

Determinants of game-products repurchasing behaviour in virtual community: the role achievement as moderation variable

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ABSTRACT

The gaming industry is rapidly evolving, as indicated by the increased market sales of virtual products. Genshin Impact has risen to prominence after receiving the best mobile game 2021 prize at a game awards event. In addition, Genshin Impact will be ranked third in the world mobile game revenue list in 2021. The existence of a community that supports the development of a game is the most important component that contributes to its success. This study aims to examine the effect of virtual communities on online repurchase intention with customer engagement as a mediating variable and achievement as a moderating variable. Respondents in this study were members of the Genshin Impact Indonesia community who had purchased virtual products more than once. This study collected 180 samples which were distributed through various social media platforms such as Facebook. The data in this study were analyzed using SEM-PLS through the SmartPLS. The results of this study indicate that all hypotheses are accepted except for the role of consumer engagement in mediating the effect of virtual communities on online repurchase intention. The community plays a role in providing means of interaction among members and giving information about the game. The results of this study suggest that game developers provide rewards to the community to encourage interest in playing and purchasing in-game items.

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Introduction

Gaming is one of the most popular pastimes in the modern world (Wang et al., 2021). The gaming industry has boomed over the last few years (Ko & Park, 2021). Society's game consumption has become a global cultural and economic phenomenon (Wang & Hang, 2021). Purchases of virtual products are made when players enjoy playing games (Shukla & Drennan, 2018) and interacting with other players or their community (Jin et al., 2017). The majority of players nowadays play free-to-play (F2P) games. This model limits gamers by providing limited features obtained only by purchasing (Sánchez-Cartas, 2022). This business model increases the number of players and encourages them to buy products with limited features in Indonesia (Ericaska et al., 2021). It is estimated that gamers' spending will grow rapidly (Abbasi et al., 2020). According to data, mobile game spending in 2021 will reach \$93.2 billion up 7.3% from the previous year (Rousseau, 2022). Due to the game industry's rapid growth, competition is fierce. Many developers add different features or content to get people interested in their games.

In Indonesia, there are several popular mobile games, including PUBG Mobile, Mobile Legends, Genshin Impact, and Free Fire. This game has a large community in Indonesia, as evidenced by an online community on social media platforms ranging from Facebook to Instagram to YouTube. Genshin Impact is currently one of the most popular games, ranking third in total world revenue in 2021 (Chapple, 2021). Genshin Impact is an ARPG (Action Role Playing Game) type game with a fantasy world theme. Genshin Impact itself is a F2P game that offers various types of content from visualization and an exciting storyline that this game has a monetization system through gacha (draw to get paid characters and weapons randomly). Primogems are the gacha exchange tool in

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Genshin Impact, and they can be spent on new characters and weapons with a calculation of 160 primogems for one gacha (pull/wish). one of the main reasons to buy back primogems for each character and weapon is that they play a part in a virtual community. Virtual communities essentially provide a space for their members to engage in social interactions with other members who value the way they think and communicate with one another rather than their appearances (Rheingold, 1993; Hota & Derbaix, 2016). Opinions of community members and influencers on whether to make a purchase can impact Genshin Impact's sales, which also depend on the role of their community on social media. The virtual community is also essential in developing a player's attachment to a game. Interaction between game players is a critical component of a game (Van Doorn et al., 2010; Cheung et al., 2015). A player's attachment to a game is determined by how well he connects with his in-game friends and community and the game itself. A player who participates in online activities with friends both online and offline will have strong social bonds (Trepte et al., 2012; Kang et al., 2020). Wen et al. (2021) stated that interaction between virtual community members can directly make people more likely to repurchase a product. The gaming community is a significant social influence on the desire to continue playing games (Hsiao & Chiou, 2017). A game's success and sustainability depend on attracting and retaining players willing to invest their time and money in the game (Ghazali et al., 2019). The main reason people feel they have a strong bond with a game is to satisfy desires they cannot fulfill in the real world or to demonstrate their abilities to other players; when they achieve the desired goals, players will feel satisfied and happier to continue playing (Merhi, 2016; Ghazali et al., 2019). Community is essential for reward-oriented and social game players, as it increases their willingness to purchase products (Beltagui et al., 2019). One of the main reasons they play games is for the reward, which is a factor of satisfaction in playing games. The rewards that players receive can impact the group's enjoyment (Ghazali et al., 2019). Hsiao and Chiou (2017) say that the rewards that players get while playing games can make the community in the game stronger and make people more likely to keep playing the game.

