

A Study on Student Satisfaction and Continuance Intention Application Platform Based on Gamification

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Abstract:

In this era, more and more advanced technology is available, and technological developments are very helpful to humans. The application of gamification is one of the results of technological advances, namely technological developments combined with the concept of playing games into non-context games. This study aims to analyze the influence of satisfaction and continuance intention on students using gamification applications. This research is variance-based SEM with TAM and ECM models. GSCA application was used to analyze data with 83 respondents. The results of this research are that perceived usefulness does not affect continuance intention, perceived ease of use influences satisfaction, perceived ease of use influences gamification application value, gamification application value influences satisfaction, gamification application value influences continuance intention, and satisfaction influences continuance intention.

Keywords: Gamification, Online Shop Application, IS, Technology, TAM

INTRODUCTION

With the impact of COVID-19, many activities have been changed to online forms where direct contact with activity will be reduced or even prohibited, which has led to technological developments, one of which is an application. Several companies make their application products more attractive and relevant with additional gamification bases to attract buyers. Gamification is the process of applying game-like elements (e.g., points, badges, leaderboards) and mechanisms to non-game contexts (e.g., e-money, business, education) to increase user engagement, motivation, and enjoyment (Goi, 2023). In its implementation strategy. Gamification applications are often used for business, education, employment, additional skills, and other things that will increase benefits by involving their products or services (Perkasa & Emanuel, 2020). in various ways so that many conflicts occur. Researchers have proven that gamification dramatically influences people's daily lives in this era. Globally, gamification has been researched and used in various fields, as stated in the research (Goi, 2023) in business, (Lee, 2023) in Tourism (and Chugh & Turnbull, 2023) in education education. In Indonesia, Digital Data has 276.4 million residents, 212.9 million internet users, and 167 million social media users (Kemp, 2023). According to Alvara Research, there are 5 fields that are often used in Indonesia, namely the field of transportation (Gojek), the field of shopping (Tokopedia), the field of hotel and ticket bookings (Traveloka), the field of digital payments/e-wallets (Dana), the field of delivering orders in the form of food, drinks, and goods (Gofood).

This study will contribute to existing literature on gamification-based application platforms by analyzing the influence of satisfaction and continuance intention on students in using gamification-based application platforms. The novelty of this research is the presence of a new indicator, namely gamification application value (G). With the fundamental assumption, namely the high use of technology, this new indicator has emerged, which is influential and is starting to be used frequently at this time. The difference between this indicator and existing indicators (Huang et al., 2019) is that this indicator focuses more on examining the core variables of gamification (player experience and game implementation).

(Gunawan et al., 2021) In his research, he concluded that Dana has the advantage of making it easier to carry out digital transactions but also has disadvantages in being alert to serve customers, which causes some customers not to get satisfactory results when submitting complaints or accountability at the Fund's help center. Research (Sujatmiko, 2021) on Riau

students and customers, such as frequent misunderstandings between customers and drivers and unpleasant services. (Marsudi, 2019) conducted research on the Tokopedia gamification application and concluded that there is loyalty between customers and Tokopedia. (Husnawiyah, 2020) conducted a study that concluded that the Traveloka gamification application gains customer trust. Hence, customers intend to reuse the Traveloka application but fear security when transactions are not fully guaranteed. The model used is a mixed model of the TAM and ECM models. The construction of the TAM model is perceived ease of use, which is a significant predictor of perceived ease of use of information systems (Huang et al., 2019). Another model used is the ECM, which has one of the constructs, namely satisfaction and continuance intention, and is a significant predictor of continuance intention (Huang et al., 2019).

Therefore, this study aims to analyze the influence of perceived ease of use on satisfaction in using gamification applications, analyze the influence of perceived ease of use with gamification application value in using gamification applications, analyze the influence of gamification application value on satisfaction in using gamification applications, analyzing the influence of gamification application value on continuance intention in using gamification applications, analyzing the influence of satisfaction with continuance intention of users in using gamification applications. This study will collect data through a survey questionnaire that has been modified based on the previous model research. The number of samples was 83 students of Surabaya State University using a convenience sampling technique where the respondents filled out the questionnaire incidentally. The data analysis technique will use VB-SEM, which is known as Variance-Based Structural Equation Modeling, to predict the relationship between variables without having to follow the original model (Henseler et al., 2015), namely the TAM and ECM models (Huang et al., 2019). There are four variables that will be used in this research which are one variable from the TAM model, namely perceived ease of use (PEOU), while two variables from the ECM model were Satisfaction (S), continuance intention (C), and the last variable, is gamification application value (G). The hypothesis in the research is written below:

H1: Perceived ease of use influences satisfaction.

