



Applying the Theory of Acceptance Model to Consumer Acceptance of Taxi-Hailing Mobile App

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Abstract

This study aims to measure factors that can influence a person's intention to use an ojek-hailing online application. Ojek is a local name in Indonesia for a motorbike taxi. Ojek is now considered as a form of sharing economy as some of the drivers are part-timers, they have a motorbike and want to economically benefit. This study employed the technology acceptance model which includes the variables: perceived ease of use (PEOU), perceived usefulness (PU)), and attitude toward behaviour as predictor variables. In total, 200 respondents in Jakarta participated. Data were analysed using exploratory and confirmatory factor analyses. This study found that PEOU significantly affected attitude towards usage and PU, PU significantly affected attitude and intention to use, and attitude significantly affected intention to use. Recommendations for practitioners and future research are discussed.

Keywords: TAM, sharing economy, structural equation model, *ojek*, motorbike taxi

Introduction

There are popular *ojek*-hailing applications in Indonesia, including Gojek the pioneer, followed by Grab Bike and Uber. *Ojek* can be considered as an authentic public transport of Indonesia. *Ojek* is a local name for a motorbike taxi. Using a motorbike, an *ojek* driver will deliver a client from one place to another with an agreed price beforehand. This individual public transport-type has existed for decades in almost all parts of Indonesia. Furthermore, the establishment of an online application for the *ojek* hailing has caused a change of consumer behaviour. Previously, clients should visit a shelter where *ojek* drivers wait and negotiate the price with the driver. For regular trips, prices are fixed. For unusual destinations, a negotiation is needed. Sometime, if the drivers dealt with strangers, they gave a very high price. Practically the traditional way for hailing a taxi is uncomfortable and inefficient (He and Shen 2015). The current applications, as we know, are different. They reduce price and the average wait time for clients (Soota 2016).

The *ojek*-hailing application is considered as a form of sharing economy. The concept of sharing economy or collaborative consumption refers to "the peer to-peer-based activity of obtaining, giving, or sharing the access to goods and services, coordinated through community-based online services" (Hamari, Sjöklint et al. 2015). There are four categories of sharing economy according to Schor (2014), including "recirculation of goods, increased utilization of durable assets, exchange of services, and sharing of productive assets". Some authors have predicted that there would be a clash between sharing economy-based service providers and the industry as the existing industry faced a decrease of profitability (Zervas, Proserpio et al. 2014). It also occurred in Indonesia, where conventional *ojek* drivers protested and demanded the government to protect them (Wijaya 2016).

This study aims to test the theory of technology acceptance model (TAM) that is used to predict the intention of a person to

use the *ojek*-hailing app. There is a study relating to a taxi-hailing-app in the service marketing field conducted by Liu (2014). However, there is a paucity of research focussing on an *ojek*-hailing app. Besides, TAM has been employed by many researchers in various settings of technology application, such as gameplay, tablet PC, mobile money, and e-learning (Park and del Pobil 2013; Mbengo 2014; Suhud and Hidayat 2015; Wang and Sun 2016).

Literature Review

Theoretical Background

In life, people will face a certain technology and this technology might change in certain periods of time. Some will adapt, then adopt sooner or later, and some others, for a myriad of reasons, will avoid. As mentioned earlier, TAM has been used by researchers to predict a person's intention to adopt a certain technology both in an original model or modified model. In the original version, Davis, Bagozzi et al. (1989) included the variables: external variables, PEOU, PU, attitude towards usage, intention to use, and actual system usage. In more details, here are the links: Actual system usage is influenced by intention to use; intention is influenced by PU and attitude towards usage; attitude is influenced by PEOU and PU; PU is influenced by PEOU and external variables; and PEOU is influenced by external variables. Davis, Bagozzi et al. (1989) mentioned that PEOU is similar to self-efficacy while PU is defined by these scholars as "the degree to which a person believes that using a particular system would enhance his or her job performance".

Theoretical Framework

TAM has been employed by prior studies in various settings of technology apps. Fleischer and Wählin (2016) chose Generation Y as the subject of their study. According to these researchers, the attitude of Generation Y towards usage of a taxi-hailing app influenced intention to use and

further, the attitude towards the usage was influenced by PEOU and usefulness. While Fleischer and Wåhlin (2016) collected data in Jönköping, Sweden, Liu (2014) collected data in Shanghai, China. Her study also focussed on the use of a taxi-hailing app. She found that PEOU influenced PU and attitude, PU influenced behavioural intention and attitude, and attitude influenced behavioural intention.

