

# Factors Influencing Continuance Intention to Play Online Games

Boniface Boliona Badilangoe Keraf<sup>1\*</sup>, Edwin Pramana<sup>2</sup>, Gunawan<sup>3</sup>

<sup>1,2,3</sup>Institut Sains dan Teknologi Terpadu Surabaya, Surabaya, East Java, Indonesia  
E-mail: <sup>1\*</sup>bonifacelarantuka@gmail.com, <sup>2</sup>epramana@stts.edu, <sup>3</sup>gunawan@stts.edu

(Received: 2 Dec 2024, revised: 16 Dec 2024, accepted: 17 Dec 2024)

## Abstract

This study aims to identify and analyze the factors influencing continuance intention in playing online games, a rapidly growing global entertainment sector that attracts players from diverse backgrounds. Using the Expectation Confirmation Model (ECM), this research explores the psychological and behavioral aspects that drive players to continue playing. To achieve this objective, data were collected through a survey using Google Forms distributed to schools, colleges, and social media. A total of 505 active player responses were collected, and 469 valid data entries were retained after screening. The analysis was conducted using Structural Equation Modeling (SEM) with SPSS and AMOS software to identify the impact of each factor. The results from SPSS and AMOS calculations showed that Flow was not significant, and Engagement was excluded due to failing the validity test. These findings help developers and policymakers better understand player motivations to create more effective strategies for building a sustainable gaming industry. The study found that Social Influence had the greatest impact on continuance intention. Players were more likely to continue playing if the game was popular in their environment or had a large market. This factor fosters a sense of community and social support among players, from friends, family, and communities who play the same game. Perceived Usefulness and Perceived Enjoyment followed, contributing significantly as well.

**Keywords:** Online Games, Continuance Intention, Expectation Confirmation Model, Structural Equation Model, AMOS.

## I. INTRODUCTION

Online games have evolved into one of the largest global industries, with total revenue reaching \$184 billion in 2023 and a projected growth to \$205.7 billion by 2026 [1]. Indonesia, as a significant market, contributed \$941 million in revenue and garnered a player base of 44.2 million [2][3]. This rapid growth is facilitated by the availability of localized payment methods, enabling seamless transactions and contributing to the global rise of 1.47 billion paying players [4].

Beyond their role as entertainment platforms, online games have transformed into spaces for social interaction, creative expression, and economic opportunities [5]. Prior research has identified various factors driving player motivation, including Achievement, Challenge, and Social Interaction [6]. Moreover, technical elements such as Playability, Narrative, and Visual Aesthetics have been found to influence player engagement [7]. However, conflicting findings across studies highlight the need for deeper investigation to elucidate the impact of these factors on continuance intention [8].

The researchers identified a decline in global gaming market revenue in 2022, followed by a rebound in 2023. This fluctuation highlights a significant phenomenon: understanding the factors underlying the growth and retention of online game players is crucial for addressing these market

dynamics. This study aims to uncover actionable insights for sustaining the industry's growth and improving player retention by investigating what motivates players to continue engaging with online games.

Continuance intention, defined as the intention to continue playing beyond the initial engagement period, is crucial for understanding player loyalty. This factor not only enhances the user experience but also supports the sustainability of game developers' business models. Understanding what motivates players to remain engaged can help developers design strategies to boost engagement, satisfaction, and long-term loyalty.

This study adopts the Expectation Confirmation Model (ECM) as a theoretical framework to analyze the influence of satisfaction, initial expectations, and the confirmation of expectations on continuance intention. ECM is particularly well-suited for examining the psychological and behavioral determinants of player retention. Additionally, this study explores how satisfying gameplay experiences can strengthen player engagement. Beyond benefiting game developers, this research provides valuable insights for parents to understand children's online gaming addiction [9].

Another motivation for this study arises from the discrepancies among previous research regarding the key factors influencing continuance intention. Various studies have



produced mixed results concerning the most influential factors, underscoring the need for further investigation. This study seeks to bridge these gaps and provide a more comprehensive understanding of what keeps players engaged in online games.

**A. Online Games**

Online games are interactive digital games that utilize internet networks to enable player interactions using devices such as computers, laptops, or gadgets. Currently, mobile devices based on Android and iOS dominate as the primary medium due to their accessibility, even for school-aged children [10][11]. Technological advancements have transformed online games, making them an integral part of digital life.

Various genres cater to diverse interests, including action, strategy, and adventure. Popular games such as Free Fire, known for its battle royale mode, and Mobile Legends with its MOBA format, captivate millions of players, encouraging collaboration and competition. Similarly, PUBG offers a survival experience in a virtual battlefield, further engaging a wide range of players across different ages and backgrounds. This broad appeal highlights the universal attraction of online gaming.

This phenomenon reflects a cultural shift, where online games transcend mere entertainment to become platforms for self-expression, competition, and career opportunities. With thriving communities and high-stakes tournaments, online games have emerged as modern social interaction platforms, fostering digital connections and delivering unique experiences for users.

**B. Expectation Confirmation Model (ECM)**

The Expectation Confirmation Model (ECM), introduced by Bhattacherjee [12], is a cognitive framework that explains the decision to continue using technology based on expectation confirmation (Figure 1). Users evaluate the actual performance of the technology against their initial expectations. ECM is widely applied to investigate continuance intention across various technologies, including mobile applications [13], gamified e-learning platforms [14], and FinTech payment applications [15].

