



Influence of factor application between utilizing modified united theory of acceptance and use of the technology 2 model (a study on Shopee users in Indonesia)

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ABSTRACT

The internet has become a part of people's daily lives to help them fulfil their needs, such as enabling them to trade or do business utilizing e-commerce applications. Shopee is one of Indonesia's most well-liked e-commerce platforms, boasting 93 million active users. This study used the modified UTAUT 2 model to conduct a descriptive analysis to identify the application user assessment. Subsequently, the SEM PLS analysis was conducted to identify variables influencing the continuation intention of application usage and the impact of the continuation intention on the user behaviour of Shopee application users. The study also sought to ascertain the impact of age and gender on the other variables in the study model. As a result, the business can identify user preferences and factors that affect how often users use the Shopee program, enabling it to maintain its appeal in the face of intense competition. The study findings revealed that social influence, perceived security, and risk received lower ratings than other categories. In conclusion, the intention of application users to continue using it was highly influenced by performance expectations, effort expectations, social influence, enabling conditions, headache incentives, habit, and perceived security and risk.

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INTRODUCTION

Indonesia has the world's largest population and one of the highest internet access rates. With a population of 272.1 million, Indonesia had 175,4 million internet users in 2020 (We Are Social, 2021). The high number of internet users in Indonesia shows that Indonesia is enthusiastic about technological advances. The internet has become a part of people's needs that offer positive impacts, such as facilitating the needs fulfilment. Most internet users in Indonesia access the internet through mobile phones (54.6%), while the rest, access it through laptops and desktops (44.9%) and computer tablets (0.5%) (We Are Social, 2021). Fifty-five percent of mobile app utilization aims for shopping

app usage (We Are Social, 2021), indicating that most internet and mobile phone users use shopping applications. Hence, Indonesia is a potential market for such a business, including e-commerce.

According to Chaffey and Ellis-Chadwick (2016), e-commerce is everything related to financial and information exchange mediated electronically between the organization and external stakeholders. It follows the statement of Laudon & Laudon (2015) that e-commerce uses the internet and website media to conduct business transactions between the organization and individuals. Thus, e-commerce trades through the internet media used by organizations and individuals. E-commerce users in Indonesia continue to grow from 2013 to 2020. It is estimated to increase by 53% of the Indonesian population (Statista, 2019). This significant growth puts e-commerce in a promising market in Indonesia. *Shopee* is one of the top-performing apps on the iOS (App Store) and Android (Play Store) platforms in 2019 and 2020, making it one of the most well-known e-commerce companies in Indonesia (Statista, 2019). Additionally, *Shopee* customers surpass 93 million active users (iprice.co.id, 2019). The company must maintain its popularity and user satisfaction to improve user experience and encourage sustainable application usage. One is through observing consumer preferences and *Shopee* application usage patterns.

Solomon (2017) said that customer behavior studies the processes involved when individuals or groups select, purchase, use, or dispose of products, services, ideas, or experiences to satisfy needs and desires. This study aimed to discover customer assessment using the *Shopee* application and identify factors affecting continuance intention and use behavior. The descriptive analysis was performed to discover user assessment on performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value, habit, perceived security and risk, continuance intention, and use behavior of *Shopee*. Meanwhile, the SEM PLS analysis in the study aimed to discover whether performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value, habit, and perceived security and risk effects could continue the intention. Moreover, the SEM PLS analysis was also carried out to discover whether continuance intention positively and significantly affects user behavior. The moderating variable analysis was conducted to discover the effect of age and gender variables on other variables in the study model. The study results are expected to help companies understand *Shopee* users' behaviors to arrange appropriate marketing strategies to encourage application use and improve user assessment.

RESEARCH METHOD

The data used in this study were from 445 respondents collected through an online questionnaire via Google form from 18 June 2021 to 28 June 2021. This study's respondents were *Shopee* users aged between 15 - 60 years, living in Indonesia, and having completed three shopping transactions in *Shopee*. 60.67% of respondents were females, while 39.33% were males. Furthermore, 68.54% of respondents were young, aged between 15 and 24 years, and the remaining 31.46% were adults, aged between 25 and 60. Collected data were analyzed using descriptive analysis and SEM PLS analysis techniques.

Descriptive Analysis

Following Sujarweni (2019), a descriptive analysis aimed to illustrate the data characteristics of a sample. Descriptive statistics is used after collecting data from all respondents or other sources. The data then analyze and categorize data without drawing a generalized conclusion (Sugiyono, 2017). Meanwhile, a descriptive statistics analysis included mean, median, modus, percentile, decile, and quartile measurements in number, figure, or diagram analyses (Sujarweni, 2019). This study employed a descriptive statistics analysis to discover the respondent assessment of performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value, habit, perceived security and risk, continuance intention, and use of behavior variables the *Shopee* application. The higher the score percentage of a variable, the higher the variable category, as presented in Table 1.

