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31st IBIMA Conference: 25-26 April 2018, Milan, Italy



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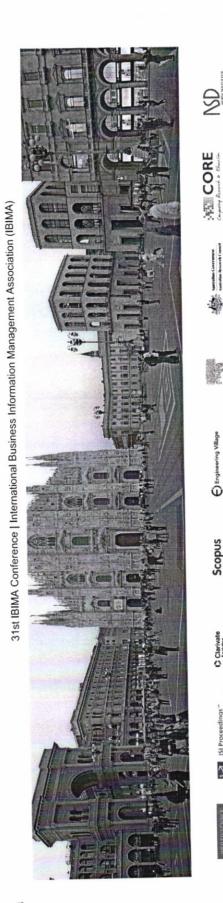
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# Proceedings of the 31<sup>st</sup> International Business Information Management Association Conference (IBIMA)

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Innovation Management and Education Excellence through Vision 2020

Editor

Khalid S. Soliman

International Business Information Management Association (IBIMA)

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# Expectation Confirmation Model in the Transportation Order Applications: Gender Differences

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# Abstract

Recently, there has been a rapid increase in development and use of Transportation Order Applications (TOA) in Indonesia. However, some TOA provider finally close their service because their customer move to the others TOA provider. Therefore, this research is aimed to test the Expectation Confirmation Model (ECM) in the Transportation Order Applications (TOA), especially motorcycles and cars, by concerning the effect of gender differences moderation in Indonesia. The sample of research were 348 respondents who once used the TOA. The model was tested using SmartPLS 2.0 and was analyzed using the multi-group technique. The results of the research, both for males and females, show that the continuance intention is affected directly by the perceived usefulness and satisfaction. The satisfaction was affected by the confirmation and perceived usefulness, while the confirmation affects the perceived usefulness. The results of the multi-group analysis test show that there is no gender difference in the effect of perceived usefulness on the satisfaction, while other hypotheses show that there is a significant effect of gender differences moderation in the ECM. It is expected that in the future research is able to input variable of age as the moderation variable.

**Keywords:** Expectation Confirmation Model (ECM), Transportation Order Applications (TOA) Confirmation, Gender

#### Introduction

In Indonesia, the fusion of cellular phone and internet is clearly depicted in the result of the survey conducted by Asosiasi Penyedia Internet Indonesia (the Indonesian Internet Provider Association) (2015) which shows that 85% of the internet use is done through cellular phones. The fact derived from the result of that survey is beneficially utilized. One of those benefits is its use in the business TOA. TOA is an application which is installed in the cellular phones, in which the users can order some types of transportation modes. Some of the applications which have been used in Indonesia are Go-Jek, Uber, Grab, Say Taxi, and the like. Regular offline public transportations in Indonesia are still interchangeable in use with the online ones, especially motorcycles and cars.

At the end of 2015, the development of TOA escalated rapidly. The society is facilitated by some transportation providers (Kresna, 2017). According to Prihatin (2016), the escalation of online

transportation provided by TOA in Indonesia is led by the needs of alternative transportations which are reasonable and fast in the society, it is also a response towards the poor transportations provided by the government. With numerous choices of TOA in Indonesia, people get it easier to move onto other applications, or even to the regular ones. At the beginning of TOA development, there were a lot of people who intended to use the application (Kresna, 2017). In its early emergence, there were many TOA which developed rapidly such as Ojek Argo which had 2,500 drivers, Ladyjek which had 3,000 drivers, and etc. (Kresna, 2017). However, those applications are having bankruptcy and finally close their services because many customer not interested to continue use the application (Kresna, 2017).

Information system like TOA has to pass through two stages to gain success, the initial acceptance and post-acceptance (Bhattacherjee, 2001). The initial acceptance is the crucial stage to gain the success of the information system, but the success depends much more on the users who continue the system (Bhattacherjee, 2001). That fact happens because the phase of the continuance of the use of information system will guarantee the long-term profitability of the company (Parthasarathy and Bhattacherjee, 1998; Reichheld and Schefter, 2000; Bhattacherjee, 2001; Thong, Hong and Tam, 2006). The fact also shows that maintaining the existing customers is easier to conduct than getting the new ones (Bhattacherjee, 2001; Stone and Baker-Eveleth, 2013).

Viewing that the effect of customers who continue to use the TOA towards the continuity of the company is very crucial, it is necessary to understand determinant factors which affect customers to continue using the application. Moreover, it is also needed to reveal the factors of maintaining customers so that there will be no changing choice. This research is focused on the TOA providing motorcycles and cars in order to avoid the bias of other transportation modes which have a different process of business.