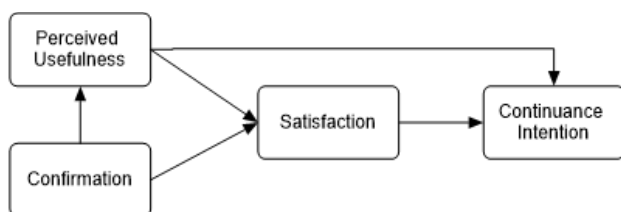


Figure 1. Expectation Confirmation Model (ECM)

In the context of online games, ECM provides insights into the factors influencing players' decisions to continue playing. Players assess their experiences based on the benefits they anticipate and their satisfaction level. This understanding is valuable for game developers aiming to enhance player retention and game quality by tailoring features to meet user needs. The model enables an in-depth analysis of the

relationships among satisfaction, expectation confirmation, and continuance intention within the online gaming ecosystem.

**C. Prior Research**

Previous studies have explored various factors influencing behavior and continuance intention in online gaming. Table 1 summarizes key research employing models such as the Expectation Confirmation Model (ECM), Unified Theory of Acceptance and Use of Technology (UTAUT2), and Technology Acceptance Model (TAM). These studies examine motivations, satisfaction, engagement, flow experience, perceived enjoyment, and social influence across different types of games.

Table 1. Prior Research

Research Title	Researcher
Exploring player behavior and motivations to continue playing Pokémon GO	[6]
Students' continuance intention toward programming games: Hedonic and utilitarian aspects.	[16]
Developing a model of video game play: motivations, satisfactions, and continuance intentions.	[7]
How to improve customer engagement: A comparison of playing games on personal computers and on mobile phones.	[17]
Investigating male gamers' behavioral intention to play PUBG: Insights from playful-consumption experiences.	[18]
Determination of factors influencing the behavioral intention to play "Mobile Legends: Bang-Bang" during the COVID-19 pandemic: integrating UTAUT2 and system usability scale for a sustainable E-sport business.	[8]
Factors Affecting Woman's Continuance Intention for Mobile Games.	[19]
Continuance Intention on Gamifikasi in E-Learning Using Extended Expectation-Confirmation Model.	[14]
The "why" behind generation Y amateur gamers' ongoing eSports gameplay intentions.	[20]
Antecedents of Gacha gaming intention: Extending UTAUT2 with structural video game characteristics.	[21]
Adoption Gamification in Mobile Learning Using Extended Technology Acceptance Model (TAM)	[22]

Most research leverages the ECM framework, focusing on variables like Perceived Usefulness, Confirmation, and Satisfaction, complemented by external elements such as engagement and perceived enjoyment. For instance, [6] identified key factors influencing Pokémon GO players, while [7] analyzed motivations for general gaming behavior.



Additionally, [8] and [14] integrated ECM with additional dimensions to study continuance intention in Mobile Legends and gamified e-learning environments.

These findings highlight the significance of a multidimensional approach in understanding online gaming behavior, offering insights crucial for developing user experience strategies. The studies also reinforce ECM's relevance in examining continuance intention across various technological contexts.

#### D. Hypothesis Development

In the context of online gaming, Confirmation refers to players' perceptions of the extent to which their gaming experiences align with their initial expectations of the game. This includes evaluating whether the features, graphics, gameplay, and overall experience meet the players' pre-play expectations.

Previous research, such as [23], highlights the significant role of confirmation in influencing the adoption and continuance intention of players to use game-related technologies, even within the context of digital addiction. Similarly, [14] demonstrated that Confirmation positively and significantly impacts both Satisfaction and Perceived Usefulness, emphasizing how fulfilled expectations enhance the overall player experience.

Based on this theoretical foundation, the following hypotheses are proposed in this study:

**H1:** Confirmation has a direct positive and significant influence on Perceived Usefulness.

**H2:** Confirmation has a direct positive and significant influence on Satisfaction.

In the context of online gaming, Perceived Usefulness refers to the extent to which a player believes that using the game enhances their gaming experience or provides beneficial value to them. Research by [14] also highlights that Perceived Usefulness plays a significant role in players' continuance intention to engage with games within the E-Sports context. Furthermore, studies [14][16][8] demonstrate that this factor has a positive and significant impact on both Satisfaction and players' intention to continue playing online games.

These findings indicate that players who perceive the game as beneficial are more likely to remain engaged in it. Therefore, in the context of online gaming, Perceived Usefulness emerges as a crucial factor influencing players' decisions to continue using the game.

Based on these explanations, the following hypotheses are proposed in this study:

**H3:** Perceived Usefulness has a direct positive and significant influence on Satisfaction.

**H5:** Perceived Usefulness has a direct positive and significant influence on Continuance Intention to play Online Games.

In the context of online gaming, Satisfaction refers to the level of contentment or pleasure experienced by players after engaging with the game. It includes the players' subjective evaluation of various aspects of the game, such as gameplay, graphics, difficulty levels, content, and social interactions within the game. Research by [14] highlights that Satisfaction

is crucial in influencing players' continuance intention in the E-Sports context. Similarly, [14] study supports that player satisfaction significantly impacts the intention to continue playing online games, whereas [16] findings indicate that the effect of satisfaction in this context is not significant.

Thus, Satisfaction serves as a vital factor in determining user retention and loyalty toward online games.