H2: Perceived ease of use influences gamification application value.

H3: Gamification application value influences satisfaction.

H4: Gamification application value influences continuance intention.

H5: Satisfaction influences continuance intention.

METHODS

The explanatory method is a research method that intends to explain the position of the variables studied and the influence between one variable and another (Sugiyono, 2020). The data source was obtained from a questionnaire using the Likert scale with 83 respondents based on the convenience sampling technique with the condition that the respondents were students of the Department of Economics Education, State University of Surabaya, who used the Fund application. Gojek, Tokopedia, and Traveloka. In data analysis, the Variance Based-Structural Equation Model aims to determine a reasonable and suitable model based on the data, and it also aims to test various hypotheses that have been built. Using SEM-GSCA, namely SEM analysis with the help of GSCA sofbeat has been used in (Latifah & Nugraha, 2023) with the data analysis stages: 1) determine the background related to problems that will be taken from the research, 2) formulate the problems that will arise carried out in research, 3) determine the objectives of the research, 4) make observations and literature, 5) collection of data related to research as well variables that will be used in the research, 6) design the questionnaire and sampling technique that will be used in research, 7) implementation of validity and reliability tests on survey results namely from research trial samples: a) if the results are issued is declared valid and reliable and can be continued for surveys on selected samples, b) if the results are issued is declared invalid and reliability is required review of questionnaire design, and c) this research has carried out validity and reliability tests and was declared valid and reliable, 8) Measurement Model Assessment through: a) Indicators of loading assessment, b) Construct quality measures, c) Component validity assessment, d) Assessment of component correlation, e) R square, 9) Structural Model Assessment through: a) Structural model fit measures, b) Path coefficient, 10) Interpreting structural models

Figure 1 shows the research model. Data was collected using a questionnaire and the Google Forms platform. This study has two exogenous variables (Satisfaction and continuance intention) and two endogenous variables (perceived ease of use and gamification application value).

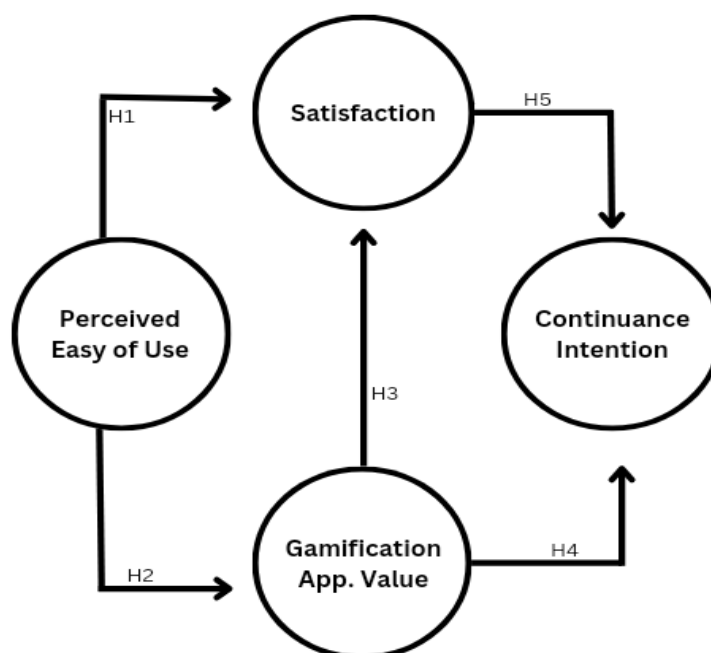


Figure 1. Research Model

Source: Processed Data, 2023

RESULTS AND DISCUSSION

In this study, 83 students participated in this research by filling out a questionnaire distributed via Google Forms. The number of respondents is considered sufficient for statistical purposes based on the sample size determined by the Krejcie table, which has a significance level of 5%. It is confirmed that all respondents (100%) are aged 19-23 years. The total number of respondents in this study was 83 respondents. Based on the results, the characteristics of the respondents were 72 (86.7%) who were female and 11 respondents (13.3%) male. Researchers chose four gamification applications to be studied, namely Dana, Gojek, Tokopedia, and Traveloka. Where in the data Table 1, as many as 11 respondents (16.9%) used the Dana application; 34 respondents (41%) used the Gojek application; 1 respondent (1.2%) used the Traveloka application; 8 respondents (9.6%) used the Tokopedia application; and 29 respondents (31.3%) use other applications.