The use of e-learning in Zimbabwe was explored by Mbengo (2014). This researcher recorded that PEOU significantly affected intention and perceived of usefulness, and perceived of usefulness significantly affected attitude. Another study on e-learning was presented by Elkaseh, Wong et al. (2016). Their study focussed on students and teachers' behavioural intention to adopt e-learning using social networking media. They carried out findings that suggested that attitude towards usage was influenced by PEOU and PU and attitude was directly influenced by intention to use this technology. Furthermore, Park (2009) concluded that attitude could affect the intention to use an e-learning system while attitude was effected by PEOU and PU. In addition, PEOU affected PU. While Park (2009) took place in Korea, Al-Alak and Alnawas (2011) took place in Jordan. These researchers demonstrated a significant impact of PEOU and PU on behavioural intention to adopt e-learning. Another study that took place in Korea was done by Kim (2006). That study focused on e-learning community for preparatory teachers and carried out findings: PEOU and PU influenced attitude and attitude influenced intention.

Online shoppers' intention behaviour was investigated by Cho and Sagynov (2015). According to these researchers, PEOU had a significant effect on PU and intention to use while PU also had a significant effect on intention to use. Taking place in Malaysia, Ramayah and Ignatius (2005) surveyed staff of a public institution to understand their intention to shop online. They showed that intention to shop online was influenced by PEOU while PEOU influenced PU.

Another study that was conducted in Malaysia is reported by Lim and Ting (2012) who surveyed a mall visitors. These researchers stated that PEOU influenced PU and attitude while attitude influenced intention. Other findings they carried out were that PU influenced attitude. Renny, Guritno et al. (2013) studied the intention of consumers to shop online. One of the findings showed that PU was an important key to predict attitude.

Furthermore, Cho and Sagynov (2015) involved students and employees, and recorded that PEOU and perceived of usefulness impacted intention to shop online. Furthermore, Juniwati (2014) involved unexperienced university students in her study. She found that attitude towards technology usage was influenced by PEOU and usefulness, and behavioural intention was influenced by attitude.

Suki and Suki (2011) found that PEOU and PU had a significant impact on intention to use a 3G mobile service. A website behavioural revisit intention has intrigued Hallegatte and Nantel (2006). As reported by these researchers, perceived ease predicted PU and behavioural intention. In addition, PU significantly predicted behavioural intention. Internet users, consisted of students and working professionals, were approached conveniently by Rizwan, Umair et al. (2014). They showed the significant impact of PEOU on attitude and PU. Taking place in Thailand, Rotchanakitumnuai (2005) selected securities investors to test their intention to use online securities trading. As they reported, attitude towards usage and PU were significantly correlated with intention to use. Kanchanatane, Suwanno et al. (2014) investigated intention of small and medium sized business owners in Thailand to use e-marketing. They included various variables, namely internal and external factors, ease of use, relative advantage, compatibility, and attitude towards behaviour to predict intention. They noted that attitude was the most influential factor to impact behavioural intention.

Another two findings included a significant impact of PEOU on attitude and perceived of usefulness. Furthermore, a study on e-government was conducted by Hamid, Razak et al. (2016). Employees from a public institution were included to test whether TAM could predict their intention

to use e-government app. This study pointed out that PEOU and PU could predict intention to use.

This study is addressed to examine the theoretical framework as illustrated below:

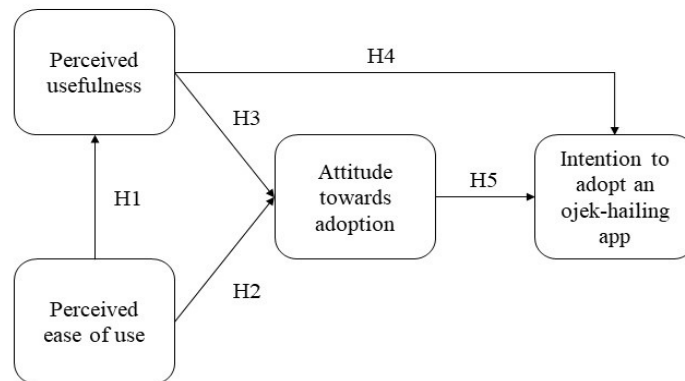


Fig. 1: The theoretical framework

Furthermore, based on the framework above, the following six hypotheses will be tested:

