

FACTORS INFLUENCING THE CONSUMER ADOPTION OF MOBILE QR CODE PAYMENTS IN INDONESIAN UNIVERSITY STUDENTS

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Abstract . Financial Technology (Fintech) was known to disrupt the financial sector. Fintech ecosystem were mapped by fintechnews.sg (2018) by 9 categories, and payment technology had the biggest distribution with mobile phone as part of this technology. Hootsuite (2019) stated that 60% of Indonesian adult population used smartphone, which explained the rapid growth of smartphone. With common technology of mobile phone camera, QR Code Payment arisen as a prominent mobile payment method. 1005 Indonesian University Students were made as respondents, considering that Ameme (2015)'s explanation that younger people's technology adoption was bigger than the older ones. This research was purposed to examine the digital savviness of Indonesian University Students, using ratings of six group of activities that considered to be a basic necessities, based on Maslow (1943) and Deci and Ryan (2000). It was known that respondents had average index of "3.02", and differences of index average happened on groups of sex and monthly income. In addition, current QR code payment adoption were analysed, where 78.91% respondents adopted QR Code Payment, mostly used Go – Pay and most of adopters had purchased food and beverage. Average digital lifestyle index were homogeneous among adopters and non – adopters. In addition, adoption factors were also analysed with UTAUT model, where several factors were known to had a significant influence toward the intention to adopt QR Code Payment, which were Cost (negative), Performance Expectancy (positive), Effort Expectancy (positive) and Social Influence (positive). Involvement was known to played moderation role on PE and SI's impact toward the intention to adopt.

Keywords: UTAUT, QR Code Payment, Cost, Digital Lifestyle Index, Indonesia, University Students

INTRODUCTION

Schubert (2011) explained that growth of mobile phone tech and adaptation had created a huge change across industries. Hootsuite (2019)'s survey was an evidence of rapid growth of mobile phone in Indonesia, where 60% of Indonesian adult population used smartphone. Ezoe et al. (2009), in addition, explained that such mobile phone technologies had an impact toward the lifestyle.

Mobile phone was involved on many industries, and one of them was the financial technology industries. *Fintech*, in recent years, had disrupted financial industry, with transaction growth value was predicted over 13.9% in 2018 – 2022 CAGR (Statista, 2018). Deloitte and Robocash, on the other hand, reported that countries belong to ASEAN represent the greatest opportunity of fintech development on the near term (Businessinsider, 2018). As a member of ASEAN, Indonesia was ranked 2nd on the fintech distribution in ASEAN (20%) (Andreasson et al., 2018). Fintechnews.sg (2018) explained that payment technology had the biggest distribution of the Indonesian fintech distribution (38%), compared to another fintech categories such as Lending or Crowdfunding.

Payment technology was also known to utilized mobile phone, which in turn called as "Mobile Payment". Dahlberg et al. (2003) described that mobile payment had short commercial history but characterized by rapid development. There were some mobile payment service providers Indonesia, such as *Go-Pay* and *Ovo*. Mobile payment were grouped as either remote – based and proximity – based payments. Carton et al. (2012) explained that remote – based payment had its own limitation and thus proximity – payment was developed. "Proximity – based payment" refers to payment transactions made through proximity technologies integrated into the mobile phones, which require a physical proximity between the source and the recipient of the payment (Ceipidor et al. 2012). Proximity – based mobile payment utilized NFC, BLE and QR Code payment. QR Code payment were cheap to produced and easy to distributed, which in turn was considered superior to another proximity – based payment method (Krombholz et al., 2014).

While QR Code Payment had its superiorities, Andreasson et al. (2018) explained that cultural barrier was the 2nd biggest road blocks to enter ASEAN fintech market, which in turn, could be tackled by exploring the trends of technology adoption (or non – adoption) itself (Beekhuyzen et al., 2019). Therefore, this research was made in order to deal with these problems, by explored the adoption factor and the lifestyle. Researcher measured the digital lifestyle of Indonesian University Students by scoring and rating of six activity groups that considered to be a basic necessities, based on Maslow (1943) and Deci and Ryan (2000)'s theories of needs. In addition, current adoption also observed, together with analysis of adoption factor with modified UTAUT (Unified Theory of Acceptance and Use of Technology), that were introduced on Gao et al. (2018)'s study, with literatures on Cost factor.

