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COMPARATIVE ANALYSIS OF INFORMATION QUALITY, SYSTEMS, SERVICES AND MOBILE BANKING CUSTOMER SATISFACTION BETWEEN GOVERNMENT BANKS, NATIONAL PRIVATE BANKS AND REGIONAL BANKS

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ABSTRACT

This study has the aim of knowing and analyzing the comparison of both the quality of services carried out by the banks and also the consumers in this case comparing the level of satisfaction of mobile banking users at government banks, national private banks and regional banks. The sample taken was 100 respondents consisting of customers of government-owned banks, private banks and regional banks. The test stages used are validity test, reliability test, normality test, and Wilcoxon Signed Rank Test. Based on the results of the study, it can be concluded that there are differences in information quality, system quality, service quality, and customer satisfaction between Mobile Banking for Government Banks, National Private Banks, and Regional Banks.

Keywords: *Bank, Mobile Banking, Information Quality, System Quality, Service Quality, Customer Satisfaction*

INTRODUCTION

The development of technology and information has a comprehensive impact in Indonesia, including in the banking sector. The development of technology and information has led to the emergence of electronic-based applications. Changes in the technological interface have made it possible for the financial industry to satisfy its customers with instant solutions to their problems through the use of technology. (Tam & Oliveira, 2017) and also Technology is increasingly being used by banks to provide services through self-service mode using various electronic channels (Sindwani & Goel, 2012) and financial services in general are complex and require a lot of trust for consumers to use technology (Khan, 2014). (Khan, 2014). Consumer trust in the banking industry is also called customer trust. The existence of customer trust is supported by information about the increase in digital transactions.

Based on Bank Indonesia (BI) data, throughout August 2023 the value of digital banking transactions nationwide reached IDR 5,098.6 trillion or around IDR 5.1 quadrillion. The value increased 1.3% compared to July 2023 (month-on-month), and grew 11.9% compared to a year earlier (year-on-year).

Figure 1 Value of Digital Banking Transactions in Indonesia

Source: Data Books (2023)

The figure above shows that the value of digital banking transactions recorded is a combination of internet banking, SMS/mobile banking, and phone banking transactions.

According to the definition of the Financial Services Authority (OJK), internet banking is a banking transaction using a computer and the internet through a special website owned by the bank. Then SMS/mobile banking is a banking transaction using a cellphone, either through a smartphone application or a short text message service provided by the bank. Another definition states that Mobile Banking is one of the banking services that can be used by customers who are registered to have an account at the bank concerned. (Antonov et al., 2022).. Meanwhile, according to (Amalia & Hastriana, 2022) Mobile banking is a technology that has innovation and has the latest information services in the banking industry so that later it can facilitate its customers in making transactions.

In contrast to phone banking, it is stated that phone banking is a banking transaction via telephone, where the customer calls the bank's service center, then the bank processes the customer's transaction through special staff or employees or through an automation program. Based on the channel, the value of digital banking transactions nationally in August 2023 reached Rp 5,098.6 trillion. The transaction details are internet banking transactions amounting to Rp3,654.6 trillion, SMS/mobile banking transactions: Rp1,443.8 trillion, phone banking transactions: Rp143.7 billion. Mobile banking transactions are the second largest after internet banking.

The increase in transactions shows that the use of digital banking transactions provides benefits to customers. This is also indicated by several services that are the advantages of transactions using m-banking according to (Chandran, 2016) namely time saving, convenient, secure, easy access to your finance, increased efficiency, fraud reduction. The m-banking service is equipped with features that make it easy for users to carry out various transactions, including information services (balances, account mutations, interest rates, and the location of the nearest branch/ATM) and providing transaction services, such as transfers, bill payments (electricity, water, internet), credit purchases, and various other features. Use in mobile banking if the services provided by the bank are considered easy so that customers will be encouraged to use mobile banking in transactions.

Currently, there are many m-banking services available that are used by the public. Among them are m-BCA, BRI-Mobile, BNI Mobile, Livin by Mandiri, and CIMB-Mobile. This causes competition in the field of banking technology to be tighter, each bank will compete to improve service quality and create satisfaction for customers so as to create customer loyalty.

