User Acceptance of Tourism and Hospitality Mobile Applications in Indonesia

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Abstract: Mobile apps including for travelers or tourists who always use Agoda as information reference increases significantly. Since, mobile applications (mobile apps) user is living in the first-tier cities and inadequate behavioral research on them, it makes limited understanding about the user's acceptance on mobile application especially tourism and hospitality industry. This study focuses on the psychological motives behind user's acceptance of Agoda mobile applications expect especially on Indonesian user. This study also tries to construct and test a conceptual model to predict user's attitude toward mobile apps, intent to use and actual use. The study also examines behavioral variables behind user's acceptance of mobile apps by applying theory of planned behavior/theory of reason action and technology acceptance model. This study adheres online survey as research method. By using partial least square structural equation model, the finding shows all hypothesis are supported. The finding shows that attitude, subjective norms, perceived (behavioral control, usefulness and ease of use) are significant determinants of behavioral intention to use and actual system use toward Agoda mobile apps in Indonesia. This study supports an application of the Theory of Planned Behavior/Theory of Reason Action and Technology Acceptance Model to mobile apps. This study is also success to integrate the constructs of theories that can be applied in tourism and hospitality industry.

Key words: User acceptance, mobile applications, planned behaviour, reason action, tourism and hospitality

INTRODUCTION

Mobile communication technology including smart phone use increases significantly over years in Indonesia. In 2014, Indonesia mobile phone user is 44.7 million. Then in 2016, the mobile phone users increase into 65.2 million. At the same time the installing of mobile applications (mobile apps) are also growing exponentially (Yang, 2013). In 2015, mobile apps usage grows 58% (Perez, 2016). Mobile apps market of Indonesia grows for >30% (Tung, 2015).

Indonesia's mobile app market remains relatively untapped. There are many rooms to grow for any mobile apps developers. Moreover, Indonesia is an important market for mobile apps in the Southeast Asian region. Especially, the attractive mobile apps by using local language (Bahasa Indonesia) would be the core of new business model.

From user perspective, the presence of mobile apps gives more benefit especially for travelers or tourists who always use Agoda as information reference. Initially, Agoda is the website and internet company that provides the service for hotel reservation and resort property online. The service is focused on Asia Pacific Region with operational basis on Bangkok, Singapore and Philippines. Agoda has a list of hundred thousand hotels and services in 38 languages including Bahasa Indonesia. Agoda has the mobile apps to find hotels, hostels, villas, apartments. It has been downloaded and installed for more than five millions times. There are 97,989 reviews which 60,096 users give five stars, 27,494 users give four stars and 6,039 users give three stars. The highlights of review go to write "easy to use" (1,274 reviews), "helpful" (845 reviews) and "great deal" (333 reviews). Agoda is the most recommended mobile apps for international travelers who use smartphone.

Since, 67.34% of the mobile app users have lived in the first-tier cities and it has not been inadequate behavioral research on them, it makes limited understanding about user's acceptance on mobile application. Therefore, this study focuses on the psychological motives behind user's acceptance of mobile applications expect especially on Agoda mobile apps. This study also constructs and analyze a conceptual model to predict user's attitude toward mobile apps, intent to use and actual use. In addition, the study examines behavioral variables behind user's acceptance of mobile apps.

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Literature review: User acceptance is one of study from Theory of Planned Behavior theory (TPB) which was constructed previously from Theory of Reason Action (TRA) (Knabe, 2012). The acceptance study from TPB is developed and modified in Technological Acceptance Model (TAM) (Davis, 1989) which is also adapted from TRA (Davis *et al.*, 1989). TPB focuses on user's intention to have any kinds of behavior that could be predicted with high accuracy from attitudes toward behavior, subjective norms and perceived behavioral control (Ajzen, 1991). TPB has similar assumption with TRA which behavior is the result of decision which could be done by full awareness to do specified action (Knabe, 2012). Moreover, previous studies that applied TPB have been validated about user adoptions of mobile services (Jiang, 2009; Lee *et al.*, 2010). TAM focuses on two variables, perceived usefulness and perceived ease of user, to decide and to cause the technology acceptance (Davis, 1989). Similar to TPB, TAM has been applied on the previous studies of mobile technology (Yang and Jolly, 2009; Nysveen *et al.*, 2005; Liu *et al.*, 2011; Hsu *et al.*, 2011).

