Factors Affecting the Adoption of Electronic Payment Technology in Service Applications Online Transportation in Indonesia

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***Abstract*—This study aims to understand customer behavioral intention in adopting digital payment on online transportation services. Researcher modifies the Unified Theory of Acceptance, and Use of Technology 2 (UTAUT 2) theory in this research. With 200 respondents, this study identifies performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value, habit, and behavioral intention to use. The finding revealed five factors in this study significantly and positively affect intention and the other two factors are insignificant. These research findings can be used for online transportation industry to attract more people to use digital payment since its still lack od user although this technology brings a lot of benefit. This research also can be a consideration for companies in terminating corporate promotion and evaluation strategies**

Keywords— Technology adoption, UTAUT 2, online transportation, behavioral intention

I. INTRODUCTION

Internet commerce is growing rapidly and changing all aspect of human life activities [1]. The internet development make technology used in all aspects, including the way of commercial activities [2]. It is due to, mobile phone not just only a tool to communicate with friends or relations, but also can be used as a payment media for paying bills, buying goods or services, booking various kinds of ticket, ordering foods and online transportation services. People can get anything they wants at their fingertips. According to Asia Times, now Indonesia is the fastest growing market in the word [3]. The total of internet users in 2017 has reached 54.68% of total population of Indonesia. Meanwhile, 44.16% of them accessed internet by their smartphone or tablet [4]. This rapid growth of wireless development combined with mobile phone technology become a big opportunity for mobile payment service provider to innovate.

In this last few years, a number of mobile payment application services are extensively accessible in Indonesia. Go-Pay, OVO, Doku Wallet, T-Cash, SakuKu, and others are several mobile payments that customers common used in their mobile phone [5]. Although Go-Pay was launched in 2015, followed by OVO in 2017, these two mobile payment providers become the most popular mobile payment services in 2018 [5, 6]. Over 60% of respondents answered Go-Pay when they asked which cashless payment system, they used over past three months. It followed by OVO with more than 40% respondents, T-cash, BCA Click Pay, and Doku Wallet [6]. This is a big achievement for Go-Pay and OVO because of its popularity can beat T-Cash and Indosat Dompetku which are the pioneer of Indonesian e-wallet that was launched in 2007 and 2008 [5, 7].

However, a research conducted by Analysis Mason in 2016, showed that Indonesia is a society dominated by cash payment, hence the willingness of customers to use mobile payment is still low [8]. In line with this research, KPMG added that Indonesia is the second largest cash-based economy in the world [9]. Although 36% of Indonesian's have a bank account [10], adoption of non-cash payments is around 10% [11]. Consumer payment transaction using the non-cash payment method only cover around 0.6% [12]. On the other hand, Bank Indonesia stated that the use of paper money has problems in terms of its efficiency [13]. It's also has a high maintaining cost and cash handling budget that might be allocated to other sectors if the government can

manage well the transactions [13, 14]. Hence, Bank Indonesia launched the national Non-Cash Movement (GNNT) in August 2014 in order to reduce the dependence on cash. Bank Indonesia initiated to push for building a society that accustomed to using a non-cash payment or Cashless Society [15].

Therefore, considering the low adoption rate of digital payment is an urgent need to understand and learn any factors that make people interested in adopting the digital payment methods on online transportation services. The researcher chooses Go-pay and OVO as digital payment application because it's transaction always increase significantly since the day one, they were launched.

The purpose of this research to understand customer behavioral intention in adopting digital payment on online transportation services. So, this research later outcomes can be applied both for online transportation service provider industry and other companies that will provide e-wallet or digital payment method in order to support the movement of non-cash payment from Bank Indonesia.

II. LITERAURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Online Transportation

Online transportation is one of the newest application services in m-commerce [16]. In some literature, online transportation also called as "ride-sharing" term. It can be defined as any privately owned vehicles, which then shared with other people as our consumers [6]. This service provides consumers to order a ride vehicle such as a motorcycle or car with a certain quantity, through the mobile application. After that, the driver will respond and pick up those request from his platform [16, 17]. The application will show the consumer's location and amount of payment information that the consumer has to pay. Hence, the transaction occurs among the customers and the drivers which can be used by cash either by financial technology application provided. There are various factors that might be influenced by the necessity of online payment transportation services for consumers, such as cost, service quality, and kind of transportation needed [18]. Nowadays, the innovation of online transportation service not only provides a vehicle drive-sharing but also it can be used for paying bills, buying tickets, ordering food and even making transaction digitally. Furthermore, online transportation very popular of its benefits.

2.2 Digital Payment

In today's market, monetary transactions begin to change from traditional payment to electronic payment [19]. Digital payment or also called as electronic payment is defined as any transaction which made by using an electronic network as a substitute from the check and cash payment [20]. At present, there are two types of e-money in Indonesia that are well known to the public [21]. The first is a prepaid card or commonly called electronic purses. An e-purse feature is an electrical value stored on a chip (integrated circuit) that is on one card. Therefore, the mechanism for transferring funds is done by inserting a card into a particular device (card reader) that can detect information on the chip card. Meanwhile, the second is digital prepaid or digital cash. The main characteristic of that electronic data is stored on a computer hard drive (the customer's personal computer). So that the way of transferring funds takes place by using a telecommunications network medium through the internet for example when a customer makes a payment transaction. Most of this payment needs bank network, but the proportion of non-bank transaction is predicted to rise sharply [20]. Hence, this study focused on digital payment on online transportation services such as Go-pay and OVO.

2.3 UTAUT 2 Model

This study adopted UTAUT 2 model with the purpose to analyze the factors that influence the behavioral intention of digital payment users in using online transportation services. Unified Theory of Acceptance, and Use of Technology or UTAUT is a model which frequently used by researchers to determine the adoption intentions of a new information communication technology by consumers [22]. UTAUT2 is an extension from UTAUT which was conducted in order to explain the acceptance and use of information technology and communication specifically by the consumer. It was developed by Venkantesh, et al in 2012, since the UTAUT was formerly arrange with the purpose to explain factors that affect the technology acceptance and use of information and communication technology for employees [23]. This model is a combination of eight popular theory of technology acceptance before. The eight theories are, Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behaviour (TPB), Combined of TAM and TPB (C-TAM-TPB), Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), and Social Cognitive Theory (SCT) [22, 24]. Therefore, UTAUT 2 model consists of eight major independent variables : performance expectancy (PE), effort expectancy (EE) social influence (SI), perceived value (PV), hedonic motivation (HM), and habit (HB) [22].

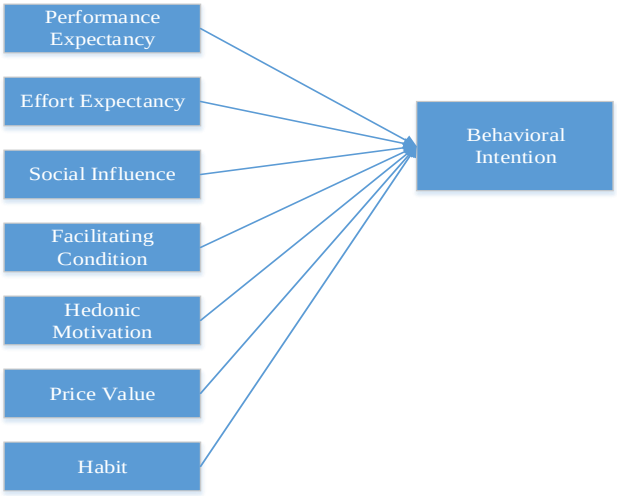

Fig.1 Modified UTAUT 2

2.4 Hypoteshis Development

Performance expectancy (PE) from consumer's perspective is the level to which using technology will give benefit to consumers on their certain activities [22]. It mostly associated with the transaction speed. In the context of digital payment, it is the level at which consumers feel that using the digital payment as an alternative in doing transaction will increase and accelerate their performance [25]. Many researchers have considered the role of PE as an important factor in determining the behavioural intention on the use of technology [25-27]. So, it means if the performance expectancy is high, it can positively affect behavioural intentions.