Regarding competition in the field of technology, this cannot be separated from customer perceptions in using or utilizing these services. The view of a brand can also be seen from the results of a survey conducted by katadata.co.id.2022 based on a survey of 8,500 respondents spread across 15 major cities in Indonesia. The results of the Top Brand Index for mobile banking in 2022 can be seen in the following table.

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Table. 1 **Most Popular *Mobile* Banking in Indonesia**

No.	Name	Top Brand Index Value/Score in 2022 (In Percent)	Top Brand Index Value/Score in 2023 (In Percent)
1	m-BCA	47.40	47,90
2	BRI Mobile	19,40	19,80
3	m-Banking Mandiri	12,90	13,0
4	BNI Mobile	11.20	11,30
5	CIMB Niaga Mobile	3,80	4,20

The table, based on the Top Brand Index (TBI) Score for 2023, shows that Bank Central Asia's (BCA) mobile banking application, m-BCA, obtained a TBI score of 47.90%, the highest compared to its competitors. In second place is BRI Mobile with a TBI score of 19.80%. Followed by Mandiri m-banking 13% and BNI Mobile 11.30%. Furthermore, CIMB Niaga Mobile is recorded to have the lowest TBI score on this list, which is 4.20%. Overall, there was an increase in value or score from the previous year. This brand index ranking is influenced by commitment share, mind share, and market share factors.(Millenianto, 2020).

Based on this research, this study aims to determine and analyze the comparison of both the quality of service carried out by the banks and also the consumers in this case comparing the level of satisfaction of mobile banking users at government banks, private banks and regional bank.

RESEARCH METHODS

The object applied in this study is the quality of mobile banking applications consisting of system quality, information quality, and service quality, as well as the level of mobile banking satisfaction. The population in this study are bank customers who actively use mobile banking at Government-Owned Banks, Private Banks and Regional Banks. In this study, a sample was drawn that could represent all population units taken, totaling 300 respondents who were bank customers who actively used mobile banking from 3 (three) bank ownership in Indonesia, namely Government-owned Banks, Private-owned Banks and Regional-owned Banks.

The questionnaire was distributed in online form and filled in by 300 respondents who filled in completely and validly whose data were used for testing the measurement model and structural model in this study. In determining the sample size using the Lemeshow Formula. This Lemeshow formula is used because of the unknown or infinite population. The Lemeshow formula is as follows:

$$n = \frac{Z^2 \; P(1-P)}{d^2}$$

Description:
n= number of samples
z= z score at 95% confidence = 1.96 p = maximum estimate = 0.5 d= sampling error = 10%

The data in this study were obtained from the distribution of questionnaires to respondents, namely bank customers using mobile banking at Government-owned Banks, Private-owned Banks and Regionally-owned Banks. The number of questionnaires obtained was 300 respondents. Measurement of the level of perception and level of expectation using a 4 (Four) rating scale (Likert scale) with the type of data is ordinal data.

Table 2 presents the Questionnaire Item Assessment Score. In the measurement, each

respondent is asked for his opinion about a statement. The questionnaire was created using google form and distributed online to 100 respondents. The questionnaire link was distributed via Whatsapp.

Table 2 Scoring of Questionnaire Items

Answer Categories	Item Score
Strongly Agree (SS)	4
Agree (S)	3
Disagree (TS)	2
Strongly Disagree (STS)	1

Furthermore, the category grouping of each statement item is presented in Table 3.

Table 3 Interval and Scoring of Questionnaire Items

Interval	Assessment
326-400	Strongly Agree (SS)
251-325	Agree (S)
176-250	Disagree (TS)
100-175	Strongly Disagree (STS)

This study examines whether there are differences in information quality, system quality, service quality, and customer satisfaction of mobile banking users at Government-Owned Banks, Private Banks and Regional Banks.

This research model uses a structural equation model as presented in the following figure.

