

# Effect of Social Interaction and Gamer-Game Relationships on Mobile Legends Gamer Retention in Indonesia: Experimental Study

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## ABSTRACT

Indonesia has the most internet users and gamers globally, and mobile video games are one of the biggest markets. One of the most popular game genres is multiplayer online battle arena (MOBA), such as Mobile Legends: Bang Bang (MLBB). This study aims to determine the effect of social interaction network factors and gamer-game relationships on MLBB gamer retention. The research model used combines three theories: social capital theory, social presence theory, and self-perception theory. Data was collected using the inverse square root technique. A total of 211 questionnaire data were analyzed using a partial least squares-structural equation model (PLS-SEM) with the help of the SmartPLS 4 tool. The results showed that all social interaction network variables and gamer-game relationships were positively related to the sense of community (SC), relationship switching cost (RCS), and gaming habit (GH), which in turn were positively related to gamer retention (RG). However, the variables network convergence (NC) and relationship length (RL) have no relationship on all variables and thus do not affect gamer retention. The findings of this study suggest that social capital, social presence, and self-perception theory can prove and explain the relationship between social networks and gamers' relationship with games, which can effectively increase the retention of users, which in turn creates a competitive advantage for developers or publishers.

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## 1. INTRODUCTION

Indonesia became the third country with the most gamers worldwide in January 2022, with 94.5% of internet users aged 16-64 playing video games (Dihni, 2022). One relatively high market in Indonesia is mobile games, as evidenced by 85% of

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1050 respondents playing video games using smartphones (Kunst, 2023). In addition, the most popular game category in Indonesia is real-time strategy (RTS), which accounted for 26% of the 6,927 respondents, with the highest sales of \$69 billion, accounting for 22% of in-app purchases (Nurhayati-Wolff, 2022, 2023b). RTS games have many derivative categories or sub-categories, including those quite popular in Indonesia, namely multiplayer online battle arena or the MOBA category. Popular games in the MOBA category in Indonesia based on data.ai, Utama (2022), and Nurhayati-Wolff (2023c) include Mobile Legends: Bang Bang (MLBB), League of Legends: Wild Rift, Lokapala, Arena of Valor and Pokemon Unite. The games were viewed based on the game download rank, active gamer rank and total time rank. Of the five popular MOBA games, MLBB is one of the game chosen in this study because it is stable. Namely, it is top-ranked in terms of both downloads and active players. It has been running for about five years but it still crowded. This event is a question mark of why these gamers do not switch to a similar category or other recent games.

The literature has identified that one of the main factors motivating gamers to keep playing games is the social interaction that occurs while playing games (Tseng et al., 2015). Social interaction is how gamers interact with other gamers, either in games or other media. Therefore, social capital theory applies to understand gamer behaviour in social interaction (either in the form of community network or other social interaction between gamers), and social presence applies to understand gamer perceptions when getting social interaction in a game (Tseng et al., 2015; Zhao & Yang, 2021). In addition to social influence, an individual's desire for achievement or motivation to complete a game is also another factor that influences interest in continuing to play video games. In this context, self-perception theory applies to explain how an individual's perception of his/her game or the gamer-game relationship can effect the gamer's motivation to play video games (Klimmt et al., 2009; Teng, 2018).

Previous studies that apply theories regarding social interaction relationships, such as social capital and social presence, as well as individual perception of games, such as self-perception, still need to be improved, especially those that focus on gamers in Indonesia. In addition, previous studies focused on more than the uniqueness of a genre game, making the research not in-depth. According to some of the shortcomings given by previous researchers, the methods they used were still ineffective, such as cross-sectional design, surveys, quantitative survey design, and several other methods that researchers who used these methods considered limited in testing the causality of the relationship between the variables to be studied.