Table 1. Variable Assessment Categories

Assessment Category	Percentage Interval
Very low	$20\% < x \leq 36\%$
Low	$36\% < x \leq 52\%$
Moderate	$52\% < x \leq 68\%$
High	$68\% < x \leq 84\%$
Very high	$84\% < x \leq 100\%$

Source: Processed Data, 2021

Structural Equation Modelling

Structural Equation Modeling (SEM) is a multivariate statistical analysis technique combining factor and regression analysis techniques. SEM aimed to test the relationship among variables in a model (Sarwono, 2010). The current study utilized SEM based on variance since this model was predicted to connect the causality effect on the latent variable level. One of the variance-based SEM (VB-SEM) commonly used is Partial Least Square (PLS). PLS is a multi-riort statistics technique comparing multiple dependent and general independent variables (Abdillah & Jogiyanto, 2015). PLS is a VB-SEM statistic method designed to solve multiple regressions when one specific problem in the data occurs, such as a small sample size, lost data (missing values), and multicollinearity. The study performed SEM PLS analysis using SmartPLS Version 3.3.3 to discover whether independent variables, i.e., performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value, habit, and perceived security and risk, exist affect the dependent variable, i.e., continuance intention. The SEM PLS analysis conducted for this study also sought to determine whether continuing intention significantly and favorably influences user behavior. SEM PLS analysis was used as a prediction model rather than assuming a certain distribution to estimate parameters and forecast causality relationships. As a result, the nonparametric prediction evaluation model replaces the parametric technique for testing parameter significance. The PLS model evaluation was performed using the outer and inner model evaluations (Abdillah & Jogiyanto, 2015).

Outer Model: Outer model testing is a measurement to assess model validity and reliability through the algorithm iteration process. The measurement model parameters were acquired (consisting of convergent validity, discriminant validity, composite reliability, and Cronbach's Alpha), including the R^2 value as the predicting model accuracy parameter (Abdillah & Jogiyanto, 2015). The validity test aimed to discover the ability of study instruments to measure what it was supposed to measure (Cooper & Scindler, 2006). Meanwhile, the reliability test aimed to measure the instrument's consistency in measuring concepts and the respondent's consistency in providing answers to the question items in a questionnaire or study instrument. Validity and reliability tests were crucial to acquiring accurate calculation results.

The validity test in the current study used convergent validity and discriminant validity evaluations. When determining convergent validity, a factor loading (FL) of greater than 0.7 was used to determine if an item or a group of items was accurate. The item in the variable is also judged to have sufficient convergent validity if the Average Variance Extracted (AVE) is higher than 0.5 (Abdillah, 2018). Meanwhile, discriminant validity was utilized when two different instruments measuring two constructs were predicted not to correlate and produce noncorrelated scores. The discriminant validity in this study was conducted by comparing the AVE root for each construct with the correlation between other constructs in the model, where the model will have a sufficient discriminant validity if the AVE root for each construct was bigger than the correlation between other constructs in the model.

Moreover, a variable is declared valid in discriminant validity if it has a higher cross-loading value than other variables (Indrawati et al., 2017). The reliability test in this study was performed with Cronbach's Alpha and composite reliability methods. Cronbach's Alpha aimed to measure an item's lower reliability level value, while composite reliability measures the actual reliability value of a construct (Abdillah & Jogiyanto, 2015; Chin & Todd, 1995). An item was reliable if the

Cronbach's Alpha and composite reliability values were higher than 0.7 (Abdillah, 2018; Abdillah & Jogiyanto, 2015; Hair-Jr. et al., 2014).

Inner Model: The structural or inner model sought to establish a causal link between latent variables built using theories. Four different inner model evaluations were performed for this study: R-square, Q-square, effect size, path coefficient, and t-value calculations. The dependent variable's level of change variation on the independent variables was measured by R-Square (R²), which also determined the extent of the dependent variable's influence on the independent variables. An R-Square value higher than 0.67 for the dependent variable in an inner model indicated that the effect of independent variables on the dependent variables was categorized well. Meanwhile, Q-Square measured the feasibility of observed values generated by the model and the parameter estimates. A Q-Square value higher than zero indicated that the model was feasible for having a relevant predictive value. Effect size (F²) assessed the substantive effect of independent variables on the dependent variable (Ghozali, 2014). A small effect was obtained when the F² value was under 0.02. A moderate effect was obtained when the F² value was between 0.02 and 0.35, and a big effect was obtained when the F² value was over 0.35. The significance level utilized in the study was 5%; thus, if the t-value was higher than 1.65, the hypothesis was accepted in the hypothesis test result (path coefficient) since there was a significant effect between independent and dependent variables.