Based on these explanations, the following hypothesis is proposed in this study:

**H6:** Satisfaction has a direct positive and significant influence on Continuance Intention to play Online Games.

Flow enhances continuance intention by immersing players in a deeply satisfying gaming experience marked by concentration, enjoyment, and timelessness. This optimal state motivates players to return, strengthening their commitment to the game.

In the context of online games, the continuance intention to play is significantly influenced by how frequently and intensely players experience Flow during gameplay [6]. When the experience of Flow becomes consistent, players are more likely to develop a strong attachment to the game, forming habits that encourage continued play and long-term player retention.

Therefore, in this study, Flow is included as one of the factors influencing the continuance intention to play online games, and the following hypotheses are proposed:

**H4:** Flow has a direct positive and significant influence on Perceived Enjoyment.

**H7:** Flow has a direct positive and significant influence on Continuance Intention to play Online Games.

In the context of Continuance Intention to Play Online Games, Enjoyment is a key element in understanding players' motivation to continue gaming. According to Ghazali [6], Enjoyment refers to the individual's experience of pleasure and excitement while participating in an activity, such as gaming, and it plays a significant role in motivating individuals to continue using entertainment-providing technologies.

Other studies, such as those conducted [7][14][18][19][21], have found that Perceived Enjoyment has a positive and significant influence on the Continuance Intention to Play Online Games. Based on the theories proposed by previous researchers, this study argues that Enjoyment is an inseparable and essential factor in gaming.

Therefore, the following hypothesis is proposed:

**H8:** Perceived Enjoyment has a direct positive and significant influence on Continuance Intention to Play Online Games.

In the context of Continuing Intention to Play Online Games, Engagement plays a crucial role. According to studies [17], Engagement is a psychological process in which players establish a connection with the game brand through cognition, emotion, and dynamic interactions with developers. These studies indicate that player engagement not only influences their intention to continue playing the game but also contributes to the overall increase in game sales.

Additionally, research [14] found that Engagement has a positive and significant impact on Continuance Intention to Play Online Games.

Based on these findings, this study proposes the following hypothesis:

**H9:** Engagement has a direct positive and significant influence on Continuance Intention to Play Online Games.

In the context of online gaming, the factor of Social Influence refers to the impact of social interactions and relationships among players within the gaming environment. This influence can stem from friends, family, or other members of the gaming community who affect a player's decisions regarding their use of the game [8].

Research by Ong [8] and Patzer [7] indicates that Social Influence has a positive and significant impact on Continuance Intention to Play Online Games. However, more recent findings by Hattingh [20] reveal that Social Influence does not have a significant effect in the same context.

Based on these findings, this study proposes the following hypothesis:

**H10:** Social Influence has a direct positive and significant influence on Continuance Intention to Play Online Games.

In previous research conducted by [8], Continuance Intention refers to a user's tendency or willingness to continue using an information system or e-learning platform after the initial acceptance stage. It is a critical concept for understanding the long-term effectiveness of an information system, as it evaluates how far users are still inclined and willing to use the system consistently. The assessment of Continuance Intention helps determine the success of an information system in retaining users and fulfilling their needs and satisfaction over an extended period. Figure 2 is the research model.

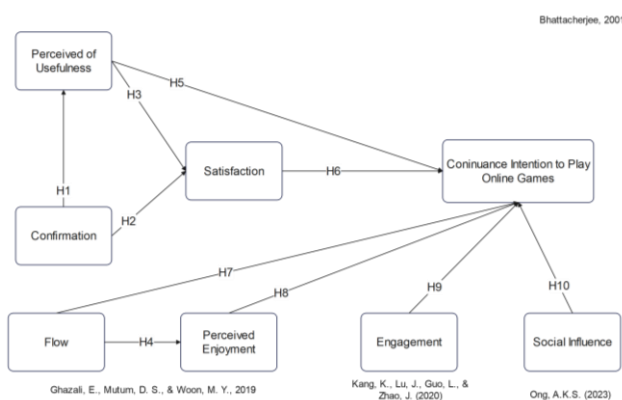


Figure 2. Research Model

According to Ghazali [6], Continuance Intention in the context of video games refers to the tendency or desire of players to continue engaging with and using a gaming application over time. This factor is significant as it influences players' decisions to make in-app purchases, contributing to the financial success and ongoing development of the game.

Research indicates that the intention to continue playing a game significantly impacts players' willingness to make in-app purchases, as they often buy virtual items to enhance their performance or gaming experience.

Thus, Continuance Intention is a key factor in understanding consumer behavior patterns and revenue strategies within the gaming industry.

## II. RESEARCH METHODOLOGY

This chapter explains the research methodology employed in this study. The analytical process uses Structural Equation Modeling (SEM), which serves as the core discussion of this chapter.

Data collection in this study was conducted through a questionnaire. The data was collected using Google Forms and distributed to various schools and other institutions via social media platforms such as Instagram, WhatsApp, Discord, and through word of mouth. The procedures carried out in this research are as follows:

### 1. Development of Theoretical Model

This stage discusses the theories from previous studies related to the adoption of gamification and the factors influencing it.

### 2. Data Collection

The data collection process was conducted by distributing questionnaires with a criterion of at least one year of online gaming experience. The target respondents were 400 students from schools and universities. Considering the total population of online game players in Indonesia is approximately 100,000, a sample size of 400 respondents was deemed appropriate for this study [26]. The sampling method used in this study was purposive (judgmental) sampling, which is appropriate given the specific characteristics required from the respondents. This method ensures that only individuals with relevant experience in online gaming were included in the study.