Looking at the problems that occur in Indonesia's gaming industry and the phenomenon that occurs in the MLBB game, it is necessary to analyse more deeply

what factor affect the retention of gamers. This study combines social capital, social presence, and self-perception theory to fill research gaps and learn more about how social interactions and individual perceptions affect gamers' motivation to continue playing video games. This research aims to explain the relationship between social capital, social presence, and self-perception theory factors and their influence on the retention of MLBB game gamers. Besides that, this research also wants to know the role of the factors of gamer social network interaction with games in explaining why gamers choose to keep playing MLBB games.

## **2. RESEARCH FRAMEWORK**

### **2.1 Social Presence**

Network convergence in video game social interaction is a complex and dynamic phenomenon with significant implications for the gaming industry. It is defined as the extent to which people build a shared social environment, often in online gaming communities (Parks & Floyd, 1996). So, the greater the social environment created, the greater the network convergence formed. Sharing friends fosters interpersonal relationships and everyday interests, thus fostering a sense of community in each player (Blanchard & Horan, 1998). Network convergence refers to the sense of community, which is the hypothesis in this study.

**H1:** Network convergence positively affects sense of community

Interdependence is relationship between two or more individuals, group or entities (Manaher, 2023). Interdependence among players is one of the critical elements in the community (Rovai, 2002). Players often create a team or squad to play or complete missions or events together. While doing so, they depend on the emotions and views of other players to form decisions or interact socially with them. So, players need each other to make a choice, which is the hypothesis of this study.

**H2:** Interdependence positively affects sense of community

This sense of community motivates game, the player will lose contact and experience a decrease in motivation to play, resulting in relationship switching cost (Tseng et al., 2015). Therefore, the hypothesis of this study.

**H3:** Sense of community positively relates to relationships switching costs

A sense of community also impacts the intention to continue using a communication system such as social networks or others (Zhang, 2010). Video games are a complex communication system, wherein in the virtual world that has been created, players can communicate with other players (Tseng et al., 2015). This facility can increase social interaction between players. Because of this, player will have a strong motivation to continue playing the game to maintain the sense of community

they get. Therefore, based on the above statement, the hypothesis in this study is as follows.

**H4:** Sense of community positively affects gamer retention

## 2.2 Social Capital

The number of friends can be used to predict how strong social support a gamer feels (Parks & Floyd, 1996). If a player switches games, they will lose the social capital that has been made before. This event shows the relationship between switching costs and gamers. Cost in online game is a failure to maintain relationship with other players that have been formed (Tseng et al., 2015). The social network in one game is difficult to transfer to another because if these player switch games, they will suffer considerable relational losses. According to the above statement, this research proposes a hypothesis.

**H5:** Network convergence positively affects relational switching cost

In video games, players tend to form interdependent relationships in solving problems, resulting in the intention to continue playing (Teng, 2013). When these relationships are formed, players will interact with each other to make decisions. When players respond to each other, these responses create a spiral of responses, which drives quality relationships (Canevello & Crocker, 2010). So, if gamers switch games, they will lose the social capital formed, resulting in relational switching costs (Tseng et al., 2015). Therefore, in this study, the hypothesis is that.

**H6:** Interdependence positively affects relational switching cost

Relationship length is the duration of the relationship, user retention (Bolton et al., 2004), how long the user stays (Dawes, 2009), or the history of the gamer-game relationship (Teng, 2017). The memories of playing games together motivate gamers to continue strengthening relationships in video games. This event creates a relationship between relationship length and relational switching cost (Teng, 2018). Therefore, based on the above statement, the Hypothesis.

**H7:** Relationship length positively affects relational switching cost

Relationship depth is the increased use (Bolton et al., 2004) and frequency that characterizes the gamer-game relationship (Teng, 2017). Over time, trust will be built. That trust is the precursor to the formation of social capital in gamers (Teng, 2018). So, if the player switches games, the relationship that has been established no longer functions because of loss of contact. Because of the above statement, the research hypothesis.

**H8:** Relationship depth positively affects relational switching cost

Relationship breadth is defined as cross-purchase or the extent to which gamers use service products related to gaming (Bolton et al., 2004; Teng, 2017). Purchasing in-game products can differentiate a group and increase the sociality of the game item's owner (Teng, 2018). Players with a high level of social bonding can help form social capital in a game through social interaction. This event will also not be felt if the player switches games. Therefore, based on the above statement, the Hypothesis.