- H₁: PEOU will influence a person's PU
- H₂: PEOU will influence a person's attitude towards using an *ojek* online application
- H₃: PU will influence a person's attitude towards using an *ojek* online application
- H₄: PU will influence a person's intention to use an *ojek* online application
- H₅: Attitude towards using an *ojek* online application will influence a person's intention to use an *ojek* online application

Methodology

Participants

In total, 200 participants involved in a self-administered survey consisting of 130 females (65%) and 70 males (35%). Predominantly, respondents were aged between 20-30 years old (176 - 88%) and were students (150 - 75%) followed by employees (37 - 18.5%). All respondents claimed that they had an experience downloading one or more *ojek*-hailing

online apps. They mentioned that the apps they downloaded were Gojek (182 - 91%), Grabbike (153 - 76.5%), Bluejek (5 - 2.5%), Ladyjek (3 - 1.5%), and Uber (22 - 11%). Besides, all respondents indicated that they also had had an experience using the apps and the service of the *ojek*. Another note that can be presented here is the frequency of usage. Respondents showed they used the service as once in a day (16 - 8%), twice in a day (4 - 2%), once in 2-3 days (8 - 4%), 2 - 3 times in a week (29 - 14.5%), once in a week (8 - 4%), and uncertain (135 - 67.5%).

Instrument Development

The instrument contains indicators to measure attitude, PU, perceived ease to use, and usage intention adapted from Liu (2014), Peng, Wang et al. (2014), and Zarrad and Derabi (2012).

Data Analysis

Data were collected using exploratory and confirmatory factor analyses. For exploratory factor analysis, indicators with

loadings of 0.4 or greater are selected. This condition is required as the number of the sample for this study of 200 (Hair Jr., Black et al. 2006). To guarantee its reliability, the authors choose only dimensions with a score of 0.7 and greater to be used for confirmatory factor analysis (Hair Jr., Black et al. 2006). Based on the reliability calculation, all dimensions are considered reliable. The next action is conducting confirmatory factor analysis to measure the proposed research framework. A fitted framework would be considered if the model will have a probability of 0.05 (Schermelel-Engel, Moosbrugger et al. 2003), CMIN/DF of ≤ 2 (Tabachnick and Fidell 2007), CFI of ≥ 0.97 (Hu and Bentler 1995), and RMSEA of ≤ 0.05 (Hu and Bentler 1999).

Results

Exploratory Factor Analysis

Exploratory factor analysis produces eight dimensions. Attitude consists of two dimensions: 'consistency' (five indicators with $\alpha = 0.888$) and 'direction' (three indicators with $\alpha = 0.808$). PU consists of two dimensions: 'improves job performance' (four indicators with $\alpha = 0.864$) and 'enhance effectiveness' (eight indicators with $\alpha = 0.912$). PEOU retains ten indicators with $\alpha = 0.900$. Behavioural intention forms three dimensions: 'pay more' (four indicators with $\alpha = 0.875$), 'external response' (two indicators with $\alpha = 0.725$), and 'loyalty' (two indicators with $\alpha = 0.773$).

