Customer Acceptance of QR Technology Used in Mobile Payment: A Study of Three Generation Cohorts in Jakarta

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ABSTRACT

Technology is both solution and obstacle we encountered for the sake of easier living, no exception in Indonesia. Internet and e-commerce fostered the digitalization of payment process. Mobile payment services with their increasing popularity are presently under the phase of transition, heading towards a promising future of payment innovations. In this paper, we will evaluate the possible growth of mobile payment with QR Code technology in Indonesia. This paper also examines people's readiness, available facilities, available gadgets, and other factors that bridges the transition from traditional to digitalization of payment. With security and convenience made possible by QR Code, we expect mobile payment using QR code will soon surpassing the current digital payment using debit or credit cards in numbers of transaction, reaching all generations and even broader economic entities, from big enterprise to medium and small enterprises.

Keywords: customer acceptance, mobile payment, QR code, payment systems, technology.

1. INTRODUCTION

Technology grows fast and brings positive effect on human life. One of the facts in Indonesia based on internet users, 83.44% people use smartphone in daily life. At the payment sectors, people use the access to buy or sell online and bank transaction (APJII, 2017). In this startup era, if the organization want to business on payment system service that we called financial technology. They should have permission of Central Bank to implement payment system. The examples to doing the business on mobile payment, the organizations that have electronic money and QR product permission already are bank and nonbank organizations. Some the product brands, Yap, BRI

Mobile, SiMobi, JakOne, Sakuku, Gopay, OVO, Nobu e-Pay, TCash, etc (Bank Indonesia, 2018). Why QR? The QR Code system has become popular due to its quick readability and greater storage capacity compared to standard barcodes. A QR code (Quick Response) is a specific matrix barcode, readable by dedicated QR barcode readers or smart phones through a high-resolution camera. The QR code consists of black modules arranged in a square pattern on a white background. The information usually encoded in the QR code is text, alphanumeric numbers, URL or other data. High capacity of data encoded, small printout size, Chinese/Japanese (kanji and kana) capability, dirt and damage resistance, readable from any direction in 360 and a structure append feature are needed for QR code generation so that it can be efficiently used. In Indonesia it can be complementary used like Electronic Data Capture (EDC) (Soo, 2008).

Every generation have different response with technology acceptance, we divide the generation into three cohorts: baby boomers (1950-1964), gen X (1965-1980) dan gen Y (1981-1997) (Ordun, 2015, p. 41). Baby boomers said their characteristic are value teamwork and group discussions view work from a process-oriented perspective, believe that achievement comes after "paying dues", value company commitment and loyalty, believe in sacrifice in order to achieve success, seek long term employment (Jorgensen, 2003). In the transaction case, the factors that influence baby boomer decide to buy product area price, quality, stock rather than trend or brand. But different with X and Y generation, they prefer to choose cause of brand, prestige, quality, service and variant product. (Ordun, 2015, p. 50).

In this research, the author defines the objective to increase business potential use QR interface for payment purposes. The payment industry will know

what consumer intention to use this feature. The focused research for them from 21 until 68 years old at Jakarta. We believe each generation will have different response through performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value and habit related to behavior intention then behavior to use.

2. LITERATURE REVIEW

2.1. According to Mallat (2007), the adoption of mobile payment methods is dependent upon several factors that affect the consumers' choice and willingness to make use of latest technology for making payments. Those Factors are:

Convenience (or compatibility) is explained as the consistency between an advancement and experiences, values, and need of consumers. An important aspect of compatibility for users to adopt mobile payment methods is the flexibility of these systems so that they can be easily integrated into consumers' daily lives. Mallat (2007) has identified in a study that mobile payment methods are found to be most convenient for small payments for purchasing movie tickets, mobile games, and content online.

Complexity: According to Laukkanen and Lauronen (2005), complexity in the use of various electronic payment methods including smart cards and mobile payments, have contributed to the low adoption of these services. It is logically to expect mobile payments in future will become less and less complex.

Costs: One of the major factors affecting consumer adoption of mobile payment systems is theeffective cost of a transaction. Mallat (2007) has explored that many users have refrained from mobile payment methods because of premium pricing of these services.

Security: Security of mobile payment systems and trust in service providers: Siau et al. (2004) have considered the lack of security and consumer trust in service providers as a major barrier to adoption of e-commerce transactions. Consumers need confidentiality, authentication, data integrity, and non-repudiation as key requirements for making secure payments over the internet.