Bhattacherjee, (2001) develops and tests a model of continuing the use of information system empirically which is named Expectation Confirmation Model (ECM). The ECM states that the determinant of users' intention to continue using the information technology is satisfaction, confirmation, and perceived usefulness. Some research has implemented the ECM into various contexts of information technology being focused on each research (Hong, Thong and Tam, 2006; Thong, Hong and Tam, 2006; Lee, 2010; Cho, 2016; Susanto, Chang and Ha, 2016; Wang et al., 2016). Deriving from some research using the ECM, it is found that only a little which is concerning gender as a determinant factor of the intention of continuing to use the information technology. ECM research concerning gender differences is only found in the research conducted by Wang et al., (2016). Some proofs show that gender differences can lead the inappropriateness effect of satisfaction, perceived attitude control, and subjective norm toward the users' intention (Liao, Chen and Yen, 2007). Other sources also opine that the perceived usefulness affects the attitude-intention moderated by gender differences (Gefen and Straub, 1997). The research implemented the ECM also suggests that concerning gender differences as a moderation in testing the ECM is necessary (Liao, Chen and Yen, 2007; Lee, 2010). The results of the research conducted by Wang et al., (2016) show that gender moderates the effect of perceived usefulness on the continuance intention of social media. Therefore, the aims of this research are (1) to test the ECM in explaining the continuance intention of using TOA providing motorcycles and cars and (2) to analyze the effect of gender differences on the ECM.

#### **Theoretical Background**

# Expectation Confirmation Model (ECM)

ECM is a model developed by Bhattacherjee (2001) from the basis of *Expected Confirmation Theory* (ECT) dan *Technology Acceptance Model* (TAM). The ECT is basically widely developed to investigate customers' attitude after buying products or services in the field of marketing. It has a high level of prediction and is frequently adopted in the investigation of attitude after the adoption in the context of information technology (Bhattacherjee, 2001). Bhattacherjee, (2001) argues that the ECT is necessarily used in the context of information technology because there is a suitability between the continuance intention of using the information technology and the decision to repurchase the product.

Based on the ECT and TAM, ECM states that three variables, which are the level of satisfaction of the users toward the information technology, the confirmation on the expectation, and perceived usefulness (the expectation after the adoption), will affect customer's intention to continue using the information technology. The choice of the perceived usefulness is based on the results of TAM research which reveal that the perceived usefulness is the appropriate expectation in the context of continuity of the information system. It is because the perceived usefulness is a belief which consistently affects the intention of the users in some stages of the use of information system (Davis, Bagozzi and Warshaw, 1989).

# The Development of Hypotheses

According to Bhattacherjee (2001), confirmation is a realization of the expectation from the use of information technology. In the ECM, perceived usefulness is a representation of the expectation after using the information technology (Bhattacherjee, 2001). The perceived usefulness is a user's perception about the expectation of the benefit of using the information technology (Davis, 1989). The confirmation will make the perceived usefulness suit the level of confirmation gained, especially when the initial perceived usefulness, which exists before using the information system, is not concrete. It is because the users face uncertainties towards the expectation of the use of that information system (Bhattacherjee, 2001).

#### Hypothesis 1: Confirmation affects positively on perceived usefulness

Satisfaction in the ECM is determined by the confirmation of the users' expectation and the perceived usefulness which is one of the expectations after the first use. Bhattacherjee (2001) defines the satisfaction in the context of ECT, which is inferred from satisfaction definition by Oliver (1980), as a positive emotional condition resulted from the assessment of the performance of a product or service. The confirmation of initial expectation shows that the users have gained the benefit being expected through the use of information technology which then affects the users' satisfaction (Thong, Hong and Tam, 2006).

# Hypothesis 2: Confirmation affects positively on the users' satisfaction towards the TOA

Research in TAM reveals that the perceived usefulness and the perceived ease of use affect the users' attitude towards the information technology and that it affects the intention of receiving the information technology (Davis, 1989). Satisfaction is an attitude and a positive emotion, so it is logical when the perceived usefulness and the perceived ease of use affect the users' satisfaction with the information technology (Cho, 2016). Previous research in the field of marketing also finds that a high expectation will result in a high level of satisfaction (Oliver and DeSarbo, 1988).