This research is based on previous research and phenomena, research problems, the importance of variables, and the connections between research variables. Also, the fact that the results of previous studies haven't always been the same is an interesting research gap for future studies on the variables in this study. In previous studies (Guo & Barnes, 2011; Cheng-Hsun Ho & Ting-Yun Wu, 2012; Trehan & Sharma, 2020), it was found that social (community) factors did not affect the decision to buy. Because there are not as many Genshin Impact players in Indonesia as in other games like Mobile Legends, PUBG Mobile, and others, the researcher decided to study whole country of Indonesia.

This study aims to determine the effect of virtual communities on online repurchase intentions among members of the Genshin Impact Indonesia community.

Literature Review

Theoretical and Conceptual Background

Virtual Community & Customer Engagement

A virtual community is an online gathering place for people to engage in group activities for practical purposes or to share gaming experiences (Ducheneaut et al., 2006; Hsiao & Chiou, 2017). In measuring virtual communities, there are three indicators adapted from Hsiao & Chiou (2017), namely community identification, community value congruence, and community normative influence.

Consumer engagement measures how emotionally, cognitively, and behaviourally active a person is when interacting with a brand or product in an online community (Chen et al., 2014; Cheung et al., 2015). Player engagement in a game is a behaviour that appears when playing a game, where this behaviour encourages them to continue playing the game (Kang et al., 2020). Customer engagement is measured by three indicators namely vigor, absorption, and dedication adapted from Cheung et al. (2015).

Achievement & Online Repurchase Intention

A player can receive special in-game awards such as virtual status, symbols, and objects when playing games (Hsiao & Chiou, 2017). Achievement motivates to continue playing games in which there is a desire to gain strength, fast growth in games, collect virtual items in games, collect performance points and compete with other players (Wu et al., 2010; Ghazali et al., 2019). Achievement is measured by two indicators, namely advancement and competition which were adapted from Yee (2006).

Online repurchase intention refers to the possibility of a consumer to continue purchasing a product from an online store in the future (Wang & Chou, 2014). The reason why they buy virtual products in games is to improve their game performance (Ghazali et al., 2019). Online repurchase intention is measured by two indicators, namely intending to repurchase and intending to participate in the project, adapted from Zang et al. (2022).

Empirical Review and Hypothesis Development

Virtual Community and Online Repurchase Intention

This virtual community arises because of the participation of its members to hold discussions with other members that aim to provide information and influence fellow members in purchasing a related product (Kozinets, 1999; Wang et al., 2017). Virtual communities have been identified in previous studies as drivers of repurchasing a product (Jin et al., 2017; Wen et al., 2021; Zang et al., 2022).

H1: Virtual community has a significant positive effect on online repurchase intention.

Virtual Community and Customer Engagement

Consumer engagement is a crucial factor in developing relationships between consumers and their communities (Lee et al., 2021). The environment in the community also influences member involvement behaviour, where community members stimulate emotional and cognitive changes in other members to encourage their behavioural involvement (Wen et al., 2021). Cheung et al. (2015) found that interaction within the community has a positive effect on customer engagement.

H2: Virtual community has a significant positive effect on customer engagement

Customer Engagement and Online Repurchase Intention

The success and sustainability of a game depend on engagement and retaining players who are willing to invest their time and buy (Ghazali et al., 2019). Purchase of in-game items will increase when the game being played is considered very valuable for the players (Ko & Park, 2021). Several previous studies have found that customer engagement has a positive effect on consumer purchases (Abbasi et al., 2020; Cheung et al., 2015; Lee et al., 2021; Molinillo et al., 2020)

H3: Customer engagement has a significant positive effect on online repurchase intention

The Mediation of Customer Engagement

Purchasing virtual products is the result of long-term friendships of individuals with other players online which leads to a sense of attachment to the game and motivates them to contribute to the game (Jin et al., 2017). Kaptein et al. (2015) stated that an increase in community activity can lead to a high attachment of a consumer to a service or product through high purchase intensity. Several previous studies have found that purchase intention can be influenced by the community (Jin et al., 2017; Wen et al., 2021; Zang et al., 2022) and customer engagement (Cheung et al., 2015; Molinillo et al., 2020; Lee et al., 2021).

H4: Customer engagement mediates the effect of virtual community on online repurchase intention

The Moderation of Achievement

Beltagui et al. (2019) found that reward-oriented players strengthen the relationship between perceived community strength and willingness to pay for premium game products. Hsiao & Chiou (2017) and Beltagui et al. (2019) found that achievement drives interest in continuing to play and buying behaviour

H5: Achievement Moderates the effect of virtual community on online repurchase intention.

