

DETERMINANT OF IN-APP MOBILE GAME PURCHASE INTENTION: AN EMPIRICAL STUDY OF INDONESIAN MOBILE GAMER

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Abstract. Games have become an interesting business and even in a pandemic COVID-19 situation like today, most businesses are collapse, but mobile games still become promising market segments. This study aims to examine factors that determine the purchase intention of in-app mobile games for non-paying players to target the young gamers market in Indonesia. Several 264 mobile gamers were recruited as respondents. Data were collected using a cross-sectional survey with a structured questionnaire. SmartPLS was used to verify the research hypotheses. Based on the study result, reward affects the good price, and affect in-app purchase intention. Playfulness, access flexibility, connectedness, and reward did not affect in-app purchase intention. This shows that gamer intends to buy if the price is good, and this is supported by the availability of reward. Therefore, companies still have to work hard to explore more deeply the variables studied why these variables do not support purchase intentions.

Keywords: in-app mobile game, emotional value, quality value, social value, purchase intention.

1 Introduction

Besides having a big impact on mobile phone development, technology also has a big impact on the development of the gaming world. In 2019, the value of the global gaming market will reach USD152 billion, an increase of 9.6 percent over the previous [1]. Research in Indonesia shows [2] that from 518 samples studied, all of them claimed that they spent their free time playing games even though not all of their samples had smartphones, and five percent of the samples studied have made purchases in gaming applications.

The Mobile Legend Bang Bang (MLBB) game is the most popular game on mobile devices. In Indonesia, MLBB has 31 million active monthly users, and even this game is officially used for the 2019 SEA Games [3]. There are currently 42.9 million gamers in Indonesia, whereas, in 2015, there was only half of that number. In the next five years, according to the DANA estimation, the number of gamers will increase threefold [4]. Internet penetration rates in Indonesia in 2019 increased by 10% from 2018. While the comparison between the number of internet users in Indonesia and the number of gamers is also likely to increase considering that new generations will have been exposed to the technology virus.

The mobile game may be downloaded for free, but for the game to be more interesting, a gamer can buy various virtual products in the game. This is of course a very promising market opportunity for mobile game companies. The problem is how marketing managers can take advantage of this opportunity to achieve success. Many factors influence users' in-app mobile game purchasing behavior. Previous research stated that good price and customer loyalty are recognized as the main determinants of intention to pay [5]. In his research, [6] shows that the perceived value of having internet facilities on a mobile device affects the intention of

smartphone users to pay for mobile phone services. This study adopts a previous research model conducted by [5] and is adapted to the needs of the study.

2 Literature Review

Virtual item

Virtual items are virtual products or non-physical products that are sold and played in online gaming communities. Items that are purchased or shipped through the virtual world are virtual properties. Virtual items in online games can be custom avatars, bases, or player characters that are purchased using real money [7].

Emotional Value

Emotional value is a person's perception of the benefits obtained from the use of a product [8]. Emotional value arises as a result of trying something new or something different [9]. Based on previous research, it was found that people will be more affected to attend a festival because of emotional (hedonic) values obtained from the playfulness of the festival [10]. Another study found that customer perceived emotional value tends to influence customer intention to buy local products and international products [9]. Based on these arguments, the hypothesis proposed is:

H1. Perceived playfulness effect positively on in-app purchase intention.

Performance/Quality Value

The performance or quality value is defined as the value or benefit perceived by users about the quality or performance of services in the mobile game used [5]. In their study, performance or value quality is measured using variable access flexibility. What is meant by access flexibility is the user's flexibility in controlling time when playing games. Meanwhile, another study found that access flexibility and time flexibility influence users' intention to use the game [11].

H2. Access flexibility affects positively on in-app purchase intention.

Social Value

Social value can be interpreted as the value obtained by the user as a result of social interactions that occur between that user and other users through experience in using that service [12]. Social interaction causes users to feel attached, have feelings of closeness and connectedness. Connectedness is a user's feeling of being connected to other users [13]. When connectedness arises between a player and other players in the game, then there is a tendency of the user to make in-app purchase intention [5].

H3. Connectedness effect positively on in-app purchase intention.