**H9:** Relationship breadth positively affects relational switching cost

Social capital is very helpful for the social interactions that occur, so in-game social interaction can motivate gamers to continue playing the game repeatedly. The repeated social interaction makes the gamer's behavior automatic and natural. Thus, it will become a habit of the player himself. Therefore, this statement can be used as a hypothesis.

**H10:** Relational switching cost positively affects gaming habit

Relational switching costs include friendships and relationships lost if players switch to another game (Tseng et al., 2015). Resources from the social network include friends, where friends can help achieve common goals, and this is a form of social capital (Petermann, 2019). Social capital is very valuable to gamers because it can motivate them to continue playing video games. The above statement can be used as a hypothesis.

**H11:** Relational switching cost positively affects retention gamer

## **2.3 Self-perception**

The use of self-perception theory on relationship length will define the gaming experience and will be observed to conclude that gaming is a fulfillment in their life (Teng, 2018). This gaming experience represents the experience of playing for a considerable amount of time. This means that gamers are used to playing it naturally or develop habits based on the definition of user habits (Bhattacharjee et al., 2012). These events can be used as a hypothesis.

**H12:** Relationship length positively affects gaming habit

Applying self-perception theory to relationship depth assumes that the gamers will observe frequent gaming, so it can be concluded that gaming is part of their life habits. This means that the high frequency of playing or frequent gaming can make players feel that playing games is a habit. So, this statement can be used as a hypothesis.

**H13:** Relationship depth positively affects gaming habit

Relationship breadth, according to self-perception theory, concludes that buying related products or services is one of the supporting factors of gaming, thereby also supporting the trade of related products and services. Such acceptance can result in gaming habits, thus strengthening the idea that there is a relationship between relationship breadth and gaming habits. Therefore, it can be used as a hypothesis.

**H14:** Relationship breadth positively affects gaming habit

Habit is an activity that is natural or natural. So, in this video game, habit is the behavior of playing games continuously, naturally, or automatically. Meanwhile, according to self-perception theory, such gaming behavior implies that gamers enjoy playing games. This enjoyment motivates gamers, thus creating a positive relationship between gamer habit and gamer retention. Therefore, based on the above statement, it can be used as a hypothesis.

**H15:** Gaming habit positively affects retention gamer

### **3. RESEARCH METHOD**

#### **3.1 Sample**

Based on previous research literature, this study uses non-probability sampling techniques or purposive sampling, which is a sampling technique that requires certain considerations (Sugiyono, 2013). Data was collected for approximately 9 days, from 15 to 24 December 2023, through social media such as WhatsApp, Facebook, discord, and Twitter. At the time of data collection, the minimum number of respondents in this data collection was 155, according to the inverse square root method (Hair Jr. et al., 2021; Jhantasana, 2023). According to what has been previously determined, the criteria for respondents are MLBB game players aged at least 17 years and a maximum of 54 years. Based on the data collection process, the data collected from the online questionnaire was 211 respondents. After data screening, it is known that the total number of data that will be further analyzed is 203 datasets.

#### **3.2 Research Instrument**

The research instrument consisted of two sections written in Indonesian. The first section contained the respondent demographic profile, which included questions about gender, age, education, and one question relating to the username or in-game name in the MLBB game. The second section contains statements that correspond to the construct indicators/items adopted from previous research, namely the gamer-game relationship variable in the form of 3 items relationship length (RL), 2 items relationship depth (RD), and 2 items relationship breadth (RB)

(Bolton et al., 2004; Liao et al., 2020; Teng, 2017; Teng, 2018); 4 items relational switching cost (RCS) (Burnham et al., 2003; Teng, 2018; Tseng et al., 2015); 3 items gaming habit (GH) (Bhattacharjee et al., 2012; Teng, 2018); 4 items network convergence (NC) and 3 items interdependence (INT) (Liao et al., 2020; Parks & Floyd, 1996; Tseng et al., 2015); and finally the 5 items gamer retention variable (RG) (Teng, 2013; Tseng et al., 2015). In contrast, a 5-point Likert scale was used in this study to assess responses, giving participants five options for each topic. The values of 1 and 2 for strongly disagree, 3 and 4 for agree, and 5 and neutral for 3 and strongly agree, respectively, are the alternatives available.