Effort expectancy (EE) refers to the level of easiness related to the use of technology by consumers [22]. The easier a digital payment technology to learn, the more consumers can adopt the technology in their daily lives. The high complexity of the digital payment system will decrease consumers interest to adopt it [28]. Some research found that EE has a significant impact on the technology adoption context [29, 30]. But in contrast with this, another research confirmed that EE is not significant in affecting behavioural intentions [31]. This different result makes the author wants to know more the relationship between EE and BI in this context.

Social influence is a critical aspect in influencing consumer behaviour. Social Influence (SI) defined as the extent to which a consumer decides to use a product or service influenced by relatives or friends [24]. [32]. In the technology adoption context, SI from family, peers, and media are can affect a person's decision to adopt a new technology [33, 34]. The more people in the same social circle with consumers suggest to use a technology innovation based on their perceived benefits, the more consumers will adopt the technology. This construct has been extensively used in many earlier types of research [35, 36].

Facilitating Condition (FC) is the physical resources and environment needed for the effectiveness of adoption and use of products, services or technology in any form [25]. By ensuring all facilities are ready to be used, and can be handled without worrying it's availability in some places. Assume that FC is one of the influential constructs in determining the intention to adopt the use of technology such as mobile commerce, internet, mobile banking, and e-wallet [25, 37, 38].

Hedonic motivation refers to fun or happiness that consumer get from using the technology [32]. In consumer context, consumer not only consider the utilitarian factor but also enjoying the process in using particular technology. In mobile payment context for example. The feeling produced when consumer tap their mobile phones in a scanner is different than we pay it by cash.

Price Value (PV) is the value that consumers feel in return for the price they have paid to use any product or service [25]. This construct is one of important factor that has a significant influence on behavioral intention in context mobile commerce, mobile wallets, and mobile banking [26, 38, 39].

Habit defined as the level to which consumers tend to act automatically due to learning and previous experiences in the usage of technology [22]. It includes the instant activation and automaticity perspective, of which two perspectives were resisted to one another [22]. There are several past studies using habit [25, 26]. Behavioral intentions is degree of a personal intention in performing a specific behavior [40]. Numerous factors such as EE, PE, PV, SI have been measured to determine BI towards technology adoption by a lot previous study [27, 35, 36]. In this research, BI is taken as a dependent variable. Therefore, it purposed that:

H1: Performance Expectancy affects Behavioral Intentions on the use of digital payment in online transportation positively.

H 2: Effort Expectancy affects Behavioral Intentions on the use of digital payment in online transportation positively.

H 3: Social Influence affects Behavioral Intentions on the use of digital payment in online transportation positively.

H 4: Facilitating Condition affects Behavioral Intentions on the use of digital payment in online transportation positively.

H 5: Hedonic Motivation affects Behavioral Intentions on the use of digital payment in online transportation positively.

H 6: Price Value affects Behavioral Intentions on the use of digital payment in online transportation positively.

H 7: Habit affects Behavioral Intentions on the use of digital payment in online transportation positively

III. RESEARCH METHODOLOGY

This research using the primary and quantitative approach with data collection through distributed online questionnaires. Meanwhile, all variable is measured by using a five-point Likert scale, which consist of 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly disagree. Regarding the statistical tools used, this study tested data by partial least squares structural equation modelling (PLS-SEM). The analysis used in this study are: 1. SEM-PLS algorithm to quantify the latent variables. 2. Blindfolding for evaluating model criteria, and bootstrapping to test the significance in the research model.

IV. DATA ANALYSIS AND DISCUSSION

4.1 Respondences Profile

The survey distributed into gender, age, occupation, the frequency of using digital payment and income per month. As stated in the table below, the number of respondents is 200. All of the respondents are Indonesian who has experience in using digital payment method on online transportation application services. The majority of respondents are female by 72,5%, with the average age between 18-25 years old, and monthly income less than 1.500.000 rupiahs. Most users are a student, with more than 12 times usage in a month.

