is considered too long, and sometimes when the customer has mistyped one number or letter when entering the initial pin, they will have to repeat the pin. It will be seen to slow down the transaction process on m-BCA.

## **Efforts to improve Relationship Quality with decreased Perceived Risk**

### **1. Back-Up Server**

Provision of a back-up server is one step that can be done by the BCA to deal with the problem of the 'system down' or 'error' on m-BCA. Back-up servers can be described as a type of server that allows back up of data, files, or applications. Backing up the server can help and replace the server's work, so the service is unlikely to have an excess time request when the user

accesses a service that results from 'server down'. Finally, the risk of failure to perform a transaction or error system can be requested.

### **Efforts to improve Continuance Intention with improved Relationship Quality**

#### **1. The quota for Free transactions.**

The customer will get free transactions to a certain extent stipulated by m-BCA, such as five free cash withdrawals in the ATM Bersama network each month, and no administration fees for the first three months after activation. Free of charge to open an account, free balance checking fee, free transfer fee ten times to fellow m-BCA accounts every month: hopefully with the free transaction quota it will relieve the transaction fees that must be paid by the customer of m-BCA each month. It can satisfy the wishes of customers to transact at a fair cost so that eventually, customers will continue to use m-BCA repeatedly in conducting various types of financial transactions.

#### **2. UX and UI views are fixed.**

Implement an improved view of UX (user experiences) and UI (user interface) on m-BCA during a certain period, such as per semester or year. The improvement of this UX and UI display should be based on the wishes and needs of the m-BCA users themselves. It would be better if m-BCA does a kind of mini-research distributed through a short online questionnaire filled by customers who are using m-BCA and customers who have responded will earn reward points that can be redeemed for various cashbacks such as 10% cashback for electricity, water, and mobile phone with a maximum cashback of Rp 15,000 for one transaction during the period. UX can be made simpler, such as by only storing the transfer list of account numbers that need to be stored. At the same time, transactions that tend to be 1-2 times only will not enter into the transfer list, so creating a log history that will display various transactions that have been done based on the range that is every week, and every month.

### **Conclusions and Limitations**

This study shows the relationship between technology readiness, service quality, perceived risk, relationship quality, and continuance intention. It can be seen that relationship quality has a long-term relationship in establishing a continuance intention of mobile banking. However, other than that, technology readiness is one of the independent factors that are very important in establishing the quality of service and relationship that has continuity in the intention of mobile banking. However, this research shows that technology readiness has not been proven to affect perceived risk. It can occur because the majority of respondents in this study work as students or students aged 21-24 years who tend to be more sensitive and able to follow new technological changes, so it is not difficult for respondents to conduct transactions at m-BCA



easily. Besides, respondents with professions as students have a smaller number of transactions compared to respondents who are working, so this has an impact on the potential that occurs of spending large amounts of money when making transactions.

Furthermore, m-BCA also has a good security system that requires security data and money that has been entrusted to be stored by the BCA on the m-BCA application – thereby increasing the risk of using m-BCA, and this proves that technology readiness is not affected by the perceived risk. It is supported by research conducted by Chen (2012), who said that the perception of risk doesn't show as a significant effect between the relationship of technological readiness and relationship quality.

There are several limitations from the interpretation of results that point to a need for better research in the near future. In this study, the majority of respondents are millennials aged 21 years-24 years. They have a sensitive nature to technological change, which is considered to be less by variable readiness technology. In general, the technology readiness variable will be more suitable if it is used on respondents who are less sensitive to technological changes such as gen X (born 1961-1980). It would be better if this study added a moderating variable whose task was to strengthen the relationship between the technology readiness variable and other variables. The moderation variable that can be used is the age variable. So for further research, it is expected to select respondents from among gen X, who are 39 - 58 years of age. Besides that, it is hoped that further research can add Perceived Ease of Use and Perceived Usefulness variables as components of the TAM (Technology Acceptance Model). The purpose of using TAM itself is to explain the determinants of how to accept the presence of a computer in general, explain user behaviour and its population in various computing technologies that exist (Davis, Bagozzi, & Warshaw, 1989). In general, TAM is often used to examine object-based research applications or websites, in measuring the strength of intention to use mobile banking repeatedly (continuance intention).

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