Previous studies tried to combine TPB/TRA and TAM (Chau and Hu, 2001; Chen and Chen, 2008; Zhang and Zhang, 2005). Therefore, this study focuses on attitude, subjective norms, perceived (behavioral control, usefulness, ease of use), intention (behavioral intent to use) and behavior (actual sytem to use). Attitude is the degree of personal's evaluation either positive or negative of particular performance of behavior (Ajzen, 1991). Since, Fishbein and Ajzen (1975) constructed attitude into attitude toward the object and attitude toward the behavior, this study develops the definition of two main constructs as attitude toward mobile apps and attitude toward the use of mobile apps. Attitude toward mobile apps refers to the degree of personal's evaluation toward mobile apps. While attitude toward the use of mobile apps refers to the degree of personal's evaluation of mobile apps use. Subjective norms are beliefs that determine specific referent of individuals or groups' approval on behavior and motivation (Ajzen, 2002). Subjective norms are assumed to have two components which work in interaction: beliefs about how other people, who may be in some way important to the person, would like them to behave (normative beliefs), e.g., 'I feel pressure to use mobile apps') and the positive or negative judgments about each belief (outcome evaluations), e.g., 'I think It is important/unimportant to use mobile apps') (Fishbein and Ajzen, 1975).

Perceived could be translated as "to become aware of" or "to recognize". As Ijzen defined in his study, Perceived Behavioral Control (PBC) is a recognition or awareness function toward certain control factors of behavior (Ajzen, 2002). In this study, the user embraces mobile apps usage based on his/her resources and control. In addition, Perceived Usefullness (PU) refers to the individual's subjective assessment of the utilities offered by the technology (Davis, 1989). In term of mobile apps, PU is defined as user's beliefs that mobile apps provide timely, exclusive and customized information and improve their efficiency. While, perceived Ease Of Use (EOU) refers to the cognitive effort that the individual puts forward in learning the technology. In this study, Ease Of Use (EOU) is defined as the degree to which a user believes it is easy to learn and use mobile apps.

Intention could involve four elements; the behavior; the target object at which the behavior is directed; the situation in which behavior is to be performed and the time at which the behavior is to be performed (Fishbein and Ajzen, 1975). While in TAM, intention refers to behavioral intention which defined as a person's perceived likelihood or subjective probability that he or she engage in a given behavior (Davis, 1989). This study focuses on the intention of mobile apps use or behavioral intention to use mobile apps at the specific situation and time. Behavior could be defined as anything an organism does that can be measured (Chance, 2008). In TPB, a given behavior deals with actual performance of the behavior (Ajzen, 1991). While in TAM, behavior refers to actual use (Davis, 1989). Therefore, in this study, the behavior may refers to any behavioral intention to actual use of mobile apps.

This study focuses on tourism and hospitality based mobile apps technology such as Agoda mobile applications. Tourism and hospitality industries such as Agoda could be interesting as a main mobile applications on this study. Therefore, this study proposes hypotheses of user acceptance based on variables from TPB/TRA and TAM into:

- H_1: attitude will be positively related to subjective norm on (Agoda) mobile apps use
- H_2: attitude will be positively related to perceived behavior control, perceived usefulness and perceived ease of use on (Agoda) mobile apps use
- H_3: attitude will be positively related to behavioral intention to use of (Agoda) mobile apps
- H_4: subjective norm will be positively related to perceived behavior control, perceived usefulness and perceived ease of use on (Agoda) mobile apps use
- H_5: subjective norm will be positively related to behavioral intention to use of (Agoda) mobile apps
- H_6: perceived behavior control, perceived usefulness and perceived ease of use will be positively related to behavioral intention to use of (Agoda) mobile apps

- H_7: behavioral intention to use will be positively related to actual system use of (Agoda) mobile apps

MATERIALS AND METHODS

This study adheres online survey as research method. The participant of the online survey is university students who already use Agoda mobile apps. The instrument of survey was posted in komunikasi.us that a website for student's assignment postings via google form. The participants were invited to fill form with one of the criteria that they already used Agoda mobile apps to book the hotel. To ensure that they used Agoda, they were asked to send the copy of their last hotel booking. The participant who sent their Agoda's hotel booking and filled the questionnaire would get extra credit for their class.

The participants would fill questionnaire which consisted attitude, subjective norms, perceived (behavioral control, usefulness and ease of use), behavioral intention to actual use constructs. Attitude applied three modified indicators about Agoda ("my attitude toward Agoda mobile apps is positive"; "generally, I think it is good to use Agoda mobile apps"; "I honestly don't like to use Agoda mobile apps") (Yang, 2013; Liu *et al.*, 2011). Subjective norms consisted of three modified statements about Agoda ("people who are important to me think that I should use Agoda mobile apps"; "it is expected that people like me use Agoda mobile apps" and "people who I look up is to expect me to use Agoda mobile apps") (Pavlou and Fygenson, 2006).