TABLE 1. RESPONDENT PROFILE

		Freq	%
Gender	Male	55	27,5
	Female	145	72,5
Age	18-25	192	96
	26-33	5	2,5
	34-41	3	1,5
	42-49	0	0
	50-55	0	0
Occupation	Student	130	65
	Civil Servant	7	3,5
	Entrepreneur	2	1
	Employee	41	20,5
	Other	20	10
Frequency of using digital payment	1-3	57	28,5
	4-6	50	25
	7-9	16	8
	10-12	11	5,5
	>12	66	33
Income per month	<Rp.1.500.000	112	56
	Rp.1.500.000-Rp.2.500.000	37	18,5
	Rp.2.500.000-Rp.3.500.000	15	7,5
	>Rp.3.500.000	36	18

4.2 Measurement Model

To check out the validity and reliability of this constructs, this research analyzes the AVE and factor loadings [41]. The variable can be assumed as valid if the item data in the AVE value is more than 0.5 [42]. Besides that, the item is reliable if loadings are above 0.4 [43], and composite reliability values are more than 0.7 [44]. Furthermore, the test result of the measurement of this research model is shown in table 2.

TABLE 2. LOADING, COMPOSITE AND AVE

Constructs/Items (mean; standard deviation)	Loading*	CR	AVE
Performance Expectancy (0.184; 0.070)		0,869	0,624
Usefulness.	0,799		
Speed up the process of payment services.	0,804		
Saving time.	0,801		
Increase productivity.	0,754		
Effort Expectancy (0.043; 0.066)		0,914	0,780
Easy to learn.	0,869		
Easy to use.	0,884		
Clear and easy to understand.	0,895		
Social Influence (0.007; 0.046)		0,861	0,611
Encouragement from Important person.	0,675		
Encouragement from people who influence behavior.	0,673		
Advice from the closest person.	0,875		
The influence ofthe people around.	0,878		
Facilitating Condition (0.139; 0.070)		0,812	0,523
the resources necessary.	0,751		
Application compatibility.	0,736		
the knowledge necessary.	0,815		
Customer support	0,567		
Hedonic Motivation (0.182; 0.077)		0,944	0,850
Prefer than cash.	0,915		
More comfortable than cash.	0,932		
Enjoyable.	0,919		
Habit (0.271; 0.066)		0,893	0,737
Become my Habit.	0,896		
Become my Need.	0,907		
I will top up when I realize the balance has run out.	0,765		
Price Value (0.170; 0.064)		0,841	0,572
Glad to receive promotion.	0,640		
Often get promotions	0,735		
Cheaper than cash.	0,853		
Saving money.	0,782		
Behavioral Intention		0,956	0,878
Intend to continue	0,901		
Will always try to use	0,957		
Plan to continue to use	0,951		

Note: CR = Composite Reliability; AVE = Average Variance Extracted

To analyses the purposed model of this study and test the hypotheses, researcher utilized it by using

Smart-PLS. Bootstrapping use 5000 repetitions procedure was applied to evaluate the path's coefficients and the weights of items [23]. In order to assess the goodness-of-fit index (GoF), the formulation of the average R^2 for endogenous constructs and the geometric mean of the communality was applied [45]. From this formulation, GoF value of 0.36 is considered large, 0.025 and 0.10 are considered medium and small. Table 3 shows 0.631 as GoF value result in this study. It means that the date is highly appropriate in explaining the proposed model.

