

# Quick Response Pay Analysis with Electronic Service Quality and Importance Performance Analysis

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**Abstract**—In current banking digitalization era, bank could meet this challenge by launching a payment technology using QR code scan, that use devices owned by their customer by scanning QR code attached to the merchant. Customer satisfaction should be prioritized which is determined by the quality of goods or services. E-ServQual intended to examine transaction accuracy, speed to solve problems online, required information easily available, and ease of accessing QR Pay. This study aimed to analyze bank customer satisfaction level in using QR Pay service based on ServQual method integrated with Fuzzy logic. This research also identified service variables prioritized by customers by using Importance Performance Analysis (IPA). This study conducted on 69 customers of Bank QR Pay service in one Branch Office of State-Owned Enterprises bank in Balikpapan, East Kalimantan. Study result indicated that the need of QR Pay strategy improvement service that comprised of transaction accuracy, speed to solve problems online, required information easily available and ease of accessing the QR Pay.

**Keywords**—service quality; QRPay; Fuzzy E-Servqual; IPA

## I. INTRODUCTION

Business change is certainly occurring constantly with rapid change movement. All parties recognize that business is currently at digital transformation era, which means entire business line should transform into digital era. In connection to above matter, there was prediction from International Research Institute of Indonesian Data Corporation (IDC) that 33% of global company would bankrupt should they do not perform digital transformation.

Digital transformation occurs in entire business sector and across the globe. Even in Indonesia, digitalization becomes one of vision target to attain, specifically becoming largest digital economic in South East Asia that reach USD 130 billion in 2020. All business sector is inevitably start to prepare themselves entering digitalization era, including banking business which is one of nation economic driver institution. Banking as business entity also faces necessity demand to maintain competitive level alongside rapid information technology development, society lifestyle change, and increasingly consumer demand as well, and also data concerning banking digital industry big opportunity in which Bank Indonesia recorded that it is only 110 million of Indonesian population that could access banking services. It is

also affirmed that on more active banking sector, web-based solution is necessary for standardization, optimization and regulating selling or pre-selling flow process and new product introduction. It is also reflecting on how importance banking business readiness to encounter evolution leading into Banking Digitalization.

One of banking digitalization form is information technology utilization within banking service, one of them is mobile banking (m-banking) service. This m-banking service is service in which customers using mobile phone or Personal Data Assistant (PDA) device in making their banking transaction. This m-banking service existence certainly would ease customer in using various products and services offered by bank [1]. According to survey carried out by Financial Service Authority (2015), there were 19.9 million m-banking users in Indonesia [2].

Several research concerning m-banking influence toward customer satisfaction amongst them are research carried out by Sagib and Zapan which stated that service quality as a whole was a strong antecedent of customer satisfaction, but only three dimensions had positive influence on satisfaction specifically reliability, efficiency, and convenience [3]. Meanwhile reliability and efficiency were two dimensions with positive influence on customer retention. Meanwhile Chrispine concluded that clear and easy to understand mobile banking application user interface enhanced customer satisfaction [4]. Alper Ozer stated that there were five dimensions to consider in mobile service quality: availability, perceived risk, easy to use, compatibility of mobile devices and entertainment services, and these dimensions had positive effect on satisfaction [5]. Differences still remain on influence result from indicators that constitute m-banking service quality magnitude toward customer satisfaction, that this paper shall re-examine m-banking influence toward customer satisfaction, specifically from one of m-banking service: QRPay.

This research focuses more on QRPay, which is part of the mobile banking service. The mobile banking application can be downloaded at apps store and play store. This application can run smoothly on Android and I phone. QR Pay services in Indonesia have been carried out by less than 10 companies that have obtained permission from Bank Indonesia to provide payment systems through the Quick Response Code / QR Code. These companies consist of banking and financial

technology (fintech). Bank Indonesia explained that, the standardization would include four aspects, namely interoperability, interconnectivity, security and inclusion. So that with the greatest in the National Payment Gateway, the QR Code from various hosting companies will be connected so that the payment can be used across services. As a result, one merchant does not need to provide many QR code scanners for each company [6]. Until now the author has not found the literature directly related to QRPay. Therefore, this research is very interesting for the author to be studied.

II. METHOD

This research is a quantitative research to analyse bank customer satisfaction level in using QR Pay service based on ServQual method integrated with Fuzzy logic.

Data collection in this research carried out through questionnaire directly distributed to customers of one of the State-Owned Enterprise (BUMN) Bank located in Balikpapan, East Kalimantan Province of Indonesia. Total population were 56,353 people and 69 of them returning questionnaire that directly assigned as samples in this study. SOE name was not mentioned due to request from BUMN leader in which research conducted. Should you need further information please directly contact this research author.