Assessing measurement model

Table 1. Component Correlations

	PEOU	S	G	C
PEOU1	0.835	0.486	0.532	0.541
PEOU2	0.780	0.453	0.477	0.526
PEOU3	0.892	0.531	0.638	0.621

PEOU4	0.802	0.514	0.468	0.497
PEOU5	0.877	0.607	0.594	0.587
G1	0.637	0.546	0.772	0.551
G2	0.236	0.331	0.628	0.478
G3	0.577	0.575	0.826	0.685
G4	0.379	0.467	0.768	0.537
G5	0.437	0.527	0.892	0.517
G6	0.584	0.498	0.809	0.614
S1	0.660	0.796	0.643	0.578
S2	0.479	0.812	0.546	0.495
S3	0.631	0.845	0.613	0.588
S4	0.337	0.800	0.517	0.348
S5	0.364	0.711	0.524	0.491
C1	0.510	0.496	0.544	0.830
C2	0.578	0.575	0.580	0.806
C3	0.530	0.537	0.504	0.851
C4	0.443	0.546	0.529	0.696
C5	0.383	0.473	0.429	0.704

Source: Processed Data, 2023

In the Indicators of Loading on Component values. (F. Hair Jr et al., 2014) explained that the value of Indicators of Loading on Components is considered eligible if the value is ≥ 0.7 . However, (Chin, 1998) explained that the Loading Component Indicator value ≥ 0.5 -0.6 is sufficient. Regarding the Indicator of Loading, the overall value is ≥ 0.6 . Thus, this model meets the Indicator of Loading on Components requirements. The Perceived ease of Use variable with the highest loading value is the PEOU3 indicator (0.892), while the lowest is the PEOU2 indicator (0.780). In the Satisfaction variable, the highest loading value is found in the S3 indicator (0.845), while the lowest is in S5 (0.711). In the Gamification Application Value variable, the highest loading value is found in the G5 indicator (0.892), while the lowest is in G2 (0.628). In the Continuance Intention variable, the highest loading value is indicator C3 (0.851), and the lowest is indicator C4 (0.696). It can be concluded that the indicators used in this research have a correlation between indicators and are declared eligible.

Table 2. Construct Quality Measures

	PEOU	S	G	C
PVE	0.703	0.631	0.582	0.583
Alpha	0.894	0.853	0.857	0.816
rho	0.922	0.895	0.892	0.873
Dimensionality	1.0	1.0	1.0	1.0

Source: Processed Data, 2023

In measuring Construct Quality Measures (Reliability of Indicators), (F. Hair Jr et al., 2014) suggest getting research that has convergent validity, internal consistency, and composite reliability of PVE values ≥ 0.50 in line with (Ali et al., 2017) that Alpha and Rho values are above 0.70. The dimensions are 1.0 (Meneau & Moorthy, 2022). Table 2 shows that the PVE

values for the PEOU, G, S, and C variables are higher than 0.50. Alpha and Rho values for PEOU, G, S, and C variables exceed 0.70. Therefore, all variables in the model have acceptable levels of convergent validity, internal consistency, and composite reliability.

Table 3. Component Validity Assessment

	PEOU	S	G	C
PEOU	0.838			
S	0.622	0.794		
G	0.654	0.655	0.762	
C	0.665	0.664	0.748	0.764
HTMT				
PEOU <-> S			0.702	
PEOU <-> G			0.702	
PEOU <-> C			0.758	
S <-> G			0.748	
S <-> C			0.787	
G <-> C			0.886	

Source: Processed Data, 2023

The Fornier Lacker criterion value proves that all diagonal values representing the square root of AVE are more than correlations between factors (Fornell & Larcker, 1981). It determines discriminant validity; in other words, the measurement model has acceptable psychometric properties (Adu et al., 2020). The HTMT ratio for all variables in Table 3 shows a value of ≤ 0.90 , where the HTMT ratio value ≤ 0.90 indicates discriminant validity (Ali et al., 2017). (Henseler et al., 2015) explained that an HTMT value above 0.90 indicates no discriminant value.