### 3. Data Processing

The collected data was processed by removing outliers that could affect subsequent assumption tests. A validity test was conducted to determine whether the data was discriminant and convergent. Reliability testing was also carried out to ensure the instruments used were trustworthy as data collection tools. Additionally, descriptive analysis was performed to identify the respondents' profiles.

In the final stage of the study, SEM analysis was conducted to examine a series of relationships that are typically challenging to analyze simultaneously. This test was performed using factor analysis and regression tests with SPSS and AMOS software.

The questionnaire, as a measurement tool for the variables in the theoretical model, was developed based on the variables used in this study and prior research. The analysis for each indicator in this study utilized a 5-point Likert scale. The use

of a 1-5 scale is applied to each respondent's answer with the following categories:

1. Strongly Disagree (SD) assigned a score of 1
2. Disagree (D) assigned a score of 2
3. Neutral (N) assigned a score of 3
4. Agree (A) assigned a score of 4
5. Strongly Agree (SA) assigned a score of 5

The questionnaire had two sections: one covering respondents' profiles (e.g., age, gender, education, gaming experience, daily playtime, and recent games played), and

another with 3–4 questions per variable, including Perceived Usefulness, Confirmation, Satisfaction, Engagement, Flow, Perceived Enjoyment, Social Influence, and Continuance Intention. Table 2 lists the questionnaire items for each indicator.

From 505 collected responses, 469 valid responses remained after outlier analysis. Most respondents were 16-year-old high school students, with ages ranging from 10 to 54 years.

Table 2. Questionnaire Item

Variable	Code	Question	Ref
Perceived of Usefulness	PU1	I think playing Online Games is useful to me.	[8]
	PU2	Playing Online Games enhances my ability to make choices more effectively.	
	PU3	Playing Online Games is useful for my social life.	
	PU4	Playing Online Games has increased my productivity.	
Confirmation	CO1	My experience with playing Online Games was better than I expected.	[24]
	CO2	My experience with playing Online Games was better than I expected.	
	CO3	Overall, most of my expectations from Playing Online Games were confirmed.	
Satisfaction	SA1	Playing Online Games makes me feel very satisfied.	[24]
	SA2	Playing Online Games makes me feel very delighted.	
	SA3	I feel extremely satisfied about my overall experience of playing online games.	
Flow	FL1	When playing Online Games, time seems to pass very quickly.	[6]
	FL2	When playing Online Games, my attention is focused on the game.	
	FL3	When playing Online Games, I am not aware of things happening around me.	
	FL4	When playing Online Games, I am totally absorbed in the game.	
Perceived Enjoyment	PE1	Playing Online Games is fun.	[6]
	PE2	Playing Online Games is pleasurable.	
	PE3	Playing Online Games is enjoyable.	
	PE4	Playing Online Games is exciting.	
Engagement	EN1	I am concentrated on the activities of the Online Games so it makes me feel that time flies.	[25]
	EN2	I think that I'm fully focused on the Online Games.	
	EN3	No matter I lose or win, Online Games are still fun.	
Social Influence	SI1	I get involved with other people a lot when playing Online Games.	[8]
	SI2	People who influenced me think that I should play Online Games.	
	SI3	Online Games is a status symbol in my environment.	
Continuance Intention	CI1	I intend to continue playing Online Games in the future.	[6]
	CI2	I will keep playing Online Games as regularly as I do now.	
	CI3	I will continue playing Online Games as much as possible in future.	

### III. RESULT AND DISCUSSION

The respondents' profiles are thoroughly presented in the following tables, offering a comprehensive view of their demographic and behavioral characteristics. Table 3 illustrates the distribution of respondents based on their gender, allowing for an understanding of the gender representation in this study. Table 4 delves into the respondents' age groups, providing insights into the age demographics, which range from teenagers to older participants, reflecting the diversity of the sample population. Furthermore, Table 5 categorizes the respondents according to their educational levels, highlighting their academic background and helping to identify trends related to education and gaming behavior. Lastly, Table 6 focuses on the types of games that the respondents have been playing recently, offering a glimpse into their gaming preferences and popular game genres among the participants. These tables collectively provide a clear and detailed overview

of the respondents' profiles, which is essential for interpreting the findings and understanding the context of the study.

Table 3. Respondent Based on Gender

Gender	Frequency	Percent
Male	266	56.7 %
Female	203	43.3 %
Total	469	100 %

Table 4. Respondent Based on Age

Age	Frequency	Percent
10	1	0.2 %
11	1	0.2 %
12	3	0.6 %
13	34	7.2 %
14	61	13.0 %
15	31	6.6 %



16	127	27.1 %
17	86	18.3 %
18	22	4.7 %
19	2	0.4 %
20	9	1.9 %
21	5	1.1 %
22	5	1.1 %
23	8	1.7 %
24	12	2.6 %
25	25	5.3 %
26	7	1.5 %
27	8	1.7 %
28	5	1.1 %
29	1	0.2 %
30	4	0.9 %
31	2	0.4 %
32	1	0.2 %
34	2	0.4 %
35	2	0.2 %
40	1	0.4 %
49	3	0.6 %
54	1	0.2 %
<b>Total</b>	<b>469</b>	<b>100 %</b>