There were 2 sections in this research questionnaire that comprised of: (1) Information section related to respondent background and socio-economic background, (2) Question section that comprised of 15 questions divided into 5 sub-part that consist of 3 questions for each sub-part.

This questionnaire design was based on e-Servqual developed by Parasuraman. This questionnaire is one of tools designed in service quality measurement that related to online transaction context. This model is development and adaptation from Servqual model.

e-SERVQUAL model initial design consist of for kinds of gap, specifically information gap, design gap, communication gap, and fulfilment gap. Perception difference between customer expectation and reality provided by company examined through this questionnaire. Author adjusted some questions solely intended to ease respondents understanding in Indonesia without removing original meaning of the question. Researcher added 1 new question section in this questionnaire design, namely access easiness.

Measurement of variables in this study described in the following table 1:

TABLE I. OPERATIONAL VARIABLE DEFINITIONS

No	Operational Variable Definitions	
	Variable	Sub Variable
1	Transaction accuracy	Transaction speed Transaction accuracy Transaction easiness
2	Interface design	Functional interface Contemporary interface Interactive interface
3	Simplicity in access	Quick access time Easy to install application Accessible application
4	Required information availability	Information available according to necessity Attainable information Too much information delivered
5	Problems handling	Quick problems handling Accurate problems handling Simple problems handling

Fuzzy perceived and fuzzy expected analysis carried out using frequency analysis of SPSS 24 statistical tools.

III. RESULTS AND DISCUSSION

Statistical result showed that most of respondents were in 27 through 32 years of age, as presented in the following figure 1:

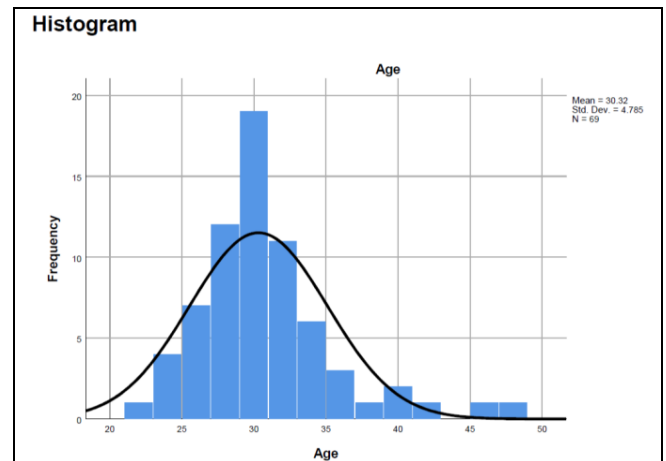


Fig. 1. Histogram analysis of frequency of age result from SPSS 24.

Based on above statistical result it could also be revealed that respondents comprised of 37 males (53.6%) and 32 females (46.4%). From educational background perspective, most of respondents (72.5%) were undergraduate, followed by 15.9% and 11.6% of respondents with Senior High School and Diploma educational background respectively. From marriage status perspective, 68.1% of respondents were married and 31.9% of them were single. Further information concerning respondent’s demographic data are shown in the following table 2.

TABLE II. DESCRIPTIVE STATISTICS

Table Caption	Operational Variable Definitions		
	Variable	Frequency	Percentage
Gender	Male	37	53.6%
	Female	32	46.4%
Marital Status	Single	22	31.9%
	Married	47	68.1%
Education	High School	8	11.6%
	Diploma	11	15.9%
	Undergraduate	50	72.5%

In order to review further concerning customer satisfaction according to this research intention, researcher had conducted data processing through SPSS 24 from the distributed questionnaire. SPSS 24 could process data through frequency analysis. This analysis calculated customer satisfaction in detail based on perceived and Expected.

The examined variables comprised of 5 sections, specifically Transaction accuracy, Interface design, Simplicity in access, required information availability, and Problems handling. Transaction accuracy more concern during transaction and transaction process itself. Meanwhile interface design more related to interface of QR pay application. Simplicity in access measured as customer would make access to QR pay application, required information availability concerned information interface required when performing QR Pay transaction on the application provided. Meanwhile problems handling concerned more effort customer could undertake upon performing transaction and more concerned into complaint handling should problems occur in performing QR Pay transaction.

Those five variables were further divided into three sub-variables respectively, yielding 15 variables in total to examine in this research: Transaction speed, Transaction accuracy, Transaction easiness, Functional interface, Contemporary Interface, Informative interface, Quick access time, Easy to install application, Accessible information, Information available to necessity, Attainable information, Too much information delivered, Quick problems handling, Accurate problems handling and Simple problems handling.