LITERATURE REVIEW

2.1. Previous Research

Shin (2009) was one of the pioneer research about consumer acceptance of mobile payment. This was done on the several countries quantitatively with UTAUT research model and 296 sample. It was known that Perceived Usefulness and Perceived Ease of Use had a significant, positive relation with Attitude, while Perceived Security, Trust and Attitude had a significant, positive relations with Intention and Intention had a significant, positive relation with Usage Behavior. Specifically, Chandra et al. (2018) researched about *Go – Pay* mobile payment adoption in Indonesia quantitatively, with modified TAM (Technology Acceptance Model) as the research model. It was known that Perceived Reputation had a positive, significant relation with Perceived Trust. Perceived Usefulness, Perceived Ease of Use and Perceived Mobility had a positive, significant relation with Attitude and Attitude had positive, significant relation with Intention to Use.

Such research about QR Code Payment adoption was pioneered by Liébana – Cabanillas et al. (2015) in Spain with modified TAM research model. It was known that Perceived Compatibility had a positive relation with Perceived Usefulness (PU), and PU had a positive relation with Attitude. Personal Innovativeness had a positive relation with Perceived Easy of Use and Intention. Perceived Easy of Use had positive relation with Perceived Usefulness. Both Attitude and Subjective Norms had a positive relation with Intention to Use. The study was followed by Eyüboğlu et al. (2016) on consumers' adoption to shop with QR Code in Turkey, where Perceived Usefulness (PU) , Perceived Playfulness and Attitude had a positive, significant relation with Behavioral Intention and PU had a positive, significant relations with Attitude.

As a prominent Asian country to house QR Code Payment development, several researches had been done in China. It was known that in 2016, 22.8% of users used QR code payments daily, and up to 60% of users use QR code payment weekly (Zhang, 2017). Lou et al. (2017), researched the QR Code Payment in context of tourism. It was known that Relative Advantage, Compatibility, Observability and Trialability had a positive, significant relations with Attitude, and Attitude had a positive, significant relations with Current Usage (CU). CU was also known to had a positive, significant relations with Transaction Satisfaction and Travel Satisfaction. Gao et al. (2018) researched about Continuous Usage Intention (CUI) of QR Code Payments in China. Gao et al. (2018)'s findings explained that Performance Expectancy (PE), Effort Expectancy (EE) and Social Influence (SI) had a positive, significant relations with CUI. Involvement, in addition, played a positive, significant moderating factor on the impact of PE -> CUI and EE -> CUI.

2.2. Research Model

In order to measure the respondents' digital savviness, researcher introduced the calculation of Digital Lifestyle Index (DLI) with six groups of basic activities. Matzler et al. (2007)'s explained that it was reasonable to assume that a person with higher spending level differs from mass market, therefore "Expense" activities category was added with observed activities of monthly expenses on leisure and internet, method to purchase Food & Beverage, method to purchase Fashion and method to purchase Books. F&B and Fashion were considered, based on Maslow (1943)'s hierarchy of needs (physiological needs). Books, leisure and internet, in addition, were considered based on Deci and Ryan (2000)'s theory of well-being and Maslow (1943)'s hierarchy of needs (self-actualization needs). "Leisure" activities category also added, based on the Deci and Ryan (2000)'s explanation on the needs of leisure activities in order for people having opportunities to feel good about something. On this category, leisure was divided into daily, weekend and holiday free – time activities.

"Knowledge" activity category was added, considering that Wilson (2000) urged that individual purposively seeking for some information as a consequence of a need to satisfy some goal. This category, therefore, was measured by the method of seeking recent information. There was also "Communication" category, which urgency risen from Adler and Towne (1978)'s explanation that every accomplished thing (past and future) by human involved communication with others. This category was measured by amount of daily internet usage, activities to be done online, most common place to access internet and main way of communication. In addition, "Transportation" activity category was included, considering that Koutsopoulos (1980) argued that transportation was an essential facility for a person. This category was measured by respondents' transportation method. Finally, "Investment/Savings" category was considered, based on the Keynes (1936)'s factors on people saving and Maslow (1943)'s hierarchy of needs (self – actualization). This category was measured by the amount of money saved monthly.

Gao et al. (2018)'s research model, which was a modified UTAUT model, was adopted in order to measure the adoption factors. PE, EE, SI and Perceived Risk (PR) was made as the independent variable, together with Cost (CS), in regard with UTAUT 2 (Venkatesh et al., 2012) where previous researches hadn't specifically mentioned CS as influencing factor. CUI factor on Gao et al. (2018)'s research were substituted with Hongxia et al. (2011)'s Behavioral Intention (INT) and Actual Usage (ACT). In addition, moderating variable of Involvement (IN) was also included, where IN was hypothesized to had a moderating effects on the impact of PE -> INT, EE -> INT and SI ->INT.