Research and Methodology

This study investigates four main constructs consisting of independent variable (virtual community), dependent variable (online repurchase intention), mediation variable (customer engagement), and moderation variable (achievement). For more details, see figure 1 below:

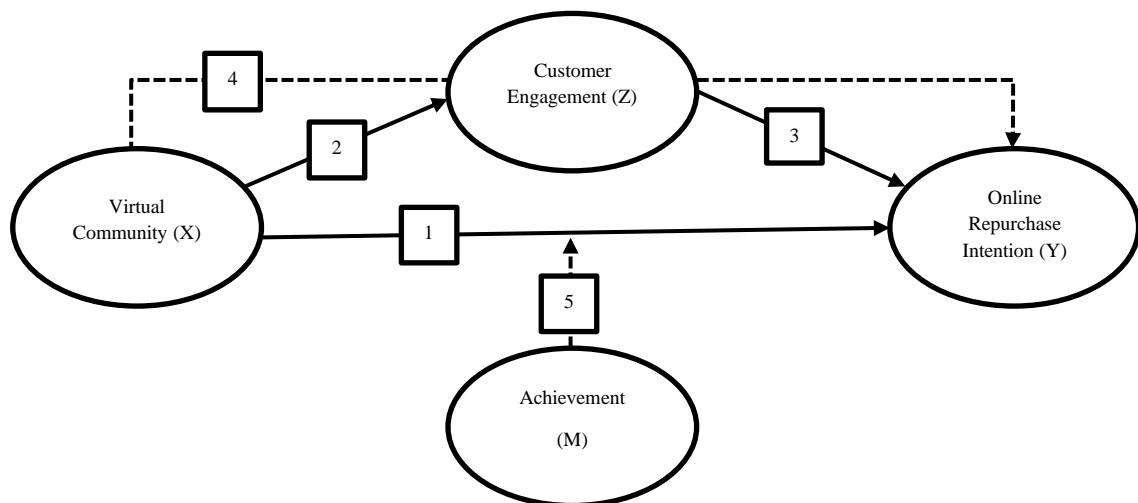


Figure 1: Conceptual Model of the Study; *Source:* Authors 2022

The population in this study is members of the Genshin Impact community aged over 17 years who have made purchases (top-up) more than once in the game. Because there are certain criteria for selecting the sample, a non-probability approach with a purposive

sampling technique was used to select the sample in this study. The sample in this study is 180 respondents of 205 respondents. This research uses Structural Equation Model (SEM) analysis with a Variance Based SEM approach or better known as Partial Least Square (PLS) that uses SmartPLS 3.0 software application.

This study uses a questionnaire of two sections: demographic respondents and the research constructs. This study uses a five-point Likert scale, where a score of 1 represents “strongly disagree” and a score of 5 represents “strongly agree”. The virtual community was measured by adapting eight items from (Hsiao & Chiou, 2017); customer engagement consists of seven items adopted by (Huang et al., 2017); achievement consists of six items adopted by (Yee, 2006); and online repurchase intention consists of four items adopted by (Zang et al., 2022).

Findings and Discussions

Respondents Overview

Respondents were predominantly male (78.3%), aged 17-21 years (73.3%), Facebook is a social media (community) that is often used (43.3) and most of the respondents have joined the community for 1-2 years (66.7%). The majority of respondents have top-ups more than 3 times via website or e-commerce and the average spending is around IDR 100,000 – IDR 300,000. The characteristics of the respondents of this study are presented in table 1.

Table 1: Characteristics of Respondents

No	Characteristics of Respondents	Frequency	%
1	Gender		
	Male	141	78.3
	Female	39	21.7
2	Age		
	17 – 21 years	132	73.3
	22 – 26 years	46	25.6
	27 – 31 years	2	1.1
3	Social Media (Community)		
	Facebook	78	43.3
	Instagram	44	24.5
	Youtube	41	22.8
	HoYoLab	15	8.3
	Twitter	2	1.1
4	Duration of Joining Community		
	< 1 year	60	33.3
	1 – 2 years	120	66.7
5	Total Top up		
	2 times	34	18.9
	3 times	17	9.4
	> 3 times	129	71.7
6	Top up Procedure		
	Through Website/e-commerce	152	84.4
	Through Game (Official store)	28	15.6
7	Average spending		
	< IDR 100.000	39	21.7
	IDR 100.001 – 300.000	81	45
	IDR 300.001 – 500.000	7	3.9
	IDR 500.001 – 1.000.000	16	8.9
	> IDR 1.000.001	37	20.5