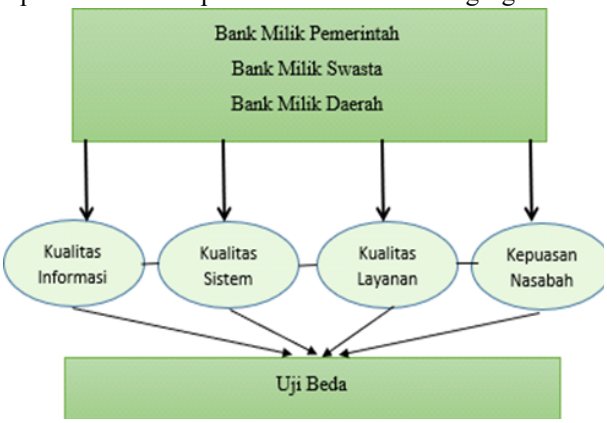

Figure 2 Research Model

The research instrument used validity test, reliability test, and normality test. The analysis technique uses the Wilcoxon Signed Rank Test. (Sugiyono, 2014). If the probability (Asymp.sig <0.05), then Hypothesis 1 is rejected. 2 . If the probability (Asymp.sig > 0.05 then Hypothesis 1 is accepted.

$$Z = \frac{T - \sigma_T}{\sigma_T} = \frac{T - \frac{n(n+1)}{4}}{\sqrt{\frac{n(n+1)(2n+1)}{24}}}$$

(Chou et al., 2014) Defining that Service Quality has a long-term effect in shaping customer satisfaction and will make customers loyal to the company. Service quality can be realized if in a way, being able to meet the needs and desires of customers and appropriately able to balance customer expectations. Meanwhile, according to (Parasuraman et al., 1985) Service quality measures how far the difference is between reality and the expectations desired by customers. Service Quality is a very good or superior delivery according to customer expectations by providing the best service according to needs and desires, customers will assess the results of the service they get. (Zeithaml et al., 1990).

The quality of service provided is sometimes not always in accordance with the expectations of its customers. Various experiences in fact occur that BCA and Mandiri mobile banking services have experienced problems in the transaction process caused by an increase in transactions through BCA virtual accounts that exceed capacity limits. (Sugianto, 2019) BCA's IP address that cannot be accessed from the internet (Sukmana, 2019) and the BCA Bank system upgrade (Leucereno, 2019). (Leucereno, 2019) and Bank Mandiri (Sugianto, 2019) The results of this study show that the failure of BCA Bank's system upgrade, which resulted in failure in transactions alone, but caused a feeling of customer discomfort and obstruction in carrying out banking activities that were not in accordance with the promise given, which was easily accessible for 24 hour.

Based on some of these studies, the hypothesis of this study can be arranged as follows:

H1: There are differences in the quality of mobile banking systems at government banks, private banks and regional banks.

H2: There are differences in the quality of mobile banking information at government banks, private banks and regional banks.

H3: `There are differences in customer service quality of mobile banking users at government banks, private banks and regional banks.

H4: There are differences in the level of customer satisfaction of mobile banking users at government banks, private banks and regional banks

RESULTS AND DISCUSSION

Respondent Characteristics

The questionnaire that is the measuring tool for this research includes questions about the respondent's profile which consists of the characteristics of the respondent with demographic considerations and the respondent's behavior regarding MBanking. The profile consists of age, gender, marital status, highest education, expenditure per month, employment status, sector / field of work, Frequency of Use of M-Banking, Value Per M-Banking Transaction, Duration of