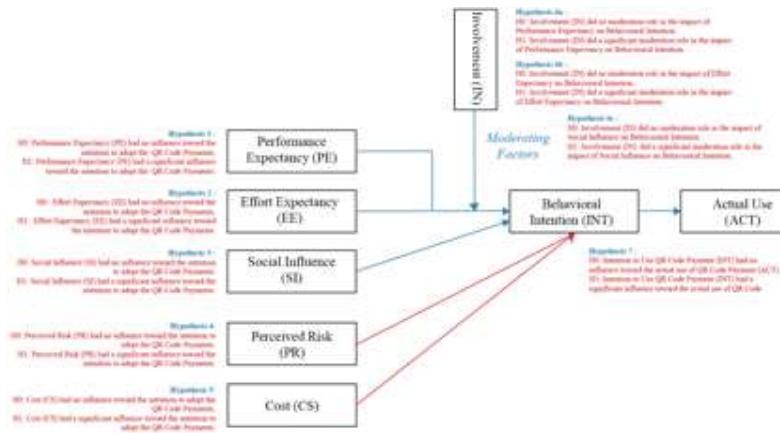


Figure 1. Proposed Research Model

METHODOLOGY

3.1. Sampling

This research had 19 – 34 years old Indonesian higher education students as the population, with convenience sampling method as considered to be easier to be accessed by researchers (S & Given Lisa, 2008). Approximately there were 6.924.511 enrolled higher education students in Indonesia based on Indonesian Ministry of Higher Education data on 2017, thus researcher decided to use Slovin formula (Talukder et al., 2016) in order to determine the sample size.

$$n = \frac{N}{1 + N(\epsilon^2)}$$

n = number of samples
 N = total population
 ε = error tolerance

With given population size, 95% confidence level and 3.092% margin of error, thus 1005 sample size was decided. Based on Comrey and Lee (1992)'s argument, it was known that this research had an "excellent sample size".

3.2. Data Analysis

Researcher calculated the digital lifestyle index with weighted rating of six factors explained on the literature review. Every measurement method was scored based on the exposure of the digital technology on that activity from score 1 to 5. "Expense" category weighted as 0.13, "Leisure" as 0.15, "Knowledge" as 0.17, "Communication" as 0.17, "Transportation" as 0.17 and "Investment/Saving" as 0.17. Such weighted scores then were aggregated, and these average digital lifestyle indexes was compared by the demographic group of Sex, Origin, Monthly Income and Faculties. Sex and Origin group was compared with independent t – test, and Monthly Income and Faculties group was compared with ANOVA. Such samples were tested for normal distribution before, with Shapiro – Wilk W test and Levene test for variance equality.

In order to analyze the adoption factors, researcher used partial least squares – structural equation model (PLS – SEM) with smartPLS 3.0 (Ringle et al., 2015). Reliability and Validity were tested before PLS – SEM concluded. On the reliability analysis, Ramos – de – Luna et al. (2015) explained that Composite Reliability (CR) must be ≥ 0.7 . On convergent validity, however, Fornell and Larcker (1981) explained that AVE must be ≥ 0.5 . Fornell, Larcker (1981)'s Criterion analysis was also done. A strong discriminant validity was indicated by each square root of AVE should be greater than its corresponding row and column elements (Lou et al., 2017). In addition, Chin, Marcoulides (1998) explained that standardized loadings must be greater than 0.5.

FINDINGS AND ARGUMENT

This research was done with 1005 respondents, with 64.08% respondents were aged 17 – 20 years old, followed with 35.12% respondents on 21 – 23 years old. Most of the respondents (59.7%) were Female. Geographically, most respondents (67.86%) came from West Java, followed by 18.21% came from Jabodetabek and 4.48% from East Java and Bali. Some respondents, however, came from cities outside Java island, such as Sumatera, Borneo and Celebes. On the education background, most respondents came from Mathematics and Engineering faculty group (43.58%), followed by Economics and Business (26.87%), Life Science (13.13%), Social Science (11.54%) and Others (4.88%). Respondents also grouped on the monthly income, where most respondents had monthly income of IDR 1.000.000 – IDR 1.999.999 (39.4%), followed by IDR 2.000.000 – IDR 4.000.000 (27.86%), < IDR 1.000.000 (24.38%) and >IDR 4.000.000 (8.36%). In addition, 84.98% respondents had their own parents as main source of income.