### 3.3 Data Analysis

This study analyzed the data using PLS-SEM, or partial least squares structural equation modeling. This method is well-suited to complex research models and uses a regression-based methodology (Zhang, 2010; Zuhdi et al., 2016). The technique emphasizes efforts to reduce residual variation in the dependent variable. Two tests, the outer model and the inner model, are used in this study's PLS-SEM analysis.

## 4. RESULTS AND DISCUSSION

### 4.1 Demographic Analysis

Based on 203 respondents who have filled out questionnaires, the number of male respondents in this study is 123 people, or 61% of the total respondents. In contrast, for female respondents, there are 80 people, or 39% of the total 203 respondents. This study has a higher proportion of male respondents than female respondents, and this is comparable to several other online game studies where men play more games than women (Teng, 2017; Teng, 2018).

Meanwhile, in the age distribution of respondents, the majority of respondents in this study were aged 17-25 years, with 147 people (72% of the total respondents). Gen Z is also quite present in video game players because they are the second most video game players, so they are quite familiar with video games (APJII, 2022; Nurhayati-Wolff, 2023a).

Most respondents have a tertiary education, with a total of 89 people out of a total of 203 respondents. This proportion of education levels is similar to the literature that discusses other video game players, such as in the research of Teng (2017), Teng (2018), and Liao et al. (2020) in which most respondents were in the college group. The demographic profile of respondents is shown in Table 1.

**Table 1.** Demographic Profile of Respondent

| Respondent Profile | Total | Percentage |
|--------------------|-------|------------|
| <b>Gender</b>      |       |            |
| Male               | 123   | 61%        |
| Female             | 80    | 39%        |

| <b>Age</b>               |     |     |
|--------------------------|-----|-----|
| 17-25 years              | 147 | 72% |
| 26-30 years              | 35  | 17% |
| 31-35 years              | 13  | 6%  |
| 36-40 years              | 7   | 4%  |
| 40-54 years              | 1   | 1%  |
| <b>Educational stage</b> |     |     |
| Secondary School         | 54  | 27% |
| College                  | 89  | 44% |
| Others                   | 60  | 40% |

## 4.2 Measurement Model Test Result (Outer Model)

The measurement or outer model test is also known as the data validity test. This data validity test occurs to ensure the data is reliable and valid. The indicator becomes legitimate if each indication's outer loading has a minimum threshold value of 0.7 (Hair Jr. et al., 2021). The results of the convergent validity calculation of the outer loading value of all 30 indicators/items studied are valid because they have an outer loading value above 0.7. The next convergent validity test to see whether these indicators have a strong relationship with their variables will use the AVE criteria, with each variable having a minimum value of 0.5 so that each variable can measure what should be measured or said to be valid (Hair et al., 2017). The results of the calculation of convergent validity from the outer loading value of the 30 indicators/items studied are valid because they have an outer loading value above 0.7.

The next test is the discriminant validity test using the Fornell-Larcker criterion, which states that each latent variable's square of the AVE must be greater than the correlation between latent variables. The results in Table 2 show that all variables fulfill this criterion, with the square root value of AVE exceeding the correlation with other variables, which confirms that all variables have a strong relationship with themselves.