Table 4. R Squared Values

PEOU	S	G	C
0.0	0.496	0.427	0.615

Source: Processed Data, 2023

R Square is used to measure predictive accuracy. Value C (0.615), G (0.427), and S (0.496). Table 4 explains that the Continuance Intention (C) variable is 61.5%, which can be influenced by Satisfaction (S) and Gamification Application Value (G). In comparison, the value of 38.5% is influenced by independent variables outside this study. The variable value of the Gamification Application Value (G) is 42.7%, which can be influenced by Satisfaction (S) and Continuance Intention (C). In comparison, the value of 57.3% is influenced by independent variables outside this study. The Satisfaction (S) variable value is 49.6%, which can be influenced by Gamification Application Value (G) and Continuance Intention (C). In comparison, the value of 50.4% is influenced by independent variables outside this study.

Assessing structural model

Table 5. Structural Model Fit Measures

FIT	AFIT	FITs	FITm	GFI	SRMR	OPE	OPEs	OPEm
0.627	0.617	0.307	0.689	0.977	0.066	0.384	0.730	0.318

Source: Processed Data, 2023

FIT values range from 0 to 1, which explains the total variance of all variables where. The higher the FIT value, the more variance the model explains (Hwang & Choo, 2021). By Table 5, the FIT value is 0.627, which means that the variance of the research model is 62.7%. The AFIT value is the same as the FIT value but considers the complexity of the model and ranges from 0 to 1. The AFIT value is 0.617, meaning the research model explains 61.7% of the variance. FITs describe the total variance of all model components and range from 0 to 1. The FIT value is 0.307, meaning that 30.7% of the variance is explained in the structural model. FITm ranged from 0 to 1, and the FITm value was 0.689, which means that 68.9% of the variance has been explained in the measurement model. (Hwang & Takane, 2009) explained that if the sample is > 100 then the $GFI > 0.93$ and $SRMR < 0.08$. Based on Table 6, the GFI value is 0.977, and the SRMR is 0.066, so the GFI and SRMR values fulfill the fit model requirements.

Table 6. Path Coefficient

	Estimate	SE	95%CI(L)	95%CI(U)	Conclusion
PEOU->S	0.336	0.127	0.080	0.516	H1 Accepted
PEOU->G	0.654	0.087	0.471	0.815	H2 Accepted
G->S	0.426	0.153	0.151	0.763	H3 Accepted
G->C	0.559	0.100	0.330	0.720	H4 Accepted
S->C	0.308	0.100	0.117	0.522	H5 Accepted

Source: Processed Data, 2023

The path coefficient results are presented in Table 6. (Hwang & Choo, 2021) explained that the path coefficient is considered significant if it is within the 95% confidence interval and has a positive or no negative value (an estimate is considered statistically significant at the 0.05 level if the confidence interval does not include 0). Perceived Ease of Use (PEOU) on Satisfaction (S) has a path coefficient of 0.336 (CI L = 0.080, CI U = 0.516) so that the first hypothesis is accepted. This means that perceived ease of use affects satisfaction. Perceived Ease of Use (PEOU) on Gamification Application Value (G) has a path coefficient of 0.654 (CI L = 0.471, CI U = 0.815) so that the second hypothesis is accepted. This means that perceived ease of use affects the value of the gamification application. Gamification Application Value (G) on Satisfaction (S) has a path coefficient of 0.426 (CI L = 0.151, CI U

= 0.763) so that the third hypothesis is accepted. This means that the value of gamification applications affects satisfaction. Gamification Application Value (G) on Continuance Intention (C) has a path coefficient of 0.559 (CI L = 0.330, CI U = 0.720) so that the fourth hypothesis is accepted. It means that the Gamification Application Value affects Continuance Intention. Satisfaction (S) to Continuance Intention (C) has a path coefficient of 0.308 (CI L = 0.117, CI U = 0.522) so that the fifth hypothesis is accepted. It means that satisfaction affects Continuance Intention.