Clash of Clans	11	2.3 %
Counter Strike	30	6.4 %
Dota 2	29	6.2 %
Free Fire	86	18.3 %
GTA 5 Online	25	5.3 %
Honor of Kings	17	3.6 %
Minecraft	94	20 %
Mobile Legends	251	53.5 %
PUBG	90	19.2 %
Roblox	63	13.4 %
Valorant	56	11.9 %
Others	170	36.2 %

Table 5. Respondent Based on Educational Level

Educational Level	Frequency	Percent
Non-Bachelor	400	85.3 %
Bachelor	69	14.7 %
Total	469	100%

Table 6. List of Online Games Recently Played

Online Games	Frequency	Percent
Apex Legend	20	4.3 %

The validity test was conducted in two stages because, in the first stage, one variable was found to be non-discriminant. From the results of the first-stage validity test shown in Table 7, the variable *Engagement* was identified as non-discriminant and subsequently removed, the Engagement factor has a lower value compared to Flow and one indicator value is below 0,4. The validity test continued with the second stage, as shown in Table 8, where the results indicated that all variables were discriminant and convergent.

Following this, a reliability test was conducted by calculating the Cronbach's Alpha coefficient, which is considered acceptable if it falls between 0.7 and 0.9. All variables were declared reliable. However, due to the removal of one variable, the research model was adjusted accordingly. Figure 3 illustrates the revised research model.

After conducting the factor analysis process, the next step, as illustrated in Figure 4, involved model analysis using AMOS software to calculate the standardized estimates for each variable. Each variable is represented according to the modified research model.

Table 7. Validity Test Phase 1

Indicator	Latent Variable							
	Flow	Engagement	Perceived Enjoyment	Continuance Intention	Satisfaction	Social Influence	Confirmation	Perceived of Usefulness
FL2		.779						
FL3		.779						
FL1		.770						
FL4		.686						
EN1		.635						
EN2		.434						
PE2			.803					
PE1			.787					
PE3			.738					
PE4			.717					
CI3				.871				
CI2				.860				
CI1				.817				
SA2					.851			
SA1					.802			
SA3					.800			
EN3								
SI2						.866		



SI3	.822
SI1	.799
CO2	.758
CO3	.757
CO1	.744
PU3	.719
PU2	.718
PU4	.698
PU1	.683

Table 8 Validity Test Phase 2

Indicator	Latent Variable							Cronbach Alpha
	Perceived Enjoyment	Continuance Intention	Satisfaction	Flow	Social Influence	Confirmation	Perceived of Usefulness	
PE2	.823							.743
PE1	.802							
PE3	.749							
PE4	.714							
CI3		.875						.807
CI2		.871						
CI1		.831						
SA2			.876					.902
SA1			.826					
SA3			.824					
FL3				.809				.802
FL2				.797				
FL1				.763				
FL4				.716				
SI2					.879			.898
SI3					.832			
SI1					.802			
CO2						.793		.839
CO3						.778		
CO1						.752		
PU3							.732	
PU2							.708	.909
PU4							.688	
PU1							.682	

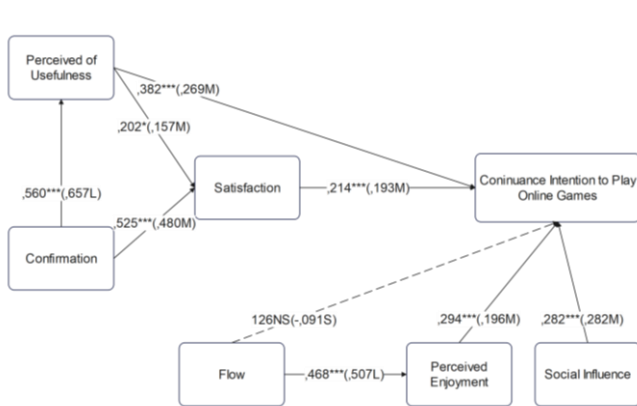


Figure 3. Revised Research Model

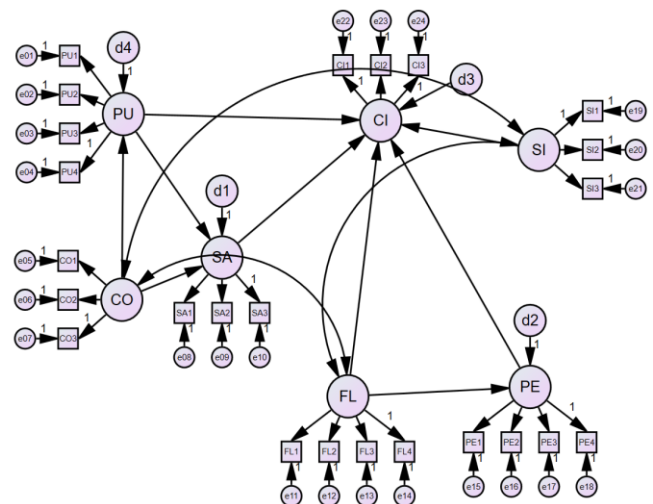


Figure 4. Research Model by AMOS

Table 9 presents the results of calculations using AMOS. The standardized values indicate the relationships and strengths between variables in the model, independent of the original scale of each variable. Meanwhile, the Magnitude of Effect (MOE) represents the extent of the effect produced by each variable.