# Hypothesis 3: Perceived usefulness affects positively on the users' satisfaction towards the TOA

Perceived usefulness is a subjective concern of the users about the possibility of the information technology in escalating the performance of the users. Therefore, it is a rational component from the decision making to use the information technology (Hsiao, Chang, dan Tang, 2016). In some literature, adoptions of the information technology constantly find that the perceived usefulness is the most crucial factor which shapes a user's intention to use the information technology (Davis, 1989).

# Hypothesis 4: Perceived usefulness affects positively on the continuance intention

Research in the field of marketing states that the determinant of customers' intention to buy a product is the level of satisfaction (Szymanski dan Henard, 2001). It is similar to the correlation in the context of repurchase a product which opines that the determinant of costumers' intention to keep using the information technology is the satisfaction (Thong, Hong and Tam, 2006; Cho, 2016).

#### Hypothesis 5: User's satisfaction towards the TOA affects positively on the continuance intention

# The Effect of Gender Differences

Gender differences own a significant effect on individuals' perception and attitude (Wang et al., 2016). Gender differences also occur in the attitude of information technology users (Venkatesh and Morris, 2000). Previous research in the context of TAM concerned the effect of gender differences on the acceptance and the use of the information technology (Gefen and Straub, 1997; Yuen and Ma, 2002; Ma and Yuen, 2005; Ong and Lai, 2006; Kim, 2010). In addition, Eagly, (1987) suggested, male and female have differing interest, male tend to be task oriented and femlae tend to be communally oriented. Li and Lai (2011), however, suggested females are becoming more task-oriented, which suggests that they are more inclined than ever to accept technology that enhances productivity. Referring to that explanation, this research includes gender differences as a moderation in implementing the ECM in the TOA. It is expected that the inclusion will lead to better understanding of the users' continuance intention to keep using the applications. Based on the above references, the model of this research can be viewed in Figure 1.

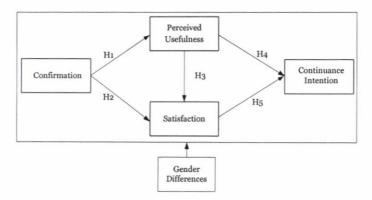


Fig. 1: The Model of The Research

#### Research Methods

#### Data Collection and Variable Measurement

The impression after

(Bhattacherjee, 2001)

using TOA

Satisfaction

Survey used to gain primary data from respondents through questionnaires. The samples in this research were 348 respondents from some big cities in Indonesia who once used the TOA, especially motorcycles and cars. The purposive sampling and convenience sampling techniques were used in this research. This research used likert scale 1-6, starting from strongly disagree to strongly agree. Table 1 shows the variable operational definition and the measurement of each variable.

Variable	Definition		Measurement	Reference	
	The intention to continue	CH	I intend to continue using the transportation order application, and I do not intend to stop using the use of the application.		
Continuance Intention	using TOA (Bhattacherjee, 2001)	CI2	I intend to continue using the transportation order application rather than using other modes of transportation order.	Bhattacherjee (2001)	
		CI3	I will continue using the transportation order application regularly as what I do now.		
		SAI	I am satisfied with the transportation order		

SA<sub>2</sub>

SA3

application I downloaded.

transportation order application.

a right

Based on my personal experience, I am satisfied with

decision by

using

Vila and Kuster (2011)

I have made

Table 1: Operational Definition and Measurement

Variable	Definition		Measurement	Reference
			the transportation order application.	
	The users' perception about the suitability of	COI	My experiences using the transportation order application exceed my expectation.	
Confirmation	the expectation of the use of the TOA, and the	CO2	Services provided by the transportation order application exceed my expectation.	Bhattacherjee (2001)
	actual performance of the applications (Bhattacherjee, 2001)	CO3	Overall, the transportation order application suits my expectation.	
	The users' perception	PU I	I get the benefits of using the transportation order application in my daily life.	
Perceived	about the expectation benefit of the use of the	PU 2	Using the transportation order application eases me to do things faster.	Davis, Bagozzi and
Usefulness	TOA (Davis, Bagozzi and Warshaw, 1989;	PU 3	Using the transportation order application supports my productivity.	Warshaw, (1989)
	Bhattacherjee, 2001)	PU 4	Using the transportation order application helps me doing many things better.	