Inner Model: The moderating variables in this study were age and gender. Age in this study was divided into two groups, i.e., adolescents (15-24 years) and adults (25-60 years). Meanwhile, gender was divided into males and females. The moderating variable analysis was performed to discover whether gender and age have a moderating effect on the relationships in the model. The moderator variable analysis in this study was carried out by calculating the path coefficient and standard error of each group of age and gender variables. Then, the analysis was followed up by calculating the t-value from the compared path.

RESULTS AND DISCUSSIONS

Descriptive Analysis

The descriptive statistics analysis in this study demonstrated that most respondent assessments on the eight study variables were "very high," whereas only two variables were categorized as "moderate." The variable with the highest assessment score was hedonic motivation, with a percentage of 75.49%. Meanwhile, the variable with the least assessment score was perceived security and risk, with a percentage of 64.97%. In summary, the descriptive analysis results of the study were presented in Table 2.

Table 2. Descriptive Analysis Summary

Assessment Category	Percentage Interval
Very low	20% < x ≤ 36%
Low	36% < x ≤ 52%
Moderate	52% < x ≤ 68%
High	68% < x ≤ 84%
Very high	84% < x ≤ 100%

Source: Processed Data, 2021

SEM PLS Analysis

Outer Model: Since the FL value was greater than 0.7 and the AVE value was greater than 0.5, the convergent validity evaluation result showed that all market indicators for each variable were valid with good convergent validity. As a result of each variable's AVE root value being larger than the correlation between the two variables in the model, the research variables passed the discriminant validity test, which demonstrated that the variables had discriminant validity. Also, compared to other variable values, each variable had the largest cross-loading value on the created variable. The reliability test revealed that all variables had Cronbach's Alpha and composite reliability values greater than 0.7. It may be said that the variables have good data dependability.

Inner Model: The R-square value for the continuance intention variable in the study was 0.746, which indicates that the continuance intention percentage can be explained by performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, and perceived security and risk by 76.4%. Comparatively, the study's exclusion of other factors had an impact on the remaining 23.6%. The user behavior variable's R-square value was 0.868, meaning that 86.8% of the use behavior percentage may be attributed to continuing intention, with the remaining 13.2% being influenced by other variables that were left out of the study. Continuance intention and use behavior variables had R-square values over 0.67, categorizing both models as good. The Q-square calculation result of the continuance intention variable was 0.687 and 0.7474 for the user behavior variable. It showed that the model had a relevant predictive value since the Q-square values of both variables were over zero. The effect size values showed that performance expectancy, effort expectancy, social influence, facilitating conditions, and habit variables moderately affected continuance intention. Meanwhile, hedonic motivation, price value, perceived security, and risk variables minimally affected continuance intention. The continuance intention variable majorly affected user behavior.

The path coefficient and t-value calculation results for direct effect in this study demonstrated that each variable of performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), habit (H), and perceived security and risk (PSR) positively and significantly affected continuance intention (CI). Meanwhile, price value (PV) positively and insignificantly affected continuance intention, and continuance intention positively and significantly affected use behavior (UB). The summary of the path coefficient and t-value calculation results (direct effect) was presented in Table 3.

Table 3. Path Coefficient and T-value (Direct Effect)

Struktural	Path Coefficient	T-value	P-value	Conclusion
PE-> CI	0.240	3.033	0.001	Hypothesis is accepted
EE-> CI	0.195	2.484	0.007	Hypothesis is accepted
SI-> CI	0.085	2.846	0.002	Hypothesis is accepted
FC-> CI	0.190	6.193	0.000	Hypothesis is accepted
HM-> CI	0.051	2.098	0.018	Hypothesis is accepted
PV-> CI	0.033	1.258	0.104	Hypothesis rejected
H-> CI	0.255	5.124	0.000	Hypothesis is accepted
PSR-> CI	0.092	2.205	0.014	Hypothesis is accepted
CI-> UB	0.932	111.042	0.000	Hypothesis is accepted

Source: Processed Data, 2021

Then, path coefficient and t-value calculation results for indirect effect in the study revealed that performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, habit, and perceived security and risk variables positively and significantly affected use behavior via continuance intention. Meanwhile, price value positively and insignificantly affected use behavior via continuance intention. The summary of the path coefficient and t-value calculation results (indirect effect) was presented in Table 4.