Table 9. AMOS Hypothesis Calculation

Hypothesis	Relation	Estimate	Status	Standardize	MOE
H1	CO → PU	0.560	***	0.657	L
H2	CO → SA	0.525	***	0.480	M
H3	PU → SA	0.202	0.031 *	0.157	M
H4	FL → PE	0.468	***	0.507	L
H5	PU → CI	0.382	***	0.269	M
H6	SA → CI	0.214	***	0.193	M
H7	FL → CI	0.126	0.125 NS	-0.091	S
H8	PE → CI	0.294	***	0.196	M
H10	SI → CI	0.310	***	0.282	M

Out of the nine hypotheses, eight were found to be significant, and one was not significant. Below is the list of hypotheses ranked by their standardized estimates, from highest to lowest:

- Confirmation has a direct positive and significant influence on Perceived Usefulness.
- Flow has a direct positive and significant influence on Perceived Enjoyment.
- Confirmation has a direct positive and significant influence on Satisfaction.
- Social Influence has a direct positive and significant influence on Continuance Intention to Play Online Games.
- Perceived Usefulness has a direct positive and significant influence on Continuance Intention to Play Online Games.
- Perceived Enjoyment has a direct positive and significant influence on Continuance Intention to Play Online Games.
- Satisfaction has a direct positive and significant influence on Continuance Intention to Play Online Games.
- Perceived Usefulness has a direct positive and significant influence on Satisfaction.

The hypothesis that was not supported, showing no positive and significant influence, is:

- Flow on Continuance Intention to Play Online Games.

Model Fit Statistics have specific ranges based on the methods employed. In Table 10, each model used and its interpretation are explained according to the guidelines provided by Kline [27] for evaluating causal models. The following outlines the assessment methods for Model Fit Statistics along with their interpretations.

Table 10. Interpretation of Model Fit Statistics

Model Fit Statistics	Interpretasi
Model Chi-Square $\chi^2$	A small $\chi^2$ value with $p > 0.05$ indicates at least a reasonable (acceptable) fit.

$\chi^2/df$ (Normed Chi-square, NC)	NC values within the range $0 < NC < 5$ are considered to indicate at least a reasonable (acceptable) fit.
RMR (Root Mean Square Residual)	An RMR value close to 0 indicates a good model fit. Fit deteriorates as the RMR value increases.
GFI (Goodness of Fit Index) AGFI (Adjusted GFI)	GFI = 1 indicates perfect fit; GFI > 0.9 indicates good fit, while GFI = 0 suggests poor fit. Adjusts the GFI downward based on the complexity of the model.
NFI (Normed Fit Index) IFI (Incremental Fit Index) CFI (Comparative Fit Index)	NFI, IFI, and CFI values above 0.9 indicate a good model fit.
RMSEA (Root Mean Square Error of Approximation)	RMSEA ≤ 0.05 indicates a close fit; 0.05 < RMSEA < 0.08 indicates a reasonable (acceptable) fit; RMSEA > 0.1 indicates poor fit.

Kline [27] suggests using the  $\chi^2/df$  (Normed Chi-square, NC) value as a substitute for the  $\chi^2$  value in evaluating model fit. This recommendation stems from the limitations of hypothesis testing using  $\chi^2$  in assessing theoretical models, where the hypothesis is often rejected. The  $\chi^2$  value tends to be sensitive to the magnitude of correlations, with larger correlations usually resulting in higher  $\chi^2$  values. Additionally,  $\chi^2$  is highly influenced by sample size (N). In large samples, even minimal differences in covariance between observed and predicted data can produce high  $\chi^2$  values, leading to model rejection.

To address this sensitivity, NC is utilized as an alternative measure. Bollen [28] recommends values of 2, 3, or even up to 5 as the minimum threshold for NC to indicate an adequately fitting model.

Table 11. Goodness-of-fit Statistic for Final Model

N	$\chi^2/df$	GFI	AGFI	NFI	IFI	CFI	RMSEA
469	728.164/240 = 3.03	0.883	0.854	0.884	0.919	0.919	0.067
Evaluation Criteria	<3	>0.9	>0.9	>0.9	>0.9	>0.9	<0.08

Fit statistics are utilized to evaluate how well the collected data aligns with the proposed theoretical model. Based on the table below, the fit statistic results indicate that the proposed theoretical model is reasonably well-fitting and appropriate. Although the fit statistic values for GFI and AGFI could still be improved, overall, each value falls within an acceptable range. This is consistent with the guidelines provided by Kline [27].





### A. Practical Contribution

This study identifies three key variables that influence players' continuance intention in online gaming: Social Influence (SI), Perceived Usefulness (PU), and Perceived Enjoyment (PE). Social Influence plays a crucial role because social interactions with friends and communities enhance players' motivation to keep playing. Perceived Usefulness indicates that the tangible benefits of playing games, such as additional income, influence players' decisions to continue participating. Meanwhile, Perceived Enjoyment emphasizes the importance of fun in the gaming experience.

In game development, it is important for developers to consider social elements that allow players to interact with each other, either through competition or collaboration. By incorporating features that support social engagement, games can create a strong community and increase long-term appeal. Furthermore, games that provide tangible benefits in players' daily lives, such as skill improvement or income, will strengthen their continuance intention.

Additionally, game design should focus on creating an enjoyable and satisfying experience. Features such as achievements, challenges, and rewards can make players feel more engaged and motivated to keep playing. By optimally integrating these three factors, online games can create experiences that fulfill players' social, functional, and emotional needs, thereby strengthening their intention to continue playing.