#### Measurement Model

Measurement model tested the validity and reliability of the research. The reliability test used the value of composite reliability (CR). If the CR value is not less than 0.70, the reliability is gained (Fornell and Larcker, 1981). Moreover, the validity test used the convergent and discriminant validity. If the Average Variance Extracted (AVE) value of each variable is more than 0.50, the convergent validity is gained. A valid discriminant validity shows that the value of AVE's square root for each construct is more than the correlation of constructs in the model (Fornell and Larcker, 1981).

# Structural Model

The structural model was used to analyze the correlation among variables in the research model. In this model, there were tests of model strength ( $R^2$ ), path coefficient ( $\beta$ ), and significance. The  $R^2$  test analyzes the model strength in explaining dependent variables being researched. Path coefficient ( $\beta$ ) and significance are the tests of hypotheses shaped in the model and are the output of bootstrapping in smartPLS 2.0. Each structural model was conducted both for males and females and whole of sample set.

#### Multigroup Analysis

Concerning the t-test model of males and females, the statistic test was done by comparing path coefficient in two models (males and females). The statistic comparison is a multi-group analysis as suggested by Chin (2000). According to the suggested procedure, the following is the equation to count the t-test.

$$t = \frac{(\beta \text{male} - \beta \text{female})}{\sqrt{(SEmale^2 + SE \text{female}^2)}}$$
Equation (1)

 $\beta$  = Path Coefficients

SE = Standard Error

#### Results

#### Respondents' Demography

The respondents' demography can be viewed in Table 2. Data regarding level of education shows that 279 respondents had at least a bachelor degree. The data of the age indicated that 297 respondent 21 - 30 years old. 126 respondent use the application in Yogyakarta, and 255 respondents use the application for order motorcycle.

Table 2: Respondents' Demography

	Male	Female	Total		Male	Female	Total
Level of Education :				City:")			
Diploma	3	9	12	Jakarta	57	60	117
Bachelor	120	159	279	Yogyakarta	84	126	210
Master	27	27	54	Others City	12	9	21
Doctor	3	0	3				
Age:				Vehicles:**)			
< 20 years old	30	12	42	Car	24	69	93
21 - 30 years old	117	180	297	Motorcycle	129	126	255
31 - 40 years old	6	3	9				

<sup>\*)</sup> City used by respondents to use TOA

# Measurement Model Test

Table 3 shows that the value of AVE for each variable is more than 0.5, so it can be inferred that the results have gained the convergent validity test. As it is viewed from the loading factor and T-Statistic, the variable measurement items have loadings from 0.811 to 0.909 with the significance is more than 1.96. It is concluded that the construct indicator in the model is valid. Viewed from the value of composite reliability (CR), all variables have values above 0.7, so it is concluded that it has gained the reliability test. Table 4 shows that the value of AVE's square root for each variable, is more than each construct correlation. It shows that the discriminant validity test is gained.

Table 3: The Results of Reliability dan Convergent Validity Test

Variable and Item	Loading	T-Statistics	AVE	CR
Confirmation			0,766	0,907
COI	0,902	45,787		
CO2	0,877	28,529		
CO3	0,843	27,061		
Perceived Usefulness			0,729	0,915
PUI	0,811	15,639		
PU2	0,856	20,080		
PU3	0,867	28,860		
PU4	0,857	30,195		
Satisfaction			0,792	0,919
SAI	0,909	48,208		
SA2	0,906	40,241		
SA3	0,851	16,165		
Continuance Intention			0,782	0,915
CII	0,868	23,327		
CI2	0,897	30,685		
CI3	0,890	33,170		

<sup>\*\*)</sup> The types of vehicles that are often ordered in TOA

Table 4: The Results of Discriminant Validity Test

Variable	Satisfaction	Confirmation	Continuance Intention	Perceived Usefulness
Satisfaction	0,890			
Confirmation	0,6759	0,875		
Continuance Intention	0,5574	0,4937	0,884	
Perceived Usefulness	0,5914	0,5228	0,6398	0,854

#### Structural Model Test

Figure 2 shows the structural model test result for overall model testing. The results of the structural model test present that all hypotheses are accepted with the significance 0,01. Perceived usefulness and satisfaction explain the continuance intention as much as 45,86%. Figure 3 shows the structural model test results for male and female respondents. Structural model tests for males and females were conducted separately. Perceived usefulness and satisfaction, in combination, explain the continuance intention as much as 31.5% for males, and 60.3% for males. In addition, perceived usefulness and confirmation explain satisfaction as much as 62.0% for males, and 44.9% for females. The results of the structural model test show that all hypotheses are accepted, both for males and females, with the significance 0.01.