Using M-Banking. Respondents between the ages of 17 years and 30 years are 22 people or 22%, then the age of respondents between 31 years and 40 years is 25 people or 25%, while the age of the most respondents is between 41 to 50 years, namely 38 people or 38%, and ages above 51 years to 60 years as many as 15 people or 15%. As many as 60% of respondents were male and the number of female respondents was 40%. The marital status of all respondents is 100%. The highest education S1 is the most dominating, which is as much as 39% of the total respondents. groups of respondents with S3 and S2 education levels are also quite large, namely 24% and 22% of the total respondents. While the group of respondents with a diploma level of education (D1-D4) was 13%, then 2% were respondents with the highest level of education SMA or equivalent. Respondents with an income of 5 million down as much as 21%, for respondents with a monthly income of 5-<10 million rupiah occupy the largest position, namely 44% of the total respondents. While other respondents are spread in income of 10 million < 15 million rupiah as much as 15%, 15 million ruiah - < 20 million rupiah as much as 11%, 20 million rupiah - < 25 million rupiah at least 3%, and respondents with monthly income of more than 25 million per month there are 6%. Respondents are private employees, as many as 68% of the total respondents, while respondents are civil servants as many as 12%. Another 12% of respondents are entrepreneurs and 2% are freelancers. From the sector / field of work, 60% of respondents work in the education sector and others work in fields such as the creative industry as much as 13%, manufacturing by 2%, trade by 7%, banking 1%, government by 6%, informatics 4%, health 3% and finance by 4%. Respondents that 50% of respondents on average use MBanking between 10 times to 30 times per month, while 43% on average use no more than 10 times per month. 4% use MBanking more than 50 times and 3% use it between 30 times and 50 times. The transaction value of respondents per month ranging from 500 - < 1 million is 45% of all respondents, then the transaction value of respondents per month ranging from 2 million and above is 20%, then the transaction value of respondents per month ranging from <500 is 18% and respondents with a monthly transaction value of 1 million -< 2 million are 17%. Most respondents use MBanking for <5 years, then 38% of respondents who have used MBanking for 5 years -< 10 years, then respondents who have used MBanking for 10 years -< 15 years are 8%, and 3% of respondents who have used MBanking for the remaining 20 as much as 3% are respondents who have used MBanking for> 20 years. Respondents at Government Banks have Mbanking accounts at Bank Mandiri as much as 38% and Bank BNI as much as 35%. While 14% of other respondents have accounts at Bank BRI as much as 14% and 13% have accounts at Bank BTN. Respondents at National Private Banks have MBanking accounts at 83%, the remaining 6% of respondents have Bank Syariah Indonesia Mbanking accounts, then there are as many as 3% of respondents each who have Bank Bukopin, Permata Bank and Bank CIMB Niaga MBanking accounts, then there are at least 1% of respondents each who have Inter-Regional Bank and National Nobu Bank MBanking accounts. Respondents that have Bank DKI MBanking accounts are most commonly owned by respondents, which is 81% and respondents who have Bank West Java MBanking accounts are 19%. This is because the questionnaire was distributed to respondents who live in Jabodetabek. Respondents mostly use their Mbanking account for the purpose of transferring funds, balance information, digital payments, account mutations, M-commerce purchases and monthly bill payments, while for cardless features there are still many who do not use or rarely use it compared to those who use it. Respondents that National Private Bank MBanking is most widely used by respondents, namely 55%, then Government Banks as many as 32% of users and regional banks as many as 13% of users. Private Bank MBanking accounts top the list in terms of usage by respondents.

Validity Test

Validity testing is carried out to determine whether the measuring instrument (instrument) used is feasible so that it can produce data that is in accordance with what is measured or produce valid results. This test was carried out using 30 respondents who were bank customers consisting of government banks, private banks and regional banks with a total of 20 research instrument items. The details of the questions consist of 6 question items on the information quality variable, 6 question items on system quality, 4 question items on service quality and 4 question items on customer satisfaction level. Based on a research questionnaire consisting of 30 respondents for validity testing with a total of 20 question items consisting of 6 question items on the information quality variable, 6 question items on system quality, 4 question items on service quality and 4 question items on customer satisfaction level. The calculation results show that the results of r count are greater than the correlation value (r table) of 0.361 for the score of each statement item above so it can be said that all question items on the questionnaire are valid and can be used to measure variables in the study.

Reliability Test

Reliability test is used to measure the stability or level of consistency of respondents' responses to question items in accordance with the respondents' understanding of the questions in the questionnaire submitted. The reliability test was

carried out using the Cronbach's Alpha method, the results of the calculation of the reliability coefficient for the variable were said to be reliable if the alpha value was> 0.60. Cronbach's Alpha value for the Information Quality variable is 0.947 or> 0.6. Cronbach's Alpha value for the System Quality variable is 0.954 or> 0.6. Cronbach's Alpha value for the Service Quality variable is 0.955 or> 0.6. Cronbach's Alpha value for the Satisfaction Level variable is 0.971 or> 0.6. So based on the results of the validity test, it can be stated that all statement instruments are reliable, so the questionnaire is suitable for distribution to research respondents.