2.2. Performance Expectancy

Performance expectancy is the degree to which an individual believes that using the system will help him/her to attain gains in job performance. According to the fact that this model is a combination of previous models helped in formation of performance expectancy variable consisting of perceived usefulness (technology

acceptance models), external motivation (motivational model), job fit (PC utilization model), relative advantages (innovation diffusion theory) and outcome expectations (social cognition theory). [6,15,20]. (Ghalandari, 2012)

2.3. Effort Expectancy

Effort expectancy is the extent of convenience perceived for using system. Similar construct in other model and theories from semantic viewpoints are: perceived ease of use (technology acceptance model), complexity (PC utilization model and innovation diffusion theory). [6,15,20] (Ghalandari, 2012)

2.4. Social Influence

Social influence stated that the degree to which an individual perceives that other ones are importan to him/her in using new system. Construct of subjective norms (rational action theory, planned behavior theory and technology acceptance model 2), social factors (PC utilization model) and image (innovation diffusion theory) were influential in formation of this variable. (Ghalandari, 2012)

2.5. Facilitating Conditions

This variable refers to the extent to which an individual perceives that technical and organizational infrastructure required to use intended system are available. The definition covers construct of perceived behavioral control (planned behavior theory and decomposed planned behavior theory), facilitating condition (PC utilization model) and adaptability (innovation diffusion theory). (Ghalandari, 2012)

2.6. Hedonic Motivation

Variable reflect how the market more intention about shopping technology. In case through the inner city and non-inner-city market, the hedonic level more highly at inner city. They spend more money rather than non-inner city. The discussion that make motivated them impacted from adventure, social, gratification, role and value. (Kim, 2006).

2.7. Price Value

How much some differences are really worth to the customer then the improvements to product would add the most value from the customers' perspective. (Swire, 2006). Customer will be measured should them buy the products based on price tag.

2.8. Habit

Habits as the repeating actions some target of goal provide an efficient baseline response. People are

especially motivated regularly, because habit is easy predictable in some reasons and responses. (Runger, 2016). When people repeated their behavior, it can build some habit.

2.9. Behavioral Intention

This focused of behavioral intention impacted from the seven variables will affected the level of intention. But in the consumer satisfaction of store can reflected by purchase intention, willingness to pay, and brand recommendation. The variables limited to discuss on this research. (Özbek, 2013)

2.10. Age

Six age group divided by year and year, they have different characteristic for each. (Marcie Pitt-Catsouphes, 2009). If we calculate following this year as represent below.

Generation Y/Millennials: born after 1980 (age 37 or under in 2018); Younger Generation X'ers: born 1972 to 1980 (age 38-46 in 2018); Older Generation X'ers: born 1965 to 1971 (age 47-53 in 2018); Younger Boomers: born 1955 to 1964 (age 54-63 in 2018); Older Boomers: born 1946 to 1954 (age 64 to 72 in 2018); Traditionalists: born before 1946 (73 or older in 2018)

Old people and difficulties with the new technology: The role of technology in the daily life of older people. Technology may play a problematic role in older people's life1. In 2001, the Dutch Office of Social and Cultural Planning2 summarized some of the threats of new technology, but also some opportunities. Many older people use the opportunities, but the number of users is lower than in the younger age group. In 1998, mobile phones were owned by 37% in age group 35-44 and by 10% in age group 75+; a PIN-card by 97% and 75%; PC by 74% and 5%, respectively. The presence of a PC is higher among men, the better educated, higher income and more-person households. Age has a major impact on PC availability. Over 50% of the older people experience problems in using a PC, a VCR, and a mobile phone. People, who are familiar with computers in their work, stay on as users after retirement. Eventually, most older people will find the way to the digital world. However, the introduction of ticket machines, automatic teller machines, etc. comes too fast for some of them. (M, 2001)

2.11. Gender

Gender refers to the roles and responsibilities of men and women that are created in our families, our societies and our cultures. The concept of gender also includes the expectations held about the characteristics, aptitudes and likely behaviours of both women and men (femininity and masculinity). (UNESCO, 2003).

3. METODHOLOGY

Subject of this research taken from 139 people who's trying QR code payment at retail store and living at Jakarta, Indonesia. The demographic reveal male (53.24%) and female (46.76%) or in total 74 of male and 65 of female as respondents. More man that have electronic money account its used for purchase. Male initiate the financial management program rather than female, because they act like husband (Singh, 1996). All respondent age ranges from 21-54 years old. With the more contribution by age 23-27 years old as is 57 people (41%). More description will be represented on Table 1.

Survey method was spread and share the questionnaire then direct asked for filled it. At the waiting line a retail store. They filled the points while them wait the line. A pre-test done within random people at mall and university personal. Some question on variable was dropped before going to asked for research subject to filled it.