The Influence of Perceived Ease of Use on Satisfaction

Based on the researcher's data and previous research, the researcher can conclude that there is an influence between Perceived Ease of Use and Satisfaction in gamification-based applications. The ease of use of the gamification application will make users use it more often. Ease of use will also give users a sense of accomplishment because users can use gamification applications easily, causing users to feel a positive feeling or what we often call satisfaction. An overall experience that has been experienced by the user so that the user can feel confident that the satisfaction is genuine and not based on other people's experiences, which often many users do not want to believe based on other people's experiences. To show this feeling of satisfaction, users will do some positive things, such as giving positive feedback, spreading the gamification application to people closest to the user, and other positive things that make the gamification application more widely known. Based on the data that has been processed, it is concluded that this study supports previous research (Filieri et al., 2021), the results show that perceived ease of use has a positive effect on user satisfaction.

Based on the loading value on the perceived ease of use variable, the highest loading value is the PEOU3 indicator, and the lowest is the PEOU2 indicator. This is because users find it easier to use gamification applications to do what they want than users who feel proficient in using them. Not all users have the confidence to say that they are proficient in using gamification applications, but they are confident enough to say that they find it easy to use. Based on the loading value on the satisfaction variable with the highest loading value on the S3 indicator, namely, users feel satisfied with the overall experience of using the gamification application compared to the lowest loading value on S5, namely, users feel satisfied with the performance of the gamification application. It is because users are more convinced by objective evidence based on the overall experience when using the gamification application than satisfaction due to the performance of the current gamification application,

which, when there are updates to the ease of use of the gamification application in the future, there is no guarantee to keep users satisfied.

The Influence of Perceived Ease of Use on Gamification Application Value

In this study, there is an influence between perceived ease of use and the value of gamification-based applications for users. Based on the data that has been processed, it is concluded that this study supports previous research. If the user feels that the gamification application is easy to use, the user wants to give good news by continuing to use the application. What also supports the ease of use is the value of the gamification application that users feel, which users consider as a good thing, does not have a bad impact, and has many benefits when used. Research conducted by (Davis, 1989; Lin Hong, 2012) perceived that ease of use affects gamification application value.

Based on the loading value on the perceived ease of use variable with the highest loading value is the PEOU3 indicator, namely, users find it easy to use the gamification application to do what they want, and the lowest loading value is the PEOU2 indicator, namely the user feels proficient in using the gamification application. Not all users have the confidence to say that they are proficient in using gamification applications, but they are confident enough to say that they find it easy to use. Based on the loading value of the gamification application value variable, the highest loading value is found in the G5 indicator, while the lowest loading value is found in G2. It is because the user feels that using the gamification application increases the perception of enjoyment more than the user feels the fact that using the gamification application with a money balance or account level higher than others makes a good impression on other people. The value of the gamification application is felt to be better when the user's perception of enjoyment increases than the value of the gamification application in the money balance and the user's account level is higher than other people, which will give a good impression. Not everyone can appreciate the advantages of having a high money balance or account level because more people appreciate increased enjoyment when using gamification applications. There is the ease of use when using gamification applications so that it becomes an additional factor in solving existing problems with various gamification application values such as increasing the perception of enjoyment (feeling relaxed or reducing stress), solving problems (payments or top-ups), as well as other things that are included in the value of gamification applications.

The Influence of Gamification Application Value on Satisfaction

The researcher concludes that there is an influence between Gamification Application Value on Satisfaction in gamification-based applications with various gamification application values such as increasing the perception of enjoyment (feeling relaxed or reducing stress), solving problems (payments or top-ups), as well as other things that are included in the value of gamification applications. They resolve problems (payment or top-up) when users top-up, which makes users solve their problems faster and easier, as well as other things that are included in the value of gamification applications. Based on these values, users are satisfied when using gamification applications. Based on the data that has been processed, it is concluded that this study supports previous research. (Huang et al., 2019) argues that the perceived value of the gamification application is higher, thereby increasing user satisfaction; that is, there is a positive influence between the value of the gamification application and user satisfaction. In a (Putri, 2020) study, gamification (points, rewards, levels) significantly affects user satisfaction. In this study, users consider that the value of gamification applications significantly influences continuance intention.