Perceived consists three modified constructs and then they are customized into specific information about Agoda. Firstly, perceived behavioral control indicates three statements ("I feel free to use Agoda mobile apps when I like to"; "To use Agoda mobile apps is entirely within my control"; "I have the necessary means and resources to use Agoda mobile apps") (Yang, 2013; Nysveen *et al.*, 2005). Secondly, perceived usefulness consists six statements ("Using Agoda mobile apps saves me a lot of time"; "Using Agoda mobile apps improves my efficiency"; "Agoda mobile apps are useful to me"; "I receive timely about hotel information via Agoda mobile apps"; "I receive about exclusive hotel information via Agoda mobile apps"; "I receive about customized hotel information to my liking via Agoda mobile apps") (Yang, 2013; Nysveen *et al.*, 2005; Pavlou and Fygenson, 2006). Thirdly, perceived ease of use consists three statements ("Learning to use Agoda mobile apps is easy to me"; "It is easy to make Agoda mobile apps to do what I want it to"; "It is easy to use Agoda mobile apps") (Yang, 2013).

This study combines variables of intention and behavioral intent to use into one construct since they are similar in meaning. Other studies also indicated that the variables have similar indicator or statement (Yang, 2013; Yang and Jolly, 2009). The indicator uses question: "How likely will you use Agoda mobile apps within the next six months?" which has five Likert scale (very unlikely, unlikely, don't know, likely and very likely). This study also adds three modified indicators ("I will use Agoda mobile apps in the future"; "I will recommend Agoda mobile apps to other"; "I will always use Agoda mobile apps in the future") (Yang, 2013). In addition, the variables of behavioral and actual system use have three indicators, "How many five star hotel reservation; four star hotel reservation; three star hotel; based Agoda mobile application have you ever used on your cell phone?" The indicator indicates the range between 0 and >100 (Yang, 2013; Liu *et al.*, 2011).

Data are analyzed by varience based Structural Equation Model (SEM), Partial Least Square (PLS). The evaluation is done on the measurement model and the structural model. The evaluation of the measurement model is done through validity test, both convergent and discriminant with a view factor loading, Average Variance Extracted (AVE) and cross loading as well as the reliability test using Cronbach's alpha and composite reliability. Evaluation of the structural model is done by looking at R^2 to endogenous construct and path coefficients/t-values for each path (Jogiyanto, 2011).

The pretest on research instruments was conducted on 30 participants. The number of participants in the final test is 107 with a response rate achieved was 58.5%. This amount has been qualified for use PLS-SEM because it has reached the minimum threshold of samples required under ten times the rules and formulas Slovin's with a significance level of 0.05 or 5%.

RESULTS AND DISCUSSION

The testing of convergent validity is performed using a factor loading and AVE, with the provisions of Factor Loading >0.70 and AVE >0.50 (Hair *et al.*, 2012). All of variables are considered valid because all of factor loading of indicator are above 0.70 and AVE values are above 0.50. The testing of discriminant validity is performed using √AVE and cross loading where the √AVE value of a latent variable (including dimensions) must be greater than the value of its correlation with other latent variables (Forner Larcker Criterion) or Cross Loading in one variable is >0.70 (Hair *et al.*, 2012). As a result, all of the indicators, constructs and variables have

Table 1: Reliability and validity of constructs

Constructs	Items	Cronbach's alpha	Composite reliability	AVE
AT	3	0.810	0.862	0.512
SN	3	0.926	0.951	0.867
PBC	3	0.748	0.857	0.667
PU	6	0.920	0.938	0.622
PEoU	3	0.746	0.854	0.662
BItU	4	0.897	0.920	0.660
ASU	3	0.808	0.845	0.612

Table 2: Model fit of construct

Fit statistics	Values	Recommended value
χ^2		
χ^2/df	0.170	<5.00
p-value	0.000	<0.05
AGFI (Adjusted Goodness of Fit)	0.920	>0.80
RMSEA (Root Mean Square Error of Approximation)	0.080	>0.06
CFI (Comparative Fit Index)	0.920	>0.90
NFI (Normed Fit Index)	0.940	>0.90
Incremental Fit Index	0.920	>0.90

Table 3: Summary of hypothesis testing

Hypothesis	Path coefficient	t-values	p-values	Support
H_1	0.793**	18.876	0.000	Yes
$H_{2.1}$	0.585**	4.691	0.000	Yes
$H_{2.2}$	0.257*	2.436	0.015	Yes
$H_{2.3}$	0.529**	4.991	0.000	Yes
H_3	0.225*	2.330	0.020	Yes
$H_{4.1}$	0.252*	2.160	0.024	Yes
$H_{4.2}$	0.654**	6.740	0.000	Yes
$H_{4.3}$	0.270*	2.581	0.010	Yes
H_5	0.460**	3.834	0.000	Yes
$H_{6.1}$	0.335*	2.391	0.012	Yes
$H_{6.2}$	0.240*	2.541	0.011	Yes
$H_{6.3}$	0.238*	2.258	0.007	Yes
H_7	0.545**	4.344	0.000	Yes

Significant at *p<0.05 and **p<0.001

met discriminant validity. Reliability test has also been carried out using Cronbach's alpha of nunnally and the composite reliability of Fornell and Larcker >0.70 (Southern and Ghozali, 2012). This leads to the conclusion that all the constructs in the model have adequate reliability and convergent and discriminant validity Table 1.