Table 4. Path Coefficient and T-value (Indirect Effect)

Struktural	Path Coefficient	T-value	P-value	Conclusion
PE-> CI	0.240	3.033	0.001	Hypothesis is accepted
EE-> CI	0.195	2.484	0.007	Hypothesis is accepted
SI-> CI	0.085	2.846	0.002	Hypothesis is accepted
FC-> CI	0.190	6.193	0.000	Hypothesis is accepted
HM-> CI	0.051	2.098	0.018	Hypothesis is accepted
PV-> CI	0.033	1.258	0.104	Hypothesis rejected
H-> CI	0.255	5.124	0.000	Hypothesis is accepted
PSR-> CI	0.092	2.205	0.014	Hypothesis is accepted
CI-> UB	0.932	111.042	0.000	Hypothesis is accepted

Source: Processed Data, 2021

Moderator Variable Analysis: The moderating variables in this study were age and gender. The price value variable failed the previous test's significance threshold. As a result, the variable wasn't examined in the moderating variable test. The t-value calculation results in adolescents and adult groups in the age variable demonstrated that age moderated the effect of facilitating conditions on continuance intention. Meanwhile, age did not moderate the effect of performance expectancy, effort expectancy, social influence, hedonic motivation, habit, and perceived security and risk on continuance intention. Also, age did not moderate the effect of continuance intention on user behavior. The summary of the t-value calculation results of the age variable was presented in Table 5.

Table 5. T-value on The Compared Path in Youth and Adult Groups

Path Comparison	T-value from Compared Paths	Conclusion
PE-> CI	1,257198	No significant difference exists
EE-> CI	-1,086149	No significant difference exists
SI -> CI	0,155962	No significant difference exists
FC -> CI	3,809416	A significant difference exists
HM -> CI	1,285428	No significant difference exists
H -> CI	-0,833956	No significant difference exists
PSR -> CI	-1,046747	No significant difference exists
CI -> UB	-1,754532	No significant difference exists

Source: Processed Data, 2021

Table 6. T-value on The Compared Path in Male and Female Groups

Path Comparison	T-value from Compared Paths	Conclusion
PE-> CI	0,940110	No significant difference exists
EE-> CI	-0,404632	No significant difference exists
SI -> CI	0,034174	No significant difference exists
FC -> CI	-3,673582	A significant difference exists
HM -> CI	0,210721	No significant difference exists
H -> CI	1,938533	Terdapat perbedaan signifikan
PSR -> CI	-0,708690	No significant difference exists
CI -> UB	-0,176410	No significant difference exists

Source: Processed Data, 2021

The t-value calculation results in male and female groups in the gender variable showed that gender moderated the effect of facilitating conditions and habits on continuance intention. Meanwhile, gender did not moderate the effect of performance expectancy, effort expectancy, social influence, hedonic motivation, and perceived security and risk on continuance intention. Moreover, gender did not moderate the effect of continuance intention on user behavior. The t-value calculation results of male and female groups in the gender variable were presented in Table 7. Based on the SEM PLS analysis and moderator variable analysis results addressed, the hypothesis test results are briefly presented in Table 7.

Table 7. Hypothesis Test Results

	Hypothesis	Conclusion
1	Performance expectancy positively and significantly affects continuance intention.	Supported
1a	The effect of performance expectancy on continuance intention is moderated by age.	Unsupported
1b	The effect of performance expectancy on continuance intention is moderated by gender.	Unsupported
2	Effort expectancy positively and significantly affects continuance intention.	Supported
2a	The effect of effort expectancy on behavioural intention is moderated by age.	Unsupported
2b	The effect of effort expectancy on behavioural intention is moderated by gender.	Unsupported
3	Social influence positively and significantly affects continuance intention.	Supported
3a	The effect of social influence on continuance intention is moderated by age.	Unsupported
3b	The effect of social influence on continuance intention is moderated by gender.	Unsupported
4	Facilitating Conditions positively and significantly affects continuance intention.	Supported
4a	The effect of facilitating conditions on continuance intention is moderated by age.	Supported
4b	The effect of facilitating conditions on continuance intention is moderated by gender.	Supported
5	Hedonic motivation positively and significantly affects continuance intention.	Supported