The measurement used of six-Likert points, that ranging points distribute from very disagree [1] to very agree [6]. 7 items for performance expectancy (PE), 6 items for effort expectancy (EE), 5 items for social influence (SI), 5 items for facility condition (FC), 8 items for hedonic motivation (HM), 4 items for price value (PV), 5 items for habit (HT), and 5 items for behaviour intention (BI).

The description of percentage can be known that QR Code payment already try by the 68.3% respondents. I assume that the penetration of QR Code will be increased significantly when regulator component effects the models. The measurement model that contained variables and items will be followed by Table 2. Every item will provide and represent the main variable to get and answer what the related factor that affect behaviour intention like Figure 1.

Table 1. Demograhic information of samples

	Male (N = 74;53.24%)		Female (N = 65;46.76%)		Total (N=139;100%)	
	N	Percentage (%)	N	Percentage (%)	N	Percentage (%)
Age Ranges						
• 17-22	19	59.4	13	40.6	32	23
• 23-27	31	54.4	26	45.6	57	41
• 28-39	18	50	18	50	36	25.9
• 40-57	6	42.9	8	57.1	14	10.1
Ever to try QR Code for Payment?						
• Yes	53	55.8	42	44.2	95	68.3
• No	21	47.7	23	53.3	44	31.7

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Table 2. Measurement models

Measurement items
Performance Expectancy (PE)
PE1: QR payment feature useful in my daily life
PE2: QR payment feature increase the chance of achieving important things to me
PE3: QR payment feature helps me accomplish thing more quickly
PE4: QR payment feature increase my productivity
PE5: QR payment feature increase my flexible to pay product or services
PE6: QR payment feature increase my experience for any transaction
PE7: QR payment feature for overall to be advantageous
Effort Expectancy (EE)
EE1: It's easy to learn how to use QR payment feature
EE2: It's clear and understandable when interaction with QR payment feature
EE3: It's easy to find of useful QR payment feature
EE4: It's easy to become skilful at using QR payment feature
EE5: It's decrease my purchase steps with QR payment feature
EE6: It's easy to get QR payment feature when i want do anything
Social Influence (SI)
SI1: People who are important to me think that I should use QR payment feature
SI2: People who influence my behaviour think that I should use QR payment feature
SI3: People who opinions that I value prefer that I use QR payment feature
SI4: Friend's recommendation will affect my decision to use QR payment feature
SI5: I would use mobile apps because the proportion of my friends uses QR payment feature
Facilitating Condition
FC1: I have the resources necessary to use QR payment feature
FC2: I have the knowledge necessary to use QR payment feature
FC3: QR payment feature are compatible with other technologies I use
FC4: I can get help from others when I have difficulties using QR payment feature
FC5: I can use QR payment feature that entirely within my control
Hedonic Motivation
HM1: Using QR payment feature in mobile apps is fun
HM2: Using QR payment feature is enjoyable
HM3: Using QR payment feature is entertaining
HM4: Using QR payment feature gives me pleasure
HM5: Using QR payment feature is exciting
HM6: Using QR payment feature is thrilling
HM7: Using QR payment feature is delightful
HM8: Using QR payment feature is adventure
Price Value
PV1: QR payment feature in mobile apps are reasonably priced
PV2: QR payment feature in mobile apps are a good value for money
PV3: At the current price, QR payment feature in mobile apps provide good value
PV4: I have never given up purchasing an item use QR payment feature in mobile apps
Habit
HH1: The use of QR payment feature has become a habit for me
HH2: I am addicted to using QR payment feature
HH3: I must use QR payment feature
HH4: Using QR payment feature has become natural to me
HH5: Using QR payment feature is something I do without thinking
Behavior Intention
BI1: I intend to continue using QR payment feature in the future
BI2: I will always try to use QR payment feature in my daily life
BI3: I plan to continue to use QR payment feature frequently
BI4: I will often use QR payment feature in the future
BI5: I will recommend others to use QR payment feature

Before the calculation and measure the factors, that should be validity and reliability test first for each point of variables. Table 3 represented the validity test and reliability test with summarize 139 respondents.