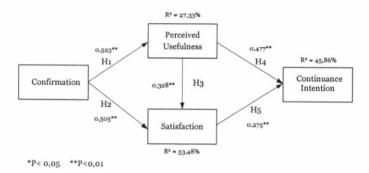


Fig. 2: Overall Model Testing Result

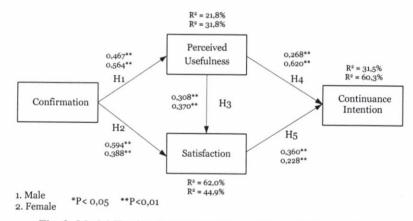


Fig. 3: Model Testing Result for Male and Female Respondents

#### Discussion

# **Overall Model Testing**

In line with hypothesis, satisfaction and perceived usefulness were shown to be significant predictors of continuance intention. This finding is consistent with the findings of prior ECM studies (Bhattacherjee, 2001; Cho, 2016; Susanto, Chang and Ha, 2016; Wang et al., 2016). In this study, however, the effect of perceived usefulness on continuance intentions was larger than satisfaction, which differs from what was observed by Bhattacherjee, (2001); Susanto, Chang and Ha, (2016). The presents results are in agreement with those of prior TAM-based studies of information system acceptance. In addition, previous ECM studies perceived usefulness is stronger predictor of continuance intention than satisfaction (Cho, 2016). Although, the predictive power of perceived usefulness and satisfaction varies across context, the association between them and information system acceptance and information system continuance intention are robust and salient (Wang et al., 2016). In this study, the results showed that confirmation has a stronger effect on satisfaction than perceived usefulness. In addition, confirmation has significant effect on perceived usefulness, indicating that users confirmation are key determinants of their satisfaction and perceived usefulness.

# The Effect of Gender Differences

Moderation analysis on the effect of gender differences was conducted through multi-group analysis. The t-test was counted using Chin (2000) theory, in which equation 1 explained the t-test. The results of the gender differences moderation effect can be viewed in Table 5. As it is viewed from all of the t-test values which are more than 1.96, the results of the test show that there is an effect on the gender differences moderation for all hypotheses, except that on hypothesis 3 – the effect perceived usefulness on satisfaction. The results of the test show that the effect of males is significantly stronger than that of females for the effect of confirmation on satisfaction ( $\beta$ =3.632), and the effect of satisfaction on the continuance intention ( $\beta$ =1.796). On the other hand, in the effect of confirmation on perceived usefulness ( $\beta$ =1.694) and the effect of perceived usefulness on continuance intention ( $\beta$ =6.306), the effect of females are stronger than that of males.

Table 5: The Effect of Gender Differences Moderation

	Male	e	Fema	Female		
Hypothesis	Path Coefficients	SE	Path Coefficients	SE	T-test	
H1 : CO -> PU	0,468	0,049	0,565	0,030	-1,694*	
H2 : CO-> SA	0,595	0,025	0,388	0,051	3,632***	
H3 : PU ->SA	0,308	0,032	0,370	0,043	-1,151	
H4 : PU -> CI	0,269	0,033	0,620	0,045	-6,306**	
H5 : SA -> CI	0,361	0,046	0,228	0,058	1,796**	

The results of the test show that ECM is able to explain the continuance intention. From the R square  $(R^2)$  values, it shows that perceived usefulness and satisfaction together explain 31,5% of the variance in male users continuance intention and 60,3% of the variance in female users continuance intention. The low value of  $R^2$  which is 31.5% implies that the model of males is necessarily investigated further related to the variables which affect the continuance intention. The elaboration of ECM by including relevant variables is needed to conduct to gain a good understanding of determinant factor of continuance intention on males.

The results of the multi-group analysis show that gender differences moderate the effect among variables which are suggested in the ECM. The continuance intention affected by satisfaction is stronger for males ( $\beta$ =0.360), and perceived usefulness for females ( $\beta$ =0.620). Both for males and females, perceived usefulness affects significantly on the continuance intention. However, the effect of perceived usefulness

for females is stronger than males. It is implied that females have more concerns on the perceived usefulness as the determinant factor of the continuance intention than do the males. The results of this research are in line with the research conducted by Yuen and Ma (2002); Ma and Yuen (2005) which find that females emphasize more on the perceived usefulness related to the intention to accept information technology. In contrast, the results of this research are not in line with the research conducted by Ong and Lai (2006); Venkatesh and Morris (2000); Wang et al. (2016). Females today are more task-oriented, which may cause them accept technology supporting their productivity (Li and Lai, 2011). Besides, the increase in the number of working females and the growth of the use of information technology in the work field can affect the perceived usefulness owned by females on the information technology (Li and Lai, 2011). The results of the survey conducted by Thomson reuters (2014) show that one of the cities in Indonesia, Jakarta, is on the rank 5 as the provider of dangerous public transportation for women. Some inconveniences in the public transportation in Indonesia are sexual abuse, robbery, and etc. The emergence of the TOA providing private transportation becomes a solution for women. This reason possible effect that the perceived usefulness on the continuance intention for females is bigger than for males.