Data Normality Test

Normality test is a test that aims to assess the distribution of data in a group of data or variables, whether the data distribution is normally distributed or not. In this study, the data was processed using IBM Staticstical Product Service Solution (SPSS) VERSION 27.0 and using the Kolomogrov-Smirnov Test with a significant level measurement of 0.05, where the data is said to be normally distributed if the significance value is greater than 0.05. Normality testing with the Kolmogorov-Smirnov method obtained a significance value for each variable. In the information quality variable, the significance value is sig 0.002 < 0.05, the system quality is sig 0.133> 0.05, the service quality is sig 0.000 < 0.05 and the level of satisfaction is sig 0.000 < 0.05 which means < 0.05 so it can be concluded that the data in this study indicate that the variables of information quality, service quality, satisfaction level are not normally distributed and only the quality of the system has normally distributed data.

Information Quality Variable

The Information Quality variable presents the ability of the output quality of the information system provided by the mobile banking application at government banks, private banks and regional banks. Recapitulation of the average value of each statement for the information quality variable for each bank and the results of the average value of respondents' answers. The average score of respondents' answers to the Information Quality variable is 318.8 with a percentage of 79.7%, so Information Quality can be stated to be included in the agreed criteria. Overall information quality in government banks, private banks and regional banks, the average score is in the interval 251-325. Based on the average score of Information Quality m. Banking in private banks has the highest value of 338.1 or 84% above the average value, while in government banks and regional banks it is below the overall average. Thus it can be interpreted that the quality of m-banking information in government banks, private banks and regional banks agrees, where the information provided by m-banking Bank is useful, the information provided by m-banking Bank is easy to understand, the information provided by m-banking Bank is interesting, the information provided by m-banking Bank is reliable, the information provided by m-banking Bank is complete and the information provided by m-banking Bank is up to date.

System Quality Variables

The System Quality Variable presents the ability of the quality of the information technology system to mobil banking applications at government banks, private banks and regional banks. Recapitulation of the average value of each statement for the System quality variable for each bank and the results of the average value of respondents' answers. The average score of all respondents' answers to the Information Quality variable is 318.6 with a percentage of 79.6%, so the Quality of the System can be stated to be included in the agreed criteria. Overall information quality in government banks, private banks and regional banks, the average score is in the interval 251-325. Based on the average score of System Quality m. Banking System Quality in private banks has the highest score of 334 or 83.5% and can be stated as strongly agreeing on the quality of information provided by the bank, the average score is also above the overall average value, while successively in government banks of 320.3 or 80% is above the overall average value and regional banks 301.6 or 75.4%, is below the overall average. Thus it is interpreted that the quality of information provided by the bank is very good. Thus it can be interpreted that the quality of the m-banking system in government banks, private banks and regional banks agrees, so it can be stated that M-banking in government banks, private banks and regional banks is easy to use, easy to find information, the Bank's m-banking service menu is well structured, the m-banking navigation system is easy to learn, Bank M-banking offers functions or services that suit customer needs, and M-banking offers other applications from third parties that are integrated with easy access.

Service Quality Variable

The Service Quality variable presents the service capabilities provided by information system developers for mobile banking application services at government banks, private banks and regional banks. Recapitulation of the average value of each statement for the service quality variable at each bank and the results of the average value of respondents' answers. The average service quality variable score on the three bank ownership is 316.5 or 79.1%. Based on the results of the calculation of the average score of respondents' answers regarding the quality of service provided for m-banking users at private banks has the highest average score of 335.2 or 83.8%, so it can be interpreted that

m.banking users at private banks strongly agree regarding the quality of service provided by the developer of the m-banking application system. While the quality of m- banking services at government banks and regional banks has an average score of 312.7 or 78.1% and 301.7 or 75.4%, both below the overall average score of 316 or 79.1%. This shows that m.banking users agree regarding the quality of service provided by the developers of the m- banking application system from government banks and regional banks.