**Table 2.** Result of the Fornell-Larcker criterion

|            | <b>GH</b>    | <b>INT</b>   | <b>NC</b>    | <b>RB</b>    | <b>RCS</b> | <b>RD</b> | <b>RG</b> | <b>RL</b> | <b>SC</b> |
|------------|--------------|--------------|--------------|--------------|------------|-----------|-----------|-----------|-----------|
| <b>GH</b>  | <b>0.860</b> |              |              |              |            |           |           |           |           |
| <b>INT</b> | 0.654        | <b>0.830</b> |              |              |            |           |           |           |           |
| <b>NC</b>  | 0.642        | 0.727        | <b>0.845</b> |              |            |           |           |           |           |
| <b>RB</b>  | 0.672        | 0.642        | 0.653        | <b>0.898</b> |            |           |           |           |           |

|            |       |       |       |       |              |              |              |              |              |
|------------|-------|-------|-------|-------|--------------|--------------|--------------|--------------|--------------|
| <b>RCS</b> | 0.687 | 0.710 | 0.655 | 0.639 | <b>0.854</b> |              |              |              |              |
| <b>RD</b>  | 0.694 | 0.607 | 0.570 | 0.647 | 0.647        | <b>0.876</b> |              |              |              |
| <b>RG</b>  | 0.698 | 0.664 | 0.604 | 0.632 | 0.701        | 0.686        | <b>0.798</b> |              |              |
| <b>RL</b>  | 0.571 | 0.579 | 0.489 | 0.480 | 0.553        | 0.657        | 0.561        | <b>0.860</b> |              |
| <b>SC</b>  | 0.576 | 0.742 | 0.584 | 0.518 | 0.646        | 0.601        | 0.648        | 0.611        | <b>0.814</b> |

Next is test reliability, assessed through two criteria: Cronbach's alpha and composite reliability, which must be greater than 0.7 (Hair Jr. et al., 2021). however, Ekolu and Quainoo (2019) indicate that although Cronbach's alpha between 0.5 - 0.7 is generally considered acceptable with adequate reliability, this also follows F. Hair Jr et al. (2014) and Ghozali (2016) opinion, which states that a composite reliability value or Cronbach's alpha > 0.6 is acceptable. The reliability test results show that all variables used in this study are reliable, as shown in Table 3.

**Table 3.** Reliability Test Result

| <b>Variable</b>                          | <b>Cronbach's alpha</b> | <b>Composite reliability</b> | <b>Information</b> |
|------------------------------------------|-------------------------|------------------------------|--------------------|
| <b>Gaming habit (GH)</b>                 | 0.823                   | 0.824                        | High               |
| <b>Interdependence (INT)</b>             | 0.773                   | 0.774                        | High               |
| <b>Network convergence (NC)</b>          | 0.867                   | 0.867                        | High               |
| <b>Relationship breadth (RB)</b>         | 0.759                   | 0.763                        | High               |
| <b>Relationship switching cost (RCS)</b> | 0.876                   | 0.876                        | High               |
| <b>Relationship depth (RD)</b>           | 0.697                   | 0.697                        | Moderate           |
| <b>Retention gamer (RG)</b>              | 0.857                   | 0.858                        | High               |
| <b>Relationship length (RL)</b>          | 0.824                   | 0.827                        | High               |
| <b>Sense of community (SC)</b>           | 0.829                   | 0.842                        | High               |

### 4.3 Comparison of Usability Test Result

Inner model testing includes testing model fit, collinearity, path coefficient analysis, coefficient of determination (R<sup>2</sup>), effect size (f<sup>2</sup>), and predictive relevance (Q<sup>2</sup>). The model fit test is carried out to determine whether the research model used is following the data collected. The model fit test criteria in this study include standardized root mean square residual (SRMR), exact fit test (Euclidean and Geodesic values), and normed fit index (NFI). The model fit test results show that the research model is considered satisfactory because it meets the specified criteria, as illustrated in Table 4.