Although satisfaction also affects significantly on the continuance intention in both males and females, the effect of satisfaction for males ( $\beta$ =0.360) is stronger than for females ( $\beta$ =0,228). It shows that males emphasize more on the importance of satisfaction as the determinant factor of the continuance intention, and dissatisfaction will lead to discontinuance intention. The results of the research conducted by Liao, Chen, and Yen (2007) and Lee (2010) conclude that both research models more represent that males show the same results on the determinant factor of continuance intention, which is satisfaction. Concerning that the ECM is developed based on the ECT which is widely used in marketing research, the basic theory in the marketing field may explain the results of this research. According to Falk and Campbell (1997), men consume products as a process of meeting the needs and of focusing on the products or services, while women consume to gain social and hedonic benefits which satisfy more than getting the products or services. Viewing those findings, men focus on getting satisfaction from the products or services, while women focus more on a peripheral aspect of consume. For that reason, the continuance intention on men is more focused on the satisfaction of getting the products or services, while on women is more emphasized on other benefits (Frank et al., 2014). That reason may be used in explaining the effect of satisfaction on the continuance intention is stronger for males than for females. In shaping the continuance intention, males emphasize more on satisfaction, while females emphasize more on other benefits.

The results of the test show that perceived usefulness and confirmation affect significantly on satisfaction, both for males and females. Related to the satisfaction, the perceived usefulness and confirmation explain males' satisfaction as much as 62.0% and females' satisfaction as much as 44.9%. The effect of confirmation ( $\beta$ = 0.594 & 0.388) is stronger than the perceived usefulness ( $\beta$ =308 & 370) in explaining satisfaction, both for males and females. Others research also finds that the effect of confirmation is the most dominant in determining satisfaction (Bhattacherjee, 2001; Cho, 2016; Liao et al., 2007; Thong et al., 2006). It shows that the application users emphasize more on the suitability of their expectation with the actual use than the perceived usefulness in the form of satisfaction. Even though confirmation and perceived usefulness affect significantly on satisfaction for both males and females, the effect of confirmation for males is stronger than for females. It is in line with the previous research findings that the continuance intention for males tends to be determined by satisfaction, so the determinant factor of satisfaction which is confirmation is stronger for males.

The dominant effect of confirmation and satisfaction show that the TOA providers should implement application development strategies which can increase customers' satisfaction. As the result, the providers will be able to maintain the number of the customers. Besides, customers' satisfaction will lead to new customers through word of mouth from the satisfied customers (Thong et al., 2006). Moreover, the role of perceived usefulness is also worth considering in determining the continuance intention. The application providers should give more attention on this case. Various services provided through TOA which facilitate not only for humans, but also for goods, delivery services, and etc. may increase the perceived usefulness. In addition, varied services are also proven to attract new customers. Go-Jek has succeeded to make Topjek bankrupt by not only providing transportation for human, but also providing

Go-Send (goods delivery) (Kresna, 2017). Various payment models may also be part of the increasing the perceived usefulness which is expected to maintain as well as add more customers.

#### **Conclusions**

This research uses the ECM in explaining the continuance intention. The results of the research show that the perceived usefulness affects the continuance intention, the confirmation and perceived usefulness affect the satisfaction, and the satisfaction affects the continuance intention. The multi-group analysis test results show that gender differences exist in the ECM. However, there is no gender difference in the effect of perceived usefulness on the satisfaction.

Although this research has succeeded to reveal and explain the continuance intention by concerning gender differences in the ECM, there are some issues worth considering in the future research. First, it is necessary to elaborate the ECM by including some relevant variables. It is expected that the inclusion of relevant variables into the ECM will illuminate readers with better understanding to deal with the continuance intention. Second, this research is dominated by the respondent aged 20 to 30 years old. It is expected that the future research is able to input variable of age as the moderation variable.

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