### B. Theoretical Contribution

The research model proposed in this study provides a significant theoretical contribution by complementing prior studies on Continuance Intention in online gaming, particularly through the use of the Expectation Confirmation Model (ECM). In the context of online gaming, Perceived Usefulness emerged as a critical factor, whereas in other studies using ECM, Satisfaction is often identified as a major determinant. However, this study highlights that Satisfaction does not hold the same level of influence within the online gaming domain.

Most previous research emphasizes Enjoyment as the most important factor driving continuance intention. However, the findings of this study reveal that Social Influence plays the most pivotal factor. This discovery challenges the dominant narrative and underscores the importance of social dynamics in motivating players to continue their gaming activities.

Overall, Social Influence, Perceived Usefulness, and Perceived Enjoyment are the three key factors influencing players' Continuance Intention in online gaming. This study reinforces the importance of social elements, tangible benefits, and enjoyable experiences in enhancing player engagement and ensuring continued play.

## IV. CONCLUSION

This study identifies Social Influence, Perceived Usefulness, and Perceived Enjoyment as the three primary factors motivating the continuance intention to play online

games, with Social Influence being the most significant. Although the Flow variable was found to be insignificant, it indirectly influences Perceived Enjoyment, further supporting its relevance in the gaming experience. The relationships between factors reveal that Confirmation contributes to both Perceived Usefulness and Satisfaction, while Perceived Usefulness enhances Satisfaction.

These findings address the issues highlighted in the background by demonstrating how these three key factors can drive player retention and growth in the online gaming market. By enhancing social elements, delivering tangible benefits, and improving enjoyment in gameplay, game developers can attract more players, contributing to the rise in online game players in Indonesia and boosting the country's gaming market. Furthermore, the study reinforces the applicability of the ECM framework in understanding player behavior and retention in the dynamic online gaming industry.

Key Factors Most Influential on Continuance Intention:

- Social Influence has a direct positive and significant influence on Continuance Intention to Play Online Games (most significant).
- Perceived Usefulness has a direct positive and significant influence on Continuance Intention to play Online Games (second).
- Perceived Enjoyment has a direct positive and significant influence on Continuance Intention to Play Online Games (third).

Interrelations Between Factors:

- Confirmation has a direct positive and significant influence on Perceived Usefulness.
- Flow has a direct positive and significant influence on Perceived Enjoyment.
- Confirmation has a direct positive and significant influence on Satisfaction.

This study identifies key factors influencing continuance intention to play online games. However, future research should explore whether these factors remain consistent or vary across different gaming platforms, such as Console, Mobile, PC, and Website-based games, to provide a more comprehensive understanding of player behavior. This could help game developers tailor their strategies to specific platforms.

A limitation of this study is the respondent sample, which primarily consisted of online game players from East Java (Surabaya, Sidoarjo, Jember) and a few gaming communities. To enhance the generalizability of the findings, future studies should diversify the respondent pool to include players from different regions and demographic backgrounds. This would provide a more representative view of online gaming behavior across various populations.

## REFERENCES

- [1] J. R. S. Writer, "Newzoo: Revenue across all video game market segments fell in 2022," GamesIndustry.biz, May 30, 2023. [https://www.gamesindustry.biz/newzoo-](https://www.gamesindustry.biz/newzoo)