**Table 4.** Fit Model Result

| Criterion    | Limit Value | Model Value | Information  |
|--------------|-------------|-------------|--------------|
| <b>SRMS</b>  | < 0.08      | 0.073       | Good fit     |
| <b>d_ULS</b> | < 95        | 2.482       | Good fit     |
| <b>d_G</b>   | < 95        | 0.993       | Good fit     |
| <b>NFI</b>   | > 0.9       | 0.736       | Marginal fit |

Additionally, the VIF value of less than five was used in the collinearity test to see whether any other factors had the same effect on the dependent variable (James et al., 2013). The results of the collinearity test found that all research variables had a VIF value of less than 5, so there was no significant collinearity problem. Next is the coefficient of determination test to evaluate the structural model. The  $R^2$  value ranges from 0 to 1, with higher values indicating better measurement accuracy. Hair et al. (2017) state that an  $R^2$  value of 0.20 is considered a high enough coefficient of determination. Table 5. displays the test findings.

**Table 5.** Coefficient of Determinant Test Result

| Variable                          | R square | Information |
|-----------------------------------|----------|-------------|
| Gaming habit (GH)                 | 0.622    | High        |
| Relationship switching cost (RCS) | 0.620    | High        |
| Retention gamer (RG)              | 0.616    | High        |
| Sense of community (SC)           | 0.555    | High        |

The effect size test ( $f^2$ ) measures the strength of the effect of one independent variable on one dependent variable. An  $f^2$  value between 0.02-0.15 indicates a small impact; between 0.15-0.35 indicates a moderate impact; and if it exceeds 0.35, it indicates a large impact (Cohen, 2013). Conversely, if the  $f^2$  value is less than 0.02, then there is no impact on the model structure (Hair et al., 2017). The results of the effect size test show that there is one large effect, INT, on SC; one moderate effect, GH, on RG; and three relationships that have no effect, NC on SC, RL on GH, and RL on RCS; the other relationships have a small effect.

A predictive relevance test ( $Q^2$ ) assesses how well the research model can predict the dependent variable. A model shows predictive relevance if the  $Q^2$  value exceeds 0 (Hair et al., 2017). This test calculates the  $Q^2$  value using the blindfolding method. The predictive relevance test results show that all dependent variables have a  $Q^2$  value greater than 0; this indicates that the PLS path modeling can predict the dependent variable well.

Path coefficient analysis, which includes hypothesis testing, is to evaluate the strength and significance of correlations between variables and test theories. The significance of the coefficients (t-values) and the strength of the association (p-values) were ascertained, and the hypotheses were tested using a bootstrapping approach. A two-tailed test with a critical value of 1.96 (at the 5% significance level) is used to

accomplish bootstrapping. The coefficient is deemed significant if the t-value is higher than the critical value, and the hypothesis is accepted if the p-value is less than 0.05 (Hair Jr. et al., 2021). Table 6 provides a thorough breakdown of the route coefficient test findings.

**Table 6.** Results of Path Coefficient, t Statistics, and p Values

| Hypothesis | Relationships | t Statistics | p Values | Information |
|------------|---------------|--------------|----------|-------------|
| H1         | NC → SC       | 1.253        | 0.210    | Rejected    |
| H2         | INT → SC      | 9.161        | 0.000    | Accepted    |
| H3         | SC → RCS      | 1.764        | 0.078    | Rejected    |
| H4         | SC → RG       | 3.932        | 0.000    | Accepted    |
| H5         | NC → RCS      | 1.853        | 0.064    | Rejected    |
| H6         | INT → RCS     | 2.675        | 0.007    | Accepted    |
| H7         | RL → RCS      | 0.601        | 0.548    | Rejected    |
| H8         | RD → RCS      | 2.474        | 0.013    | Accepted    |
| H9         | RB → RCS      | 2.056        | 0.040    | Accepted    |
| H10        | RCS → GH      | 3.762        | 0.000    | Accepted    |
| H11        | RCS → RG      | 3.662        | 0.000    | Accepted    |
| H12        | RL → GH       | 1.679        | 0.093    | Rejected    |
| H13        | RD → GH       | 3.882        | 0.000    | Accepted    |
| H14        | RB → GH       | 3.510        | 0.000    | Accepted    |
| H15        | GH → RG       | 3.920        | 0.000    | Accepted    |

Based on the test results, it is concluded that (H1 is rejected) and shows that network convergence does not have a significant effect on the sense of community. The results of this study are different from previous research conducted by Tseng et al. (2015), which states that network convergence has a positive relationship with a sense of community. The reason network convergence does not affect the sense of community is due to individuals in the MLBB game. With differences in skills and goals and a toxic community that does not support each other, this makes it quite difficult for players, especially solo ones, to make friends in the game unless they meet in person and have known each other for a long time.