Table 1: Result of exploratory factor analysis

	Items	Loadings	Cronbach's alpha
1	Attitude – Consistency		$\alpha = 0.888$
ATT5	I think using an <i>ojek</i> online app is a wise choice	0.732	
ATT6	I've had a pleasant attitude in using <i>ojek</i> online app	0.719	
ATT4	Using an <i>ojek</i> online app is a very pleasant experience	0.700	
ATT11	Using an <i>ojek</i> online app for ordering taxis is very convenient to use	0.565	
ATT3	I think it is a very wise choice to use an <i>ojek</i> online app	0.469	
2	PU - Improves job performance		$\alpha = 0.864$
PU10	Using an <i>ojek</i> online app helps me to make a decision	0.875	
PU12	Using an <i>ojek</i> online app saves my expenses	0.798	
PU11	Using an <i>ojek</i> online app improves my performance	0.787	
PU14	Using an <i>ojek</i> online app increases my productivity	0.757	
3	PEOU		$\alpha = 0.900$
PEOU2	Does not require much effort to learn how to use an <i>ojek</i> online app	-0.785	
PEOU4	In general, it is very easy for me to use an <i>ojek</i> online app	-0.686	
PEOU3	The process of using an <i>ojek</i> online app is very simple	-0.677	
PEOU9	I think it is possible to use the app without an expert	-0.569	
PEOU6	Learning to use an <i>ojek</i> online app is very easy for me	-0.551	
PEOU1	It's easy for me to use an <i>ojek</i> online app	-0.545	
PEOU11	I think I will be proficient to use an <i>ojek</i> online app	-0.517	
PEOU10	I think there is no trouble in using an <i>ojek</i> online app	-0.497	
PEOU12	I think using an <i>ojek</i> online app does not require mental effort	-0.493	
PEOU7	The tutorial of <i>ojek</i> online app was clear and understandable	-0.463	
4	Behavioural intention – Pay more		$\alpha = 0.875$

BI6	When I need a taxi bike, I prefer to use an <i>ojek</i> online app	-0.738	
BI4	I will use an <i>ojek</i> online app when I need a taxi bike	-0.729	
BI5	It is likely that I will use an <i>ojek</i> online app in the future	-0.707	
BI8	I intend to look for an <i>ojek</i> online app	-0.568	
5	Behavioural intention – Enhances effectiveness		$\alpha = 0.912$
PU2	This app can help me to take an <i>ojek</i> taxi easier	-0.664	
PU5	Using an <i>ojek</i> online app helps me get better service	-0.596	
PU4	An <i>ojek</i> online app is more convenient for taking a taxi bike	-0.595	
PU6	I find that the <i>ojek</i> online app improves my travel convenience	-0.580	
PU8	Using an <i>ojek</i> online app saves my time	-0.566	
PU3	I think it's necessary to use an <i>ojek</i> online app	-0.553	
PU1	I think an <i>ojek</i> online app is a useful tool	-0.507	
PU9	Using an <i>ojek</i> online app makes my work faster	-0.427	
6	Behavioural intention – External response		$\alpha = 0.725$
BI10	I will share to other users if I get a trouble using an <i>ojek</i> online app	0.787	
BI9	It is probable that I would use an <i>ojek</i> online app	0.523	
7	Attitude – Direction		$\alpha = 0.808$
ATT8	Adopting an <i>ojek</i> online app is would be a good idea	0.722	
ATT14	The <i>ojek</i> online app for ordering a taxi bike is very helpful		
ATT2	I think it's worth to use an <i>ojek</i> online app	0.570	
8	Behavioural intention – Loyalty		$\alpha = 0.773$
BI2	I will use an <i>ojek</i> online app frequently later	-0.553	
BI3	I will recommend others to use an <i>ojek</i> online app	-0.410	

Hypotheses Testing

The table below presents a fitted model resulted by structural equation model. This model has a probability score of 0.062, CMIN/DF score of 1.339, CFI score of 0.985,

and RMSEA score of 0.041. These scores are significant with the score stated by Schermelleh-Engel, Moosbrugger et al. (2003), Tabachnick and Fidell (2007), Hu and Bentler (1995), and Hu and Bentler (1999) respectively.

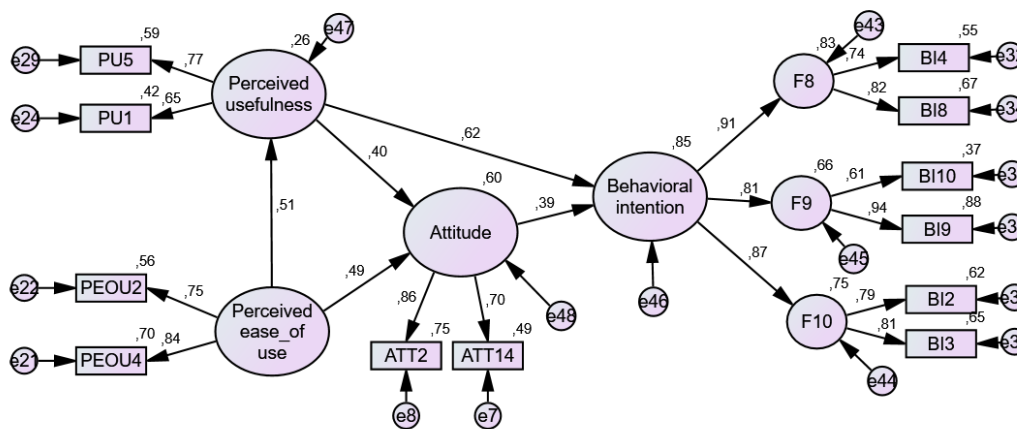


Fig. 2: Structural model of hypotheses testing

As seen in the table below, all hypotheses inspected are significant with a C.R. score

greater than 1.96 as requested (Byrne 2001; Holmes-Smith 2010).