5a	The effect of hedonic motivation on continuance intention is moderated by age.	Unsupported
5b	The effect of hedonic motivation on continuance intention is moderated by gender.	Unsupported
6	Price Value positively and significantly affects continuance intention	Unsupported
6a	The effect of price value on continuance intention is moderated by age	Unsupported
6b	The effect of price value on continuance intention is moderated by gender	Unsupported
7	Habit positively and significantly affects continuance intention	Supported
7a	The effect of habit on continuance intention is moderated by age	Unsupported
7b	The effect of habit to continuance intention is moderated by gender	Supported
8	Perceived security and risk positively and significantly affects continuance intention.	Supported
8a	The effect of perceived security and risk to continuance intention is moderated by age.	Unsupported
8b	The effect of perceived security and risk to continuance intention is moderated by gender.	Unsupported
9	Continuance intention positively and significantly affects use behavior	Supported

Source: Processed Data, 2021

Based on the descriptive analysis result of the study, there were two variables in the "moderate" category, i.e., social influence by 65.36% and perceived security and risk by 64.97%. Both variables must be improved for equality by *Shopee* Indonesia. Social influence is how consumers perceive that important others (e.g., family and friends) believe they should use a particular technology (Venkatesh et al., 2012). Meanwhile, perceived security and risk are the user's perception of the security and risk in using the *Shopee* application. This study demonstrated that continuance intention was positively and significantly affected by social influence, which follows precedent studies by Celik (2016) and Sumendap & Indrawati (2019). It indicates that family, friends, and stakeholders affect *Shopee* users to use the *Shopee* application and to decide on using *Shopee* continuously. Hence, *Shopee* is recommended to improve the social influence variable assessment by arranging marketing strategies that utilize viral social influencers to convey marketing messages, including promotions in the company or user communities to encourage users to use *Shopee*.

Perceived security and risk also significantly affected people's tendency to use *Shopee*. It follows a study by Indrawati & Tohir (2016), proving that perceived security and risk had the highest effect on continuance intention to use *Shopee*. The study result demonstrated that *Shopee* users often worry about sharing their personal data with the *Shopee* application, although they also believe that *Shopee* has a security system to support user security. Thus, it is crucial for *Shopee* to regularly monitor the application security system. The company should also provide a reliable call center to handle user problems in using the *Shopee* application. Moreover, *Shopee* should also provide and periodically inform the transaction security or privacy policy guideline to improve users' sense of security when using the application.

The starter results also revealed that the age variable moderated facilitating conditions, where young *Shopee* users moderated facilitating conditions on continuance intention more than adults. It contrasts with the study by Indrawati & Putri (2018), showing that age did not moderate facilitating conditions. Meanwhile, age did not moderate performance expectancy, effort expectancy, social influence, hedonic motivation, price value, habit, perceived security and risk, and continuance intention variables. It indicates that youth and adult categories perceive these factors similarly. Gender moderated the effect of habit and facilitating conditions, whereas males moderated the effect of habit more than females.

Meanwhile, for the facility condition variable, females moderated it more than males. It does not follow a study by Indrawati & Putri (2018) that revealed that habit and facilitating condition variables were not moderated by gender. Performance expectancy, effort expectancy, social influence facilitating condition, price value, hedonic motivation, perceived security and risk, and continuance intention variables were not moderated by gender. It shows that male and female groups perceive these factors similarly.

CONCLUSION

Based on the analysis results, it can be concluded that user assessment of the *Shopee* application in Indonesia for most variables, i.e., performance expectancy, effort expectancy, facilitating condition,

hedonic motivation, price value, habit, continuance intention, and use behaviour variables, were in the "very high" category. Meanwhile, user assessment of social influence, perceived security, and risk variables were in the "moderate" category. Test results on independent variables in this study demonstrated that seven independent variables had positive and significant effects, i.e., performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, habit, dan perceived security and risk. Conversely, price value had an insignificant effect. The continuance intention variable positively and significantly affected user behaviour.

The moderator variable test showed that age affected the facility in conditions. In contrast, other variables, i.e., performance expectancy, effort expectancy, social influence, hedonic motivation, price value, habit, perceived security and risk, and continuance intention, were not moderated by age. Furthermore, the moderate arrival test revealed that gender affected habits and facilitating conditions. However, performance expectancy, effort expectancy, social influence, price value, hedonic motivation, perceived security and risk, dan continuance intention variables were not moderated by gender. The story result also concluded that the variables to be improved by Shopee Indonesia were social influence and perceived security and risk. Improving social influence can be executed by employing influencers to aid the company's promotional activities.

Meanwhile, to improve perceived security and risk, the company should regularly monitor the security system and provide a call centre for customers to address problems when using the Shopee application. Further research can examine other factors that influence continuance intention and use behaviour apart from those mentioned in this study. In addition, further studies can conduct similar research on Shopee e-commerce websites or other e-commerce platforms to obtain a thorough understanding.

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