TABLE 3. GOODNESS OF FIT INDEX

Variable	Average Variance Extracted (AVE)	R^2
Behavioral Intention	0,878	0,572
Effort Expectancy	0,780	
Facilitating Condition	0,523	
Habit	0,737	
Hedonic Motivation	0,850	
Performance Expectancy	0,624	
Price Value	0,572	
Social Influence	0,611	
Average score		0,697
AVE x R^2		0,399
GoF = $\sqrt{(AVE \times R^2)}$		0,631

TABLE 4. VARIABLE EFFECT

Variable	β	T-Values	P-Values	Test Result
Effort Expectancy -> Behavioral Intention	0,045	0,689	0,491	Rejected
Facilitating Condition -> Behavioral Intention	0,138	2,018	0,044	Accepted
Habit -> Behavioral Intention	0,271	4,093	0,000	Accepted
Hedonic Motivation -> Behavioral Intention	0,187	2,416	0,016	Accepted
Performance Expectancy -> Behavioral Intention	0,181	2,581	0,010	Accepted
Price Value -> Behavioral Intention	0,170	2,671	0,008	Accepted
Social Influence -> Behavioral Intention	-0,007	0,139	0,889	Rejected

Note: *significant level = p<0.01

The results of current research observed habit **as** the strongest influence on customers behavioral intention to adopt a digital payment technology on online transportation application service. It followed by price value which is the second strongest factor.

4.3 Discussion

This study was purposed to analyze users' technology adoption of digital payment on online transportation application service. Besides, to recognize the major factors that have a significant impact on it. The result of this study indicated several factors such as performance expectancy, price value, facilitating conditions, habit, and hedonic motivation had a positive influence on digital payment behavioral intentions. On the other hand, effort expectancy and social influence was found to be insignificant factors.

In this current study, effort expectancy was detected to be insignificant factor in influencing consumers adoption of digital payment on online transportation application services. This result is in line with the previous research which observed effort expectancy or also known as perceive easy of use variable in TAM [27, 46]. When consumers making any transaction through digital payment application provider, they have to deal with the obstacles that may be occur at that time. For example, consumers have to deal with low bandwidth or the connectivity problem when they trying to browse easily on their mobile device [25]. Nevertheless, as well as the rapid technological development, especially in case of 4G mobile internet connections, the issues have been eliminated to a great extent.

Contrary with the findings by previous study [31, 47], social influence was the other insignificant factor in this research. The mobility societies bring through mobile phone users to make independent adoption decision without the influence from the social perspectives [37]. Meanwhile, consistent with it's past researches, performance expectancy has a positives and significant impact on behavioral intention of digital payment adoption [27, 48, 49]. This because, the digital payment technology are made the transaction easier and faster by eliminating the need for physical money in transactions. As the result, consumers perceive the digital payment on online transportation service as an faster and easier alternative payment mode.

Facilitating condition is the necessary resources required for entering into a digital payment transaction. the necessary knowledge, an internet-enabled smartphone, a mobile network with a feasible speed also become an important thing that supported consumers adopting digital payment technology. This current study are consistent with the past studies and confirm this relationship as a significant and positive influence that facilitating conditions have on behavioral intentions [33, 49].

4.4 Managerian Implicarion

There are a number of managerial implications as the result of this research. The first is, the companies or organization can help to increasing performance expectancy by providing educational programs that support the learning of new technologies as consumer concerns about computing services. Next, in order to realize an efficient payment system, Bank Indonesia must improve safely and reliably while up holding

aspects of consumer protection. Besides that, the government can conduct the regulation of consumer protection data, in order to keep the privacy of consumer's data. Based on the result of this study, habit is the most influences consumers' interest in using digital payment on online transportation services, therefore the providers should continue in creating dependency on the use of this service. After that, price value is the second factor that affects the interest of using digital payment on online transportation. Therefore, the company should create the attractive promotion program, in order to make more consumers interested to use it.

4.5 Limitatian and Future Research

This research has several limitations. First, this study does not use moderating variables as compiled in the original UTAUT 2 journal conducted by Venkatesh. So that future research is better to use moderating variables in this model. Second, this study focused on the intention to adopt digital payment, not to the use of behavioral. So, this study is limited in analyzing the behavioral stage. Future researcher can conduct a research about: the usability of this technology. In addition, for future research it is also suggested to explore about the influence of trust, security and perceived risk to measuring its impact on desirability of using digital payment in online transportation.

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