It was known that Respondents had an average digital lifestyle index of 3.02, which could be explained as "intermediate digital savviness". Independent t – test was performed on sex group, with 405 sample on each male and female. P – Value of Levene's

test was 0.439, which was >0.05 and both variances were equal. T – test had t – value of 6.60, with t – table of 1.647 (df = 808). T – value $>$ t – table, which means that there were differences of avg. DLI (Female group had higher avg.). One Way – ANOVA was performed on monthly income group with df of 84 on each income. P – value on ANOVA was 0.000, which was <0.05 and there were differences on population mean. On the Tukey – Kramer procedure, it was known that $>$ IDR 4.000.000 group had significant means differences with other income groups. One Way – ANOVA also performed on the faculty groups with df of 49 on each group. P – value on ANOVA was 0.650, which was >0.05 . Therefore, no significant differences of means between faculty groups.

Currently, 78.91% respondents had used this payment method, where male respondents had higher non – adopters ratio (24.44%). Significant differences of avg. DLI among adopters and non – adopters was not present, based on the independent T – test. In addition, *Go – pay* was the most preferred QR code payment method (75.94 %), and most respondents had used this payment method to purchase F&B (788 respondents), followed by Movie ticket (389 resp.) and Transportation (205 resp.)

Table 1. Reliability and Validity Analysis

| Latent Variable | Item | Standardized Loadings | Composite Reliability (CR) | Average Variner Extracted (AVE) |
|-------------------------------------|------|-----------------------|----------------------------|---------------------------------|
| ACT (Actual Use of QR Code Payment) | ACT1 | 0.933 | 0.911 | 0.836 |
| | ACT2 | 0.916 | | |
| CS (Cost) | CS1 | 0.819 | 0.874 | 0.698 |
| | CS2 | 0.788 | | |
| | CS3 | 0.876 | | |
| EE (Effort Expectancy) | EE1 | 0.846 | 0.887 | 0.723 |
| | EE2 | 0.827 | | |
| | EE3 | 0.858 | | |
| INT (Intrinsic to Use) | INT1 | 0.838 | 0.914 | 0.726 |
| | INT2 | 0.860 | | |
| | INT3 | 0.859 | | |
| | INT4 | 0.851 | | |
| PE (Performance Expectancy) | PE1 | 0.879 | 0.868 | 0.688 |
| | PE2 | 0.847 | | |
| | PE3 | 0.758 | | |
| PR (Perceived Risk) | PR1 | 0.646 | 0.796 | 0.571 |
| | PR2 | 0.648 | | |
| | PR3 | 0.908 | | |
| SI (Social Influence) | SI1 | 0.814 | 0.869 | 0.688 |
| | SI2 | 0.819 | | |
| | SI3 | 0.855 | | |

Table 2. Discriminant Validity Test Using Fornell – Larcker Criterion

| | ACT | CS | EE | INT | PE | PR | SI |
|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| ACT | 0.914 | | | | | | |
| CS | -0.085 | 0.835 | | | | | |
| EE | 0.533 | -0.200 | 0.851 | | | | |
| INT | 0.583 | -0.181 | 0.662 | 0.852 | | | |
| PE | 0.551 | -0.174 | 0.768 | 0.698 | 0.829 | | |
| PR | -0.066 | 0.648 | -0.230 | -0.155 | 0.200 | 0.756 | |
| SI | 0.480 | 0.069 | 0.441 | 0.505 | 0.525 | 0.007 | 0.839 |

Table 3. Structural Model Results

| | | Original Sample (O) | T Statistics (O/STDEV) | P Values |
|----|---|---------------------|------------------------|-----------------|
| H1 | PE \rightarrow INT | 0.377 | 8.014 | 0.000*** |
| H2 | EE \rightarrow INT | 0.277 | 6.143 | 0.000*** |
| H3 | SI \rightarrow INT | 0.192 | 6.879 | 0.000*** |
| H4 | PR \rightarrow INT | 0.048 | 1.331 | 0.183 |
| H5 | CS \rightarrow INT | -0.102 | 3.258 | 0.001*** |
| H7 | INT \rightarrow ACT | 0.583 | 26.335 | 0.000*** |