In order to simplify data processing, researcher provided code according to above table, to present clearer data processing with SPSS. The following table lists above variables list.

TABLE III. QR PAY QUESTIONNAIRE CODING

QR Pay Questionnaire Coding				
Variable	Sub Variable	Questionnaire	Expected	Perceived
Transaction accuracy	Transaction speed	1a	QRh1a	QRr1a
	Transaction accuracy	1b	QRh1b	QRr1b
	Transaction easiness	1c	QRh1c	QRr1c
Interface design	Functional interface	2a	QRh2a	QRr2a
	Contemporary interface	2b	QRh2b	QRr2b
	Interactive interface	2c	QRh2c	QRr2c
Simplicity in access	Quick access time	3a	QRh3a	QRr3a
	Easy to install application	3b	QRh3b	QRr3b
	Accessible application	3c	QRh3c	QRr3c

Table 3. Cont.

Required information availability	Information available according to necessity	4a	QRh4a	QRr4a
	Attainable information	4b	QRh4b	QRr4b
	Too much information delivered	4c	QRh4c	QRr4c
Problems handling	Quick problems handling	5a	QRh5a	QRr5a
	Accurate problems handling	5b	QRh5b	QRr5b
	Simple problems handling	5c	QRh5c	QRr5c

Upon coding process, researcher conducted data processing using SPSS 24. Analysis carried out using frequency and gave setting on mean position, that mean value of each questionnaire could be obtained. Based on those mean values, fuzzy perceived and fuzzy expected from each sub-variable could be obtained from the questionnaire data.

The following are analysis result in more detail:

Statistics								
		Data MyQr	QRh1b	QRh1c	QRh2a	QRh2b	QRh2c	QRh3a
N	Valid	69	69	69	69	69	69	69
	Missing	0	0	0	0	0	0	0
Mean		3.91	3.96	3.99	3.74	3.90	3.81	3.83
Median		4.00	4.00	4.00	4.00	4.00	4.00	4.00
Mode		4	4	4	4	4	4	4

Statistics								
		QRh3b	QRh3c	QRh4a	QRh4b	QRh4c	QRh5a	QRh5b
N	Valid	69	69	69	69	69	69	69
	Missing	0	0	0	0	0	0	0
Mean		3.86	3.81	3.88	3.91	3.93	3.97	3.96
Median		4.00	4.00	4.00	4.00	4.00	4.00	4.00
Mode		4	4	4	4	4	4	4

Fig. 2. Analysis result from SPSS 24.

Statistics								
		QRh5c	QRr1a	QRr1b	QRr1c	QRr2a	QRr2b	QRr2c
N	Valid	69	69	69	69	69	69	69
	Missing	0	0	0	0	0	0	0
Mean		3.99	3.26	3.20	3.16	3.22	3.13	3.09
Median		4.00	3.00	3.00	3.00	3.00	3.00	3.00
Mode		4	3	3	3	3	3	3

Statistics								
		QRr3a	QRr3b	QRr3c	QRr4a	QRr4b	QRr4c	QRr5a
N	Valid	69	69	69	69	69	69	69
	Missing	0	0	0	0	0	0	0
Mean		3.13	3.13	3.14	3.20	3.09	3.10	3.16
Median		3.00	3.00	3.00	3.00	3.00	3.00	3.00
Mode		3	3	3	3	3	3	3

Statistics			
		QRr5b	QRr5c
N	Valid	69	69
	Missing	0	0
Mean		3.12	3.23
Median		3.00	3.00
Mode		3	3

Fig. 3. Analysis result from SPSS 24 (continued).

In order to simplify further interpretation, above data questionnaire processed in the following figure 4:

QRPay				
Variable	Sub Variable	Quest	Expected	Perceived
<i>Transaction Accuracy</i>				
	Transaction speed	1a	QRh1a	QRr1a
	Transaction accuracy	1b	QRh1b	QRr1b
	Transaction easiness	1c	QRh1c	QRr1c
<i>Interface design</i>				
	Functional interface	2a	QRh2a	QRr2a
	Contemporary interface	2b	QRh2b	QRr2b
	Interactive interface	2c	QRh2c	QRr2c
<i>Simplicity in access</i>				
	Fast Access Time	3a	QRh3a	QRr3a
	The Application is easy to install	3b	QRh3b	QRr3b
	Accessible application	3c	QRh3c	QRr3c
<i>Required information availability</i>				
	Information available according to necessit	4a	QRh4a	QRr4a
	Attainable information	4b	QRh4b	QRr4b
	Too much information delivered	4c	QRh4c	QRr4c
<i>Problems handling</i>				
	Quick problems handling	5a	QRh5a	QRr5a
	Accurate problems handling	5b	QRh5b	QRr5b
	Simple problems handling	5c	QRh5c	QRr5c

Fig. 4. Result of data questionnaire processed.