Meanwhile, it is known that interdependence has a positive effect on the sense of community (H2 accepted). The results of this study are consistent with the research of Tseng et al. (2015), who found that interdependence is connected to a sense of community, which will indirectly affect the retention of video game players. Interdependence is one of the factors that are quite important in the presence of a sense of community, especially in MOBA games, where it requires the players to compactly fill the entire role and work together in completing the game.

In contrast, the relationship between a sense of community and relational switching cost has no effect (H3 rejected). The results of this study contradict research Tseng et al. (2015) and Molyneux et al. (2015), which states that a sense of community contributes positively to relationship switching costs. However, in the case of video games, relationship-switching costs and a sense of community are not always related due to several phenomena or factors, such as the case in this study. The relationship between relationship switching costs and a sense of community in video games is complex and only sometimes straightforward. In the case of MLBB Bang Bang, the toxic nature of the community and the influx of new players have reduced the influence of the sense of community on relationship switching costs.

The results of this study indicate that the sense of community felt by gamers has a positive relationship with gamer retention (H4 accepted). These findings align with research conducted by Tseng et al. (2015), which states that a sense of community contributes positively to the intention to continue playing games (gamer retention). Modern video games have evolved from isolated digital playgrounds to vibrant communities with strategic integration of social features. These features increase user acquisition and retention and motivate players to continue playing through a strong sense of community (Ayik, 2023; Molyneux et al., 2015). For example, the affinity, squad and group features in MLBB Bang Bang and the social media content that gamers share build bonds and encourage players to continue engaging with the game.

Conversely, the relationship between network convergence and relationship switching cost does not affect each other (H5 rejected). The results of this study are not in line with research (Tseng et al., 2015), which states that network convergence contributes to relationship switching costs. Network convergence, where gamers connect to several gaming communities, does not necessarily imply high relationship switching costs. Although gamers may switch to a more attractive community, factors such as emotional attachment, trust, and loyalty to the existing community may still influence switching costs. In Mobile Legends: Bang Bang (MLBB), gameplay differences, lack of trust among players, underutilized communication features, and negative social media interactions may override the effect of network convergence on relationship switching costs, leading to game switching even without network convergence or reducing the impact of network convergence.

While the relationship between interdependence and relational switching cost is positive and significant (H6 accepted), the results of this study follow research conducted by Tseng et al. (2015), which states that interdependence positively contributes to relationship switching costs in the MOBA game MLBB Bang Bang, interdependence among players is essential for success. The strong social bonds formed through teamwork and communication make it difficult for players to switch to other games, as the perceived costs of switching (time, social connections, et cetera) outweigh the potential benefits. This interdependence is further reinforced by research findings that show a positive relationship between interdependence and the social aspects of online games, leading to increased enjoyment, engagement, and retention.

Conversely, the relationship between relationship length and relational switching cost has no effect and is not statistically significant (H7 rejected). The results of this study are not in line with research conducted by Teng (2018) which

found that relationship length has a positive relationship affecting relationship switching costs. The length of time playing the game (duration of play) does not always determine the player's switch to another game. In the case of MLBB Bang Bang, the boredom factor and the emergence of other more interesting games can encourage players to switch, even though they have been playing for a long time. Other factors that weaken the relationship between playing duration and game switching are playing experience, in-game switching costs, developer image, game value, and external factors such as peer pressure. A decline in game quality and player satisfaction can also encourage switching.