Analysis of the adoption factors were presented on Table 1 through Table 3. Each item had a standardized loading above the cutoff value of 0.5. Every latent variable also had CR above the cutoff value of 0.7 and AVE above the cutoff value of 0.5, which explained that every factor was reliable and valid respectively. Based on the Table 2, it was known that every factor passed the discriminant validity test. On the other hand, Table 3 explained the results of structural model. It was known that PE, EE and SI impact through INT had a p – value of 0.000, which was less than 0.5. Therefore, there was enough evidence to reject Ho on H1, H2 and H3 which explained that PE, EE and SI had a significant relation with INT. Such positive, significant relation also known, as PE, EE and SI had a path coefficient of 0.377, 0.277 and 0.192 respectively.

PR, on the other hand, was known to had insignificant relation with INT, as PR \rightarrow INT had p – value of 0.183 (>0.05). Therefore, there was not enough evidence to reject Ho on H4. However, it was known that CS had a negative, significant relation with INT. CS had p – value of 0.001 (<0.05), which explained that there was not enough evidence to reject Ho on H5. Path coefficient was at -0.102, which explained the negative relationship. Finally, INT was known to had a positive, significant relation with ACT, as p – value was 0.000 (<0.05), which explained that there was enough evidence to reject Ho on H7. Path coefficient was at 0.583. On the impact of PE, EE, SI, PR and CS to INT, it had the adjusted R square of 0.552, where 55.2% of INT variation was explained with PE, EE SI, PR and CS. Conversely, INT \rightarrow ACT had the adj. R square of 0.339, where 33.9% of ACT variation was explained with INT.

In addition, moderating factor of Involvement (IN) was explained by introducing interactive items, where (independent variable) * (dependent variable). There were PE*IN, EE*IN and SI*IN interactive items, with these interactive items had standardized loadings, CR (0.961, 0.947, 0.923) and AVE (0.891, 0.856, 0.800) passed the respective cutoff values (reliable and valid). These interactive items also passed the discriminant validity test. From the moderating factor research, it was known that both PE*IN \rightarrow INT and SI*IN \rightarrow INT had p – values of 0.000 (<0.05) and path coef. of 0.391 and 0.183 respectively. Therefore, on H6a and H6c, there was enough evidence to reject Ho, which explained the positive, significant moderating factor of IN toward the relations of PE \rightarrow INT and SI \rightarrow INT. However, EE*IN \rightarrow INT had p – values of 0.208 (>0.05), which explained that on H6b, there was not enough evidence to reject Ho, which explained that Involvement played no significant moderation role on EE \rightarrow INT.

CONCLUSIONS

It was known that many Indonesian university students had an intermediate level of average digital savviness (3.02). Such differences of average DLI existed among sex and wealth demography groups, while differences of average DLI didn't exist on QR Code Payment adopters and non – adopters. In addition, QR Code Payment had a relatively high adoption, with preference on *Go – pay* and purchasing preference of F&B on 18 – 34 years old Indonesian University Students. It was known that Performance Expectancy, Effort Expectancy and Social Influence had a positive, significant relationship with Intention to use QR Code Payment

and Cost had a negative, significant relationship with Intention. Such Involvement did a significant, positive moderating role on impact of PE and SI toward INT.

Overall, variation of digital behavior among the target market (mainly on sex and monthly income group) should be a consideration on how QR Code Payment providers marketed their own product and served their own consumer. For example, initiated promotion on *kaki lima* sellers could be useful, as many University Students bought their food on that food stall. In addition, differentiating services on different groups (e.g. male and female, <IDR 1.000.000 and > IDR 4.000.000 monthly income) might be done based on the distinct behavior among them. On the other hand, this research provided the sufficient information on the future decision making on both corporation and government regarding QR Code Payment. For example, further development of standardized Indonesian QR Code Payment (inter – company payment) might be useful as this program satisfied both PE, EE and CS which could led into further adoption QR Code Payment toward cashless society.

On future researches, the study of QR Code Payment adoption should be focused on Indonesian rural areas (about the adoption factor and possibility of adoptions). Digital Lifestyle Index studies could be done further, as this model was a pilot model and future development might be needed. In addition, such qualitative studies with open – ended questions might be done, considering that such quantitative studies were done relatively with close – ended questions. Research on the continuous usage intention on QR Code Payment might be needed with the concern of QRIS development , as QRIS enabled consumers to do payment with other company (for example : user of *Bank Mandiri QR Code* did a transaction with *LinkAja QR Code*).

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