From figure 4, it could be concluded that highest fuzzy expected value is transaction easiness and simple problems handling. Both variables had 3.99 values, which means customer considered both variables as highly crucial. Meanwhile lowest fuzzy expected values are on too much information variable. It could be concluded that customer did not desire too much information when making access into QR Pay application.

The following table present result of sorting process of fuzzy expected from highest value into lowest value:

TABLE IV. QR PAY QUESTIONAIRE CODING

Sub Variable	Questionnaire	Expected	Expected
Transaction easiness	1c	QRh1c	3.99
Simple problems handling	5c	QRh5c	3.99
Quick problems handling	5a	QRh5a	3.97
Transaction accuracy	1b	QRh1b	3.96
Accurate problems handling	5b	QRh5b	3.96
Transaction speed	1a	QRh1a	3.91
Attainable information	4b	QRh4b	3.91
Contemporary interface	2b	QRh2b	3.90
Information available according to necessity	4a	QRh4a	3.88
Easy to install application	3b	QRh3b	3.86
Quick access time	3a	QRh3a	3.83
Interactive interface	2c	QRh2c	3.81
Accessible application	3c	QRh3c	3.81
Functional interface	2a	QRh2a	3.74
Too much information delivered	4c	QRh4c	3.72

Meanwhile, the following table present result of sorting process of fuzzy perceived from highest value into lowest value:

TABLE V. QR PAY QUESTIONAIRE CODING

Sub Variable	Questionnaire	Perceived	Perceived
Transaction speed	1a	QRr1a	3.26
Simple problems handling	5c	QRr5c	3.23
Functional interface	2a	QRr2a	3.22
Transaction accuracy	1b	QRr1b	3.20
Information available according to necessity	4a	QRr4a	3.20
Transaction easiness	1c	QRr1c	3.16
Quick problems handling	5a	QRr5a	3.16
Accessible application	3c	QRr3c	3.14
Contemporary interface	2b	QRr2b	3.13
Quick access time	3a	QRr3a	3.13
Easy to install application	3b	QRr3b	3.13
Accurate problems handling	5b	QRr5b	3.12
Too much information delivered	4c	QRr4c	3.10
Interactive interface	2c	QRr2c	3.09
Attainable information	4b	QRr4b	3.09

Based on table 5, it could have revealed that the highest fuzzy perceived value is transaction speed with 3.23 score and simple problems handling with value of 3.23, which means customer considered both variables highly crucial. Meanwhile lowest fuzzy perceived are attainable information and interactive value with value of 3.09 for both variables. It could be interpreted that customer were satisfied and obtained both variables per their request when performing transaction on QR Pay application.

Meanwhile sorting based on Gap from highest into lowest Perceived and Expected Value yielding the following information.

TABLE VI. GAP FROM HIGHEST INTO LOWEST PERCEIVED AND EXPECTED VALUE YIELDING

Sub Variable	Quest	Gap
Accurate problems handling	5b	-0.84
Transaction easiness	1c	-0.83
Attainable information	4b	-0.83
Quick problems handling	5a	-0.81
Contemporary interface	2b	-0.77
Transaction accuracy	1b	-0.75
Simple problems handling	5c	-0.75
Interactive interface	2c	-0.72
Easy to install application	3b	-0.72
Quick access time	3a	-0.70
Information available according to necessity	4a	-0.68
Accessible application	3c	-0.67
Transaction speed	1a	-0.65
Functional interface	2a	-0.52
Too much information delivered	4c	-0.12

There are few concerns in connection with above data, specifically Accurate problems handling, Transaction easiness and Attainable information. Those three largest gaps should be noticed by bank to be minimized to improve customer satisfaction. Meanwhile, on the other side Too much information, Functional interface and Transaction speed had fulfilled customer expectations.

#### IV. CONCLUSION

Based on above statistical data it could be revealed that highest fuzzy expected value was transaction easiness and simple problems handling. Meanwhile highest fuzzy perceived value was to too much information variable and attainable information and informative interface occupied lowest fuzzy perceived values. Based on gap analysis, three big problems should immediately handled by bank were accurate problems handling, transaction easiness and attainable information.

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