Table 2: Summary of the hypotheses testing

				C.R.	P	Results
H ₁	PEOU	→	PU	5,236	***	Accepted
H ₂	PEOU	→	Attitude	4,831	***	Accepted
H ₃	PU	→	Attitude	3,806	***	Accepted
H ₄	PU	→	Behavioural intention	4,496	***	Accepted
H ₅	Attitude	→	Behavioural intention	3,475	***	Accepted

Discussion

This study tested TAM, and the results of this study showed that TAM could be used to test the consumer behaviour of an application-based taxi. All hypotheses tested showed significance. The first hypothesis predicted the impact of PEOU on PU. H₁ was accepted with a C.R. score of 5.005. This finding was significant with the theory documented by Lim and Ting (2012), Liu (2014), and Rizwan, Umair et al. (2014). Further, the second hypothesis predicted the impact of PEOU on attitude. In this study, this path owned a C.R. score of 4.870 which indicates significance. This finding supported prior studies reported by Fleischer and Wählin (2016), Juniwati (2014), and Kim (2006), Lim and Ting (2012), Liu (2014), and Park (2009).

Prior studies (Kim 2006; Park 2009; Lim and Ting 2012; Renny, Guritno et al. 2013; Juniwati 2014; Liu 2014; Fleischer and Wählin 2016) hypothesised that PU would significantly impact attitude towards usage. This third hypothesis was accepted with a C.R. score of 3.894. According to prior studies (Al-Alak and Alnawas 2011; Liu 2014; Hamid, Razak et al. 2016), PU would impact intention to use. This path in this study became the fourth hypothesis. Based on the calculation, this path had a C.R. score of 4.516. Therefore, H₄ was accepted. The last hypothesis was attitude toward usage would impact intention to use an *ojek*-hailing online app. This path produced a C.R. score of 2.530 and therefore, H₅ was

accepted. This finding supported existing studies (Kim 2006; Park 2009; Lim and Ting 2012; Juniwati 2014; Liu 2014; Fleischer and Wählin 2016).

Conclusion

This study examined the intention of young consumers to use an *ojek*-hailing online app by applying TAM. To conclude, TAM can predict *ojek*-hailing online apps usage intention. PU and attitude were significantly influenced by PEOU. Attitude towards *ojek*-hailing online apps and behavioural intention were significantly influenced by PU and attitude towards *ojek*-hailing online apps.

This current study employed convenience sampling method. Therefore, results of the study cannot generalise all subscribers of the taxi-hail apps. This can be considered as one of the limitations. Another limitation of this study is the absence of other predictor variables, for example, compatibility, perceived ease, trust, subjective norm, and innovativeness (Cho and Cheung 2003; Rose and Fogarty 2006; Bigne-Alcaniz, Ruiz-Mafé et al. 2008; Nasri, Lanouar et al. 2013; Kim and Woo 2016). Therefore, future study should pay attention to this area. It is also recommended to distinguish participants with pre-paid and post-paid Internet subscribing. Similar studies may also be conducted within different areas to explore any cultural differences in results. Concerning the research model being

tested, this study does not provide any additional variables other than those variables that are part of the TAM model. This fact can be a weakness of this research. Therefore, by adding another variable as a predictor, it will contribute differently to expand the literature of sharing economy.

This study carries out a message for practitioners in the taxi-hail app-relating industry. Respondents perceived that the taxi-hailing online applications are still uneasy to use. Indeed, as the apps are Internet-based, they can be used only if the users have an Internet connection. In Indonesia, mobile users have two options to obtain an Internet connection: pre-paid and post-paid. For those who chose pre-paid scheme, they are required to have credits on their accounts. The app providers might pay attention on this part.

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