Based on the loading value of the gamification application variable with the highest loading value found on the G5 indicator, users feel that using the gamification application increases their perception of enjoyment. In contrast, the lowest loading value is found in G2. Namely, the user feels that using the gamification application with a higher balance of money or account level than other people makes a good impression on others. The higher the value of the gamification application owned by the user, the more it makes the user feel better than others. However, many people still feel that the value of gamification applications is enough to increase the user's perception of enjoyment. Based on the loading value of the continuance intention variable, the highest loading value is indicator C3, and the lowest loading indicator value is indicator C4. This is because the user will use the gamification application more frequently in the future than intends to continue using it using any alternative means.

The Influence of Gamification Application Value on Continuance Intention

With the data from this study and the support from various previous research data, the researchers concluded that there is an influence between Gamification Application Value and Continuance Intention in gamification-based applications. With various gamification

application values, such as increasing the perception of enjoyment (feeling relaxed or reducing stress), solving problems (payments or top-ups), as well as other things that are included in the value of gamification applications, this can lead to an increase in user intention to continue using the gamification application, namely when the value of the gamification application has a positive influence, the user will have an intention to continue using the gamification application. Based on the data that has been processed, it is concluded that this study supports previous research. In the interaction process, the long-lasting and holistic value of gamification applications can be determined, and this perceived value can then reduce the level of intention to stop specific gamification applications. Huang et al. (2019) argue that Gamification Application Value can reduce the level of intention to discontinue reuse. Juliana et al. (2023) show a significant influence in research on gamification and intention to use sustainability in the online travel industry.

Based on the loading value of the gamification application value variable, the highest loading value is found in the G5 indicator, while the lowest loading value is found in G2. It is because users feel an increased perception of enjoyment when using a gamification application compared to users who feel that using a gamification application with a higher money balance or account level than others makes a good impression on others. The highest loading value in the continuance intention variable is the C3 indicator. Namely, the user will often use the gamification application in the future, and the lowest loading indicator value is the C4 indicator; namely, the user's intention is to continue using the gamification application rather than using any alternative method.

The Influence of Satisfaction on Continuance Intention

In this study, researchers can conclude that gamification-based applications influence satisfaction and continuity intention. The level of user satisfaction can affect the user's intention to continue using the gamification application. When users feel satisfied, they will do various positive things to express their satisfaction. One of the things that users often do when they feel satisfied is to continue using the gamification application. Another thing is that users will recommend the gamification application to the people they are closest to. It can be concluded that user satisfaction greatly influences their desire to continue using the gamification application. Based on the data that has been processed, it is concluded that this study supports previous research. Satisfaction is continually assessed as a positive feeling that a customer has

after getting or using the desired product. A survey of 150 respondents (Kashive & Mohite, 2022) showed that satisfaction influences user continuance intention. It is also supported by (Nugraha, 2022), who that satisfaction can influence continuance intention to use the Google Classroom information system.

Based on the loading value of the satisfaction variable, the highest loading value is on the S3 indicator, and the lowest is on the S5. It is different because the user feels satisfied with the overall experience of using the gamification application, and the user feels satisfied with its performance. It is because users are more convinced by objective evidence based on the overall experience when using the gamification application than satisfaction due to the performance of the current gamification application, which, when there are updates to the ease of use of the gamification application in the future, there is no guarantee to keep users satisfied. In the loading value of the continuance intention variable, the highest loading value is indicator C3, namely, users will often use the gamification application in the future, and the lowest loading indicator value is indicator C4, namely the user's intention to continue using the gamification application using any alternative method.

CONCLUSION

Based on the results and discussion in this study, Perceived ease of use influences satisfaction. Perceived ease of use influences the value of gamification applications. Gamification application value influences satisfaction. Gamification application value influences continuance intention. Based on the research that has been done, several suggestions can be made for future research using other models, such as UTAUT and TTF. The sample in this study is uneven (convenience sampling), so it is hoped that further research will have an even distribution of samples, other variables that can be added, further research can use other applications or can focus on one of the gamification applications, the use of intervening variables. The results of this study cannot be generalized to other samples and research objects.

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