Based on the overall average score of 316.5, it is in the interval 251-325 so that it can be interpreted that the quality of service at government banks, private banks and regional banks can be stated to agree that service personnel are always responsible and very willing to help whenever customers need support with Bank m-banking, Bank m-banking service personnel also provide service attention when experiencing problems with m-banking in accordance with the promised time and responsible service personnel also have sufficient knowledge to answer questions regarding information on using m-banking.

Satisfaction Level Variable

Variable The level of satisfaction presents the user's response to the use of information system outputs for the services provided by information system developers for mobile banking application services at government banks, private banks and regional banks. Recapitulation of the average value of each statement for the service quality variable for each bank and the results of the average value of respondents' answers.

Based on the overall average score of 322.4, it is in the interval 251-325 so that it can be interpreted that the level of customer satisfaction of m-Banking users at government banks, private banks and regional banks can be stated as strongly agreeing or in other words that respondents who are users of the m-banking application are very satisfied with m-banking services in providing information or needs and are very satisfied because of the efficiency and effectiveness of the overall services provided by the bank in using the m-banking application.

The average score of respondents' answers to the variable level of satisfaction at private banks has the highest score of 334.5 or 86.1%, this shows that the respondents, in this case m-banking user customers, strongly agree on the level of satisfaction obtained. The score of 334.5 is in the interval 326-400. In government banks the average score of 323.7 and regional banks of 309 is in the interval 251-325, so it can be stated that m-banking user customers at government banks and regional banks agree on the level of satisfaction obtained when using m-banking transactions.

Hypothesis Test

The results of the Wilcoxon Signed Rank Test calculation comparing Information Quality, System Quality, Service Quality and Satisfaction Level at Government Banks, Private Banks and Regional Banks can be explained.

Table 4 Summary of Wilcoxon Signed Rank Test calculation results Information quality, system quality, service quality and satisfaction level in government banks, private banks and regional banks

Variables	Bank Ownership	Z	Significant	Results
Information Quality	BP - BS	-3.753	0.000 < 0,05	There is a difference
	BP - BD	-3.652	0.000 < 0,05	There is a difference
	BS - BD	-5.437	0.000 < 0,05	There is a difference
System Quality	BP - BS	-2.635	0.008 < 0,05	There is a difference
	BP - BD	-3.359	0.001 < 0,05	There is a difference
	BS - BD	-5.629	0.000 < 0,05	There is a difference
Service Quality	BP - BS	-3.974	0.000 < 0,05	There is a difference
	BP - BD	-2.620	0.009 < 0,05	There is a difference

Based on the table above, it can be obtained a comparison of customer perceptions regarding information quality, system quality, service quality and level of satisfaction with m- banking at government banks, private banks and regional banks. The results of the comparison of information quality show that the sig. value is smaller than 0.05, so it can be stated that there are differences in the quality of mobile banking information between government banks, private banks and regional banks. The results of the comparison of system quality show that the sig. value is smaller than 0.05, so it can be stated that there are differences in the quality of the m-banking system between government banks-private banks and regional banks. The results of the comparison of service quality show that the sig. value is smaller than 0.05, so it can be stated that there are differences in the quality of m-banking services between government-private banks and regional banks. The results of the comparison of the level of satisfaction show that the sig. value is smaller than 0.05, so it can be stated that there are differences in the level of customer satisfaction of m-banking users between private government banks and regional banks.

CONCLUSIONS AND SUGGESTIONS

Based on the results of the analysis and discussion regarding the comparison of information quality, system quality, service quality and customer satisfaction levels of mobile banking users at government banks, private banks and regional banks, the authors obtain conclusions that can be drawn from the research, namely (1) There are differences in information quality between government banks and private banks (BP-BS), government banks and regional banks (BP-BD) and private banks and

regional banks (BS-BD), (2) There are differences in System quality between government banks and private banks (BP-BS), government banks and regional banks (BP-BD) and private banks and regional banks (BS-BD), (3) There are differences in service quality between government banks and private banks (BP-BS), government banks and regional banks (BP-BD) and private banks and regional banks (BS-BD), (4) There are differences in satisfaction levels between government banks and private banks (BP-BS), government banks and regional banks (BP-BD) and private banks and regional banks (BS-BD).

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