Based on the relationship depth research results on relational switching costs, it has a significant effect (H8 accepted). The results of this study are in line with and supported by previous research by Teng (2018), which states that relationship depth positively influences relationship switching costs. The MLBB Bang Bang game has features that encourage player engagement through rewards and social relationships, increasing his investment in the game and making him reluctant to switch to other games. This effect, although small, can be attributed to addiction and strong ties to the gaming community, especially for players who play frequently.

Relationship breadth also significantly positively relates to relational switching cost (H9 accepted). Therefore, this research is in line with and supported by Teng (2018) research, which states that gamer-game relationships, especially relationship breadth, positively affect switching costs. Purchasing skins and event items in-game increases player engagement and lowers switching costs, discouraging players from quitting the game to look for another. This commitment arises from the perceived value of these investments and the reluctance to lose the benefits gained.

Similarly, the relationship between relational switching costs and gaming habits has a significant positive effect. This study's results align with Teng (2018) research, which states that switching costs have a positive relationship with gaming habits. Relationship switching costs, the perceived cost of switching to another game, positively affects habitual and automatic gaming habits. As switching costs increase, players tend to stick with their current game, reinforcing their gaming habits.

Based on research data, the relationship between relational switching costs and gamer retention has a significant positive effect (H11 accepted). This study follows the rest of the research Teng (2018), which states that it has a positive relationship with gamer retention. Relationship switching costs increase player loyalty and retention as well as the perceived efforts and losses associated with switching games. As a result, players will feel that the present game is worth more, boosting their enjoyment and justifying their investment. The results deter players from looking for other options and promote continuous engagement with the game, along with strong social relationships, community involvement, and lost costs.

In contrast, the relationship length on gaming habit does not significantly influence these variables (H12 rejected). The results of this study contradict and are not in line with research conducted by Teng (2018), who states that relationship length has a positive relationship with gaming habits. Although relationship length may impact gaming habits, it is not an absolute or sufficient condition. Relationship duration is not the only element that might affect a person's sophisticated gaming habits; other factors include social interactions, personal preferences, and

personality qualities. Gamers are not a homogeneous group but have diverse and complex profiles.

Meanwhile, the relationship between relationship depth and gaming habits has a significant positive effect (H13 accepted). The results of this study are in line with and supported by research Teng (2018), which states that relationship depth has a significant positive relationship with gaming habits. MLBB Bang Bang features such as affinity and squad levels, along with the formation of gaming habits through frequent play, contribute to increased gameplay and potentially developing toxic behavior. While frequent gaming can lead to new gaming habits, such as information-seeking and toxic behavior, these are not the only factors influencing habit formation.

Based on the results of relationship breadth research, gaming habits have a significant positive effect (H14 accepted). However, these results are different or not in line with research Teng (2018), which states that relationship breadth (cross-buying) has no relationship with gaming habits. MLBB's extensive collection of items and skins fosters a mindset of consumerism among players, encouraging impulse purchases and gaming habits. Cross-buying further reinforces gaming habits by increasing switching costs, enhancing the gaming experience, facilitating social interaction, and shaping player identity.

The relationship between gaming habits and gamer retention has a positive significant effect (H15 accepted). These results are in line with and supported by research conducted by Teng (2018), which states that gaming habit has a positive relationship with gamer retention. Gaming habits can increase players' curiosity, motivation, and satisfaction, encouraging them to continue playing and exploring new features, challenges, and rewards (Genie, 2022; Padulosi, 2019; Sciences, 2019). Playing MLBB Bang Bang, players develop stronger bonds with the game. They are more loyal and engaged when they engage in activities like competing to reach particular hero rankings and producing exciting content.

## 5. CONCLUSION

This research shows that in-game social networking can increase user retention and provide a competitive advantage for developers/publishers. Social networking fulfills players' needs and increases their attachment to the game. Gamers' relationships with games are mutually reinforcing, motivating players to continue playing and preventing them from moving on to other games. Social presence and social capital theories explain how social networks motivate gamers, while self-perception theory explains how social interactions and individual interactions with games change gamers' perceptions of gaming goals, ultimately increasing retention.

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