- revenue-across-all-video-game-market-segments-fell-in-2022
- [2] Simarmata Lukas Marcelino, G. Leo, and Wahyu Rafdinal, "Esports: An Empirical Study of Factors Affecting Continuance Intention," Jan. 2021, doi: <https://doi.org/10.2991/aer.k.211106.107>.
- [3] Mia Chitra Dinisari "Ada 44,2 Juta Pemain Gim E-Sport di Indonesia | Teknologi," *Bisnis.com*, Mar. 14, 2021. <https://teknologi.bisnis.com/read/20210314/564/1367248/ada-442-juta-pemain-gim-e-sport-di-indonesia>
- [4] T. Wijman, "Newzoo's year in review: the 2023 global games market in numbers," *Newzoo*, Feb. 29, 2024. <https://newzoo.com/resources/blog/video-games-in-2023-the-year-in-numbers>
- [5] R. Kurniawan, "Melirik Potensi Ekonomi Esports," *detiknews*, Jan. 24, 2024. <https://news.detik.com/kolom/d-7154787/melirik-potensi-ekonomi-esports> (accessed Dec. 02, 2024).
- [6] E. Ghazali, D. S. Mutum, and M.-Y. Woon, "Exploring player behavior and motivations to continue playing Pokémon GO," *Information Technology & People*, Aug. 2018, doi: <https://doi.org/10.1108/itp-07-2017-0216>.
- [7] B. Patzer, B. Chaparro, and J. R. Keebler, "Developing a Model of Video Game Play: Motivations, Satisfaction, and Continuance Intentions," *Simulation & Gaming*, p. 104687812090335, Feb. 2020, doi: <https://doi.org/10.1177/1046878120903352>.
- [8] A. K. S. Ong et al., "Determination of Factors Influencing the Behavioral Intention to Play 'Mobile Legends: Bang-Bang' during the COVID-19 Pandemic: Integrating UTAUT2 and System Usability Scale for a Sustainable E-Sport Business," *Sustainability*, vol. 15, no. 4, p. 3170, Jan. 2023, doi: <https://doi.org/10.3390/su15043170>.
- [9] Dheri Hermawan and Wahid Abdul Kudus, "Peran Orang Tua Dalam Mencegah Anak Kecanduan Bermain Game Online di Era Digital," *Jurnal Pendidikan Indonesia*, vol. 2, no. 05, pp. 778–789, May 2021, doi: <https://doi.org/10.59141/japendi.v2i05.171>.
- [10] N. Kurnada and R. Iskandar, "Analisis Tingkat Kecanduan Bermain Game Online terhadap Siswa Sekolah Dasar," *Jurnal Basicedu*, vol. 5, no. 6, pp. 5660–5670, Nov. 2021, doi: <https://doi.org/10.31004/basicedu.v5i6.1738>.
- [11] Paresmeswara, Marsanda Claudia, and Triana Lestari. "Pengaruh game online terhadap perkembangan emosi dan sosial anak sekolah dasar." *Jurnal Pendidikan Tambusai* 5, no. 1, May 2021 : 1473-1481.
- [12] A. Bhattacharjee, "Understanding information systems continuance: An expectation-confirmation model," *MIS Quarterly*, vol. 25, no. 3, pp. 351–370, 2001, doi: <https://doi.org/10.2307/3250921>.
- [13] C. Tam, D. Santos, and T. Oliveira, "Exploring the influential factors of continuance intention to use mobile Apps: Extending the expectation confirmation model," *Information Systems Frontiers*, vol. 22, May 2018, doi: <https://doi.org/10.1007/s10796-018-9864-5>.
- [14] Hikmah Agung Sasono, E. Pramana, and Lukman, "Continuance Intention on Gamifikasi in E-Learning Using Extended Expectation-Confirmation Model," *EDUTECH Journal of Education And Technology*, vol. 6, no. 4, pp. 704–724, Jun. 2023, doi: <https://doi.org/10.29062/edu.v6i4.684>.
- [15] T. A. Nurdin, M. B. Alexandri, W. Sumadinata, and R. Arifianti, "Assessing of The Continuance Intentions to Use Fintech Payments, an Integrating Expectation Confirmation Model," *Journal of Applied Data Sciences*, vol. 4, no. 3, pp. 130–146, Aug. 2023, doi: <https://doi.org/10.47738/jads.v4i3.105>.
- [16] Y.-M. Huang, "Students' Continuance Intention Toward Programming Games: Hedonic and Utilitarian Aspects," *International Journal of Human-Computer Interaction*, vol. 36, no. 4, pp. 393–402, Aug. 2019, doi: <https://doi.org/10.1080/10447318.2019.1647665>.
- [17] K. Kang, J. Lu, L. Guo, and J. Zhao, "How to Improve Customer Engagement: A Comparison of Playing Games on Personal Computers and on Mobile Phones," *Journal of theoretical and applied electronic commerce research*, vol. 15, no. 2, 2020, doi: <https://doi.org/10.4067/s0718-18762020000200106>.
- [18] U. Rehman, M. U. Shah, A. Z. Abbasi, H. Hlavacs, and R. Iftikhar, "Investigating male gamers' behavioral intention to play PUBG: Insights from playful-consumption experiences," *Frontiers in Psychology*, vol. 13, Aug. 2022, doi: <https://doi.org/10.3389/fpsyg.2022.909875>.
- [19] Ye, Pinghao, Liqiong Liu, Linxia Gao, and Qunjun Mei. "Factors Affecting Woman's Continuance Intention for Mobile Games." In *Research Anthology on Game Design, Development, Usage, and Social Impact*, 2023, pp. 1795-1817. IGI Global.
- [20] Woulan Hattingh, van, and Ayesha Lian Bevan-Dye, "The 'why' behind generation Y amateur gamers' ongoing eSports gameplay intentions," *International Journal of Sports Marketing & Sponsorship*, Jul. 2023, doi: <https://doi.org/10.1108/ijmsms-04-2023-0064>.
- [21] A. E. Kesuma and E. Princes, "Antecedents of Gacha gaming intention: Extending UTAUT2 with structural video game characteristics," *Computers in Human Behavior Reports*, p. 100405, Mar. 2024, doi: <https://doi.org/10.1016/j.chbr.2024.100405>.
- [22] Febriane Devi Rahmawati, E. Pramana, and Hartarto Junaedi, "Adopsi Gamifikasi Pada Mobile Learning Menggunakan Extended Technology Acceptance Model (TAM)," *Teknika*, vol. 13, no. 2, pp. 244–253, Jun. 2024, doi: <https://doi.org/10.34148/teknika.v13i2.826>.
- [23] Abdulaziz Aborujilah et al., "Adoption and Continuance Intention Model of Applying Telemedicine Technology in Digital Games Addiction," *2023 17th International Conference on Ubiquitous Information Management and Communication (IMCOM)*, Jan. 2020, doi: <https://doi.org/10.1109/imcom48794.2020.9001732>.
- [24] C.-L. Hsu and J. C.-C. Lin, "Understanding continuance intention to use online to offline (O2O) apps," *Electronic*



- Markets, Jun. 2019, doi: <https://doi.org/10.1007/s12525-019-00354-x>.
- [25] Shyong, Chow Shean, and Edwin Pramana. "Continuance Intention in Massive Open Online Courses Using Extended Expectation-Confirmation Model." In *The Spirit of Recovery*, pp. 149-162. CRC Press, 2024.
- [26] Israel, Glenn D. "Determining sample size." (1992): 2017.
- [27] R. B. Kline, *Principles and Practice of Structural Equation Modeling*. 1998.
- [28] Bollen, Kenneth A. "Evaluating effect, composite, and causal indicators in structural equation models." *Mis Quarterly* (2011): 359-372.