Table 3. Validity and reliability

Variable	R value (N=139)	Status	Variable	R value (N=139)	Status
Performance Expectancy	.960	Reliable	Hedonic Motivation	.958	Reliable
PE1	.898	Valid	HM1	.832	Valid
PE2	.873	Valid	HM2	.830	Valid
PE3	.860	Valid	HM3	.841	Valid
PE4	.860	Valid	HM4	.901	Valid
PE5	.849	Valid	HM5	.898	Valid
PE6	.833	Valid	HM6	.744	Valid
PE7	.855	Valid	HM7	.864	Valid
Effort Expectancy	.953	Reliable	HM8	.826	Valid
EE1	.873	Valid	Price Value	.887	Reliable
EE2	.869	Valid	PV1	.783	Valid
EE3	.848	Valid	PV2	.788	Valid
EE4	.877	Valid	PV3	.791	Valid
EE5	.842	Valid	PV4	.657	Valid
EE6	.815	Valid			
Social Influence	.949	Reliable	Habit	.945	Reliable
SI1	.845	Valid	HH1	.892	Valid
SI2	.881	Valid	HH2	.854	Valid
SI3	.859	Valid	HH3	.827	Valid
SI4	.839	Valid	HH4	.875	Valid
SI5	.880	Valid	HH5	.809	Valid
Facility Condition	.916	Reliable	Behavior Intention	.941	Reliable
FC1	.783	Valid	BI1	.869	Valid
FC2	.822	Valid	BI2	.830	Valid
FC3	.742	Valid	BI3	.863	Valid
FC4	.797	Valid	BI4	.847	Valid
FC5	.784	Valid	BI5	.808	Valid

Status means valid or reliable if R Value ≥ 0.14; Then invalid or unreliable if R value < 0.14

4. FINDINGS AND DISCUSSION

For every variable, there's relation each other. Somehow for impact the behaviour intention (BI), measurement of Pearson correlation if greater than 0.5, so the variable has strong related with the BI, vice versa. Then, the positive value means that variable direct relation, vice versa. For the reason of facility condition stronger but lower than others.

Table 4. Correlation of Each Indicator

| 5.	Mean	SD	N	Construct correlation							
				PE	EE	SI	FC	HM	PV	HH	BI
Performance Expectancy (PE)	30.29	8.505	139	1.000	.887	.751	.646	.642	.655	.711	.780
Effort Expectancy (EE)	27.13	7.057	139	.887	1.000	.694	.754	.636	.707	.648	.727
Social Influence (SI)	20.73	6.423	139	.751	.694	1.000	.558	.688	.631	.807	.762
Facility Condition (FC)	23.08	5.221	139	.646	.754	.558	1.000	.709	.763	.650	.691
Hedonic Motivation (HM)	33.18	8.867	139	.642	.636	.688	.709	1.000	.842	.759	.767
Price Value (PV)	17.65	3.871	139	.655	.707	.631	.763	.842	1.000	.698	.756
Habit (HH)	19.33	6.746	139	.711	.648	.807	.650	.759	.698	1.000	.899
Behaviour Intention (BI)	20.89	5.706	139	.780	.727	.762	.691	.767	.756	.899	1.00
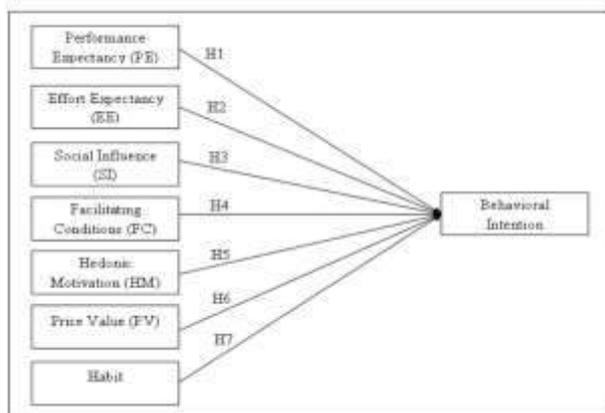
Fig 1: Research Model UTAUT 2 (Venkatesh, Thong, & Xu, 2012) SECTIONS

For the digital era, we learn that technology grow fast. QR Code for the reason already used in the global and anything purposed. The innovation on the payment via QR Code just followed by regulation and policy. Act for that, balance of gender to transaction shown that anyone having try non-cash payment method. The hypothesis talk that all variable correlated well with behaviour intention. Start-up digital can be moving to this section for growth their market. So, target segment of this feature exact to millennials market. But, while the boomer can learn and increase their experiences. For the future try to discuss about API payment the blockchain, it will be better and fast for the transaction.

Block-chain for the sharing data through the players (issuer, acquirer, switching and another participator). QR Code just for image contains any content, this message will be secured and can be expand to another functions of QR. My recommendation, for the adoption of civilian will be aware first what's the QR Code function, easy to use, simply, etc. We hope after adoption, technology can be predicted when to come and developed in the market.

6. ACKNOWLEDGMENTS

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