In case of model fit, several fit indices have been reported for the investigation of model fit including χ^2. Since χ^2 (df) is sensitive to sample size, the fit indices (AGFI, NFI, RMSEA and CFI) are more correctly reflect model fit. Results are obtained for the Goodness-of-Fit Index (GFI) = 0.92, AGFI = 0.92, the Root Mean-Square Residual (RMSR) = 0.16 (SRMR = 0.08), the normed Fit Index (NFI) = 0.94 and the Comparative Fit Index (CFI) = 0.92. An acceptable fit exists when AGFI>0.80 and RMSEA<0.10. These figures provide evidence of reasonably good fit which is suggestive of trial-valid component measures in the form of scales indicating each construct Table 2.

Internal consistencies for the three scales are also strong. The model fit is therefore considered acceptable. The fit indices again indicates good fit of the data (Table 2). Given satisfactory measurement of the model's fit to the data, the path coefficients of the structural model are assessed.

In case of structural paths and hypothesis tests, the hypothesized causal paths are estimated by using the structural equation modeling technique. The resulting estimations from PLS are shown in Table 3. The bootstrap resampling method was applied to determine the significance of the structural model paths. The path

coefficient among the constructs and the significance of each hypothesis are examined. The results shows all hypothesis are supported.

The testing results show that attitude has the strongest effect on subjective norms (H_1) (β = 0.793, t = 18.867). In case of perceived constructs, attitude also has the strongest effect on perceived behavioral control (β = 0.585, t = 4.491) while subjective norms has the strongest effect on perceived usefulness (β = 0.654, t = 6.740). However, all of perceived constructs do not give much influence on behavioral intention to use. The hypothesized path from behavioral intention to use is significant in the prediction of the actual system use of mobile apps (β = 0.545, t = 4.344) as well as supporting H_7. As hypothesized, all paths are positively significant at the p<0.05 level or above. Hence, H_1-H_7 are supported.

This study proposes a framework for evaluating a value structure composed of various dimensions. The findings show that attitude, subjective norms, perceived (behavioral control, usefulness and ease of use) are significant determinants of behavioral intention to use and actual system use toward (Agoda) mobile apps in Indonesia. This study supported an application of the TPB/TRA and TAM to mobile apps including Agoda mobile apps. This leads a window of opportunity to apply the TPB/TRA and TAM to emerging mobile apps technologies for tourism and hospitality service. The modified TPB/TRA and TAM was considered important due to the fact that mobile apps are both technology-driven and user-oriented (Shin, 2012). At the same time, the appeal and opportunities of mobile applications market are attracting increasing numbers of entrepreneurs and innovators in tourism and hospitality service industries.

Since, this study shows that the TPB/TRA and TAM are applied in the context of Indonesia user, Agoda mobile apps tend to be accepted by Indonesia users based on their personal evaluation. The attitude could increase the belief in individual and group references. The awareness

of the important function from (Agoda) mobile apps appears when the potential user saw other users were using the apps. Moreover, the important person could give more explanation on the usefulness of mobile apps utility. The control of potential user could give the directed behavior, performed behavior situation and accuracy of performed behavior. Moreover, the actual use of mobile apps such as Agoda could extend the limitation of time and space. At least mobile apps use could enhance and improve the efficiency on hotel reservation at Agoda mobile apps.

CONCLUSION

This study sheds light on the constructs of user acceptance are important to give intention and actual use of mobile apps. Recently, tourism and hospitality based mobile apps have been an increasingly important role in user acceptance. Attitude plays the most important role in the reason of people use mobile apps followed by subjective norms, perceived usefulness, perceived ease of use, perceived behavioral control and behavioral intention to use. This study is also success to integrate the constructs of TPB/TRA and TAM. Hence, this study concludes that the theories could be a foundation for accepting new technology apps.

However, most of constructs come from psychological perspectives, future studies can broaden understanding of the social dimensions of mobile apps by investigating how social economic status, social needs and stratification types develop intentions to use and experience of using mobile applications. At the same time, the mobile apps study should be conducted on group or community level to get insight on users' interaction. In addition, the further study could expand into cultural aspect which may influence the user on accepting new apps technology.

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