Source: Primary Data Processed, 2022

Measurement Model Test

Validity testing has been carried out in this study through convergent validity and discriminant validity testing. The results of the convergent validity test show that all items can be declared valid because the measurement loading value of all items is > 0.7. Furthermore, the results of the discriminant validity test also show that all items of each variable have a greater value than the cross-loading value of the other variable items. For more details, see table 2 below:

Table 2: Convergent Validity Analysis

Variable	Indicator	Outer Loading	Result
Virtual Community	VC1	0.825	Valid
	VC2	0.789	Valid
	VC3	0.827	Valid
	VC4	0.840	Valid
	VC5	0.851	Valid
	VC6	0.798	Valid
	VC7	0.814	Valid
Online Repurchase intention		0.811	Valid
	ORI2	0.791	Valid
	ORI3	0.738	Valid
	ORI4	0.801	Valid
Customer Engagement	CE1	0.723	Valid
	CE2	0.729	Valid
	CE3	0.744	Valid
	CE4	0.725	Valid
	CE5	0.775	Valid
	CE6	0.734	Valid
	CE7	0.800	Valid
Achievement	AC1	0.832	Valid
	AC2	0.838	Valid
	AC3	0.767	Valid
	AC4	0.813	Valid
	AC5	0.842	Valid
	AC6	0.852	Valid

Source: Primary Data Processed, 2022

The measurement model test indicates that the scale, magnitude, and statistical agreement have been accepted. Based on the results of the analysis, shows that the Cronbach alpha value (> 0.7) of the four variables has the lowest value of 0.797 on the online repurchase intention variable and the highest of 0.919 on the virtual community variable. Furthermore, the composite reliability value (> 0.7) of the four variables has a high value, namely 0.866 to 0.935 in the virtual community variable. Finally, the AVE test (> 0.5) shows a value of 0.674 for the virtual community variable, 0.617 for the online repurchase intention variable, 0.559 for the customer engagement variable, and 0.680 for the achievement variable. Based on these results it can be concluded that all variables are declared reliable. For more details, see table 3 below:

Table 3: Cronbach Alpha, Composite Reliability and AVE

Variable	Cronbach alpha	CR	AVE
Virtual Community	0.919	0.935	0.674
Online Repurchase Intention	0.797	0.866	0.617
Customer Engagement	0.869	0.898	0.559
Achievement	0.906	0.927	0.680

Source: Primary Data Processed, 2022.

Structural Model Test

Testing the structural model (inner model) aims to determine the suitability of a model which can be seen from the value of the coefficient of determination (R^2), predictive relevance (Q^2) and goodness of fit model (GoF). The test results for the coefficient of determination (R^2) show that the customer engagement variable has a value of R^2 of 0.108, which means that the virtual community variable can explain the customer engagement variable by 10.8%, and the rest is explained by variables. The online repurchase intention variable has a R^2 value of 0.555, which means that the virtual community variable can explain the online repurchase intention variable by 55.5%, and the rest is explained by other variables.

The Q^2 test results yield a value of 0.60306 which means that this research model has a predictive relevance of 60.3%, while the rest is explained by other variables outside this research model. This means that this research model is categorized as a strong model.

The Goodness of Fit test aims to measure the accuracy of a research model that is built based on the research variables as a whole. Based on the results of GoF calculations, it produces a value of 0.46, so it can be concluded that the structural model of this study in general has strong predictive properties.

Hypothesis Test

This research has 3 hypothesis testing, namely direct effects testing, mediation effect, and moderation effect. The direct effects test aims to examine the influence between variables, namely virtual communities, customer engagement, and online repurchase intention. The criteria for testing the hypothesis are t-statistic > 1.97 , with a probability of less than 0.05 (5% significance).

Table 4: Hypothesis Test

Hypothesis	Path Coefficient	t-statistic	P value	Results
Virtual Community \rightarrow Online Repurchase Intention	0.247	3.381	0.001	Accepted
Virtual community \rightarrow Customer engagement	0.329	4.885	0.000	Accepted
Customer Engagement \rightarrow Online Repurchase Intention	0.109	2.099	0.036	Accepted
Virtual Community \rightarrow Customer Engagement \rightarrow Online Repurchase Intention	0.498	1.802	0.072	Rejected
Achievement \rightarrow Virtual Community \rightarrow Online Repurchase Intention	0.117	2.257	0.024	Accepted

Source: Primary Data Processed, 2022

Table 4 explains the influence between virtual community variables, consumer engagement, and online repurchase intention. Based on the results of the analysis, shows that the influence of virtual communities on online repurchase intention has a t-statistic value ($3.381 > 1.973$), so it can be concluded that H1 is accepted. The results of the analysis of the influence of virtual communities on customer engagement show a t-statistic value ($4.885 > 1.973$), based on these results it can be concluded that H2 is accepted. Furthermore, the results of the analysis of the effect of customer engagement on online repurchase intention show a t-statistic value ($2.099 > 1.973$), so based on these results it can be concluded that H3 is accepted.

The results of the indirect effect analysis show the t-statistic value ($1.802 < 1.973$) and the p-value (0.072). Based on the results of this analysis, it can be concluded that customer engagement does not play a role in mediating the effect of virtual communities on online repurchase intention. So, it can be concluded that H4 is rejected. Finally, the results of moderation test show that the t-statistic value ($2.257 > 1.973$) and p-value (0.024), so it can be concluded that achievement plays a role in strengthening the influence of virtual communities on online repurchase intention (H5 is accepted).

Discussion

The effect of virtual community on online repurchase intention

The results of this test show that the virtual community has a positive and significant effect on online repurchase intention. These results can be interpreted that a better relationship with the community will have an impact on increasing the purchase of virtual products. Sharing interests and expertise in a community will provide a sense of comfort and security to its members, and common mindedness among members can encourage strong repurchase intentions (Tseng, 2007). The results of this study are in line with several previous studies (Jin et al., 2017; Wen et al., 2021; Zang et al., 2022) which state that a community has a positive effect on their repurchase.

The effect of virtual community on customer engagement

The results of this test show that the virtual community has a positive and significant effect on customer engagement. Better communication among community members will increase the attachment to the game they play. Community activity is considered a driving force for consumer or community member involvement (Kaptein et al., 2015). The results of this study are in line with several previous studies (Cheung et al., 2015; Prentice et al., 2019) which state that interaction in the community has a positive effect on customer engagement.

The effect of customer engagement on online repurchase intention

The results of this test show that customer engagement has a positive and significant effect on online repurchase intention. The attachment a player has to the game will increase their repurchases. Engagement in a game has an impact on positive behaviour for players such as buying behaviour (Cheung et al., 2015). The results of this study are in line with several previous studies (Cheung et al., 2015; Ko & Park, 2021; Lee et al., 2021) which state that customer engagement has a positive and significant effect on repurchase intention.

The effect of virtual community on online repurchase intention by mediation of customer engagement

Testing the role of customer engagement in mediating the influence of virtual communities on online repurchase intention shows negative and insignificant results. There are two categories of the behaviour of members of the gaming community, namely players who are achievement-oriented and social (Beltagui et al., 2019). Socially oriented players think that spending excessively to improve performance is unfair, they feel that all features available in the game must be free and players must be motivated by collective goals,

not commercial goals (Beltagui et al., 2019). The results of this study are not in line with several previous studies (Jin et al., 2017; Molinillo et al., 2020; Wen et al., 2021).

The effect of virtual community on online repurchase intention by moderates of achievement

Testing the role of achievement in moderating the influence of virtual communities on online repurchase intention shows positive and significant results. More awards received can strengthen the influence of virtual communities on the online repurchase intention of community members. According to (Cruz et al., 2015), there are two main motivations why individuals play games, namely external encouragement, such as the rewards they receive, and internal encouragement, namely their desires. Ghazali et al (2019) stated that the achievements received by players have a positive impact on their interest to continue playing. The results of this study are in line with previous research (Beltagui et al., 2019; Hsiao & Chiou, 2017) which states that achievement has an impact on interest in continuing to play which leads to purchases.

Conclusions

The results of this study indicate that the virtual community is an important factor in the success of a game. The community plays a role in providing information and means of communication between players related to games. The interactions that occur will provide benefits for both parties, both players (exchange of information) and game developers (product sales). This interaction also makes players more interested in the game itself, which makes them more likely to buy virtual goods. Game developers also need to pay attention to in-game features regarding the quality of their graphic designs and characters, because they play a big role in increasing attachment to the game. Rewards and prizes in games need to be increased to encourage interest in playing and purchasing them, this can be proven based on the results of this study. Thus, several important factors need to be improved by developers to increase their sales as in this research

The limitations of this study are the distribution of online questionnaires through Google Forms and the measurement of online repurchase intention variables. Although the closed-question method in the questionnaire was used to speed up data collection for this study, the responses from the respondents did not accurately capture their opinions as a whole. Only a virtual community, customer engagement, and achievement variables are used in this study to measure the variable of online repurchase intention. Therefore, several additional factors, such as enjoyment or perceived value, must be added to future studies that look at the online repurchasing interest in games.

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