Value for Money (Good Price and Reward)

In buying a product, a fair price is often the main consideration in making a decision. In high competition, a fair price can be the main key to the success of the product in the market. Fair prices can be defined as a combination of product and service quality [14]. Thus the price of a product is said to be expensive or cheap depending on the quality of the product. Price reward is a consumer's perception of product quality that is by the price offered by the company. Previous studies stated that value for money is the value that arises as a result of the reduction in costs that are the long-term or short term of a product [8]. The past empirical study stated that value for money drives potential customers to intend to make a purchase [15]. Besides, in the same study, it was found that connectedness that occurs among users, positively affects the user's perception of a good price. The higher the connectedness, the more users feel the price is fairer.

H4. Good price effects positively on in-app purchase intention

H5: Connectedness effects positively on good price

Value for money is also measured by the size of the reward given by the company. The higher the reward is given by a company, the greater the value for money perceived by the user. Reward is several benefits felt by users when playing games [5]. The result of their study stated that reward affects a person's perception of fair prices. The greater the reward is given by a company, the better the price on the eyes of users. Furthermore, it was found that reward has a positive effect on in-app purchase intention.

- H6. Reward effect positively on in-app purchase intention.
 H7. Reward effect positively on good price.

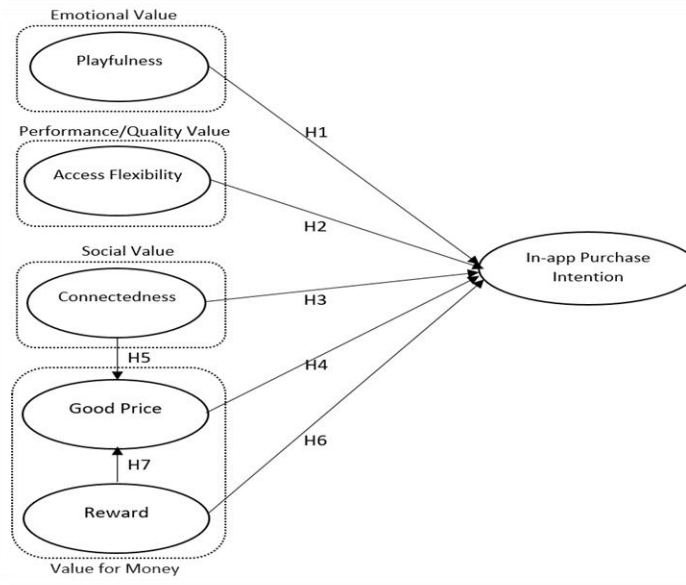


Fig 1. Research Model

3 Research Method and Data Analysis

Sample and Data Collection

The research instrument was adopted from previous studies [5] and adapted to the needs of the study. After being translated into Bahasa, and tested on several respondents for face validity, a pilot test was then carried out by distributing the research questionnaire to 30 respondents. Data were tested with validity and reliability using SPSS. After all the data were stated valid and reliable, the questionnaire was distributed to targeted respondents.

A cross-sectional online survey design is employed through google form in November 2019. Every respondent was asked to fill the administered questionnaire. To avoid ambiguous answers, an itemized rating scale with an unbalance rating scale is used to measure the research instrument, which is from score 1 to score 4 [16]. This study uses a purposive sampling method and data was analyzed with SEM-PLS statistical program. Respondents who may fill out the questionnaire are gamers who have playing MLBB games in the last six months.

Reliability, Convergent Validity, and Discriminant Validity

There are two measurement models in SEM-PLS analysis, namely the measurement model (outer model) and the structural model (inner model). The outer model is used to test construct validity and instrument reliability which can be seen through Cronbach's alpha and composite reliability (internal reliability consistency), outer loading and AVE (convergent validity), cross-loading, and The Fornell-Larcker criterion (discriminant validity). Evaluation of the inner model is tested from the value of path coefficients (β), coefficient of determination (value of R^2), size of the effect (value of f^2), the relevance of the prediction (value of Stone-Geisser's Q^2), and significant pathway (p-value).

Based on the results of the outer model, all research items of the instrument are stated reliable and valid, therefore data can be tested with the structural equation model. The value of R^2 of good price is 0.111220. This means that simultaneously connectedness and reward as an independent variable can explain 11.122% changes in good price as the dependent variable. in-app purchase intention has an R^2 value of 0.460061. It can be concluded that the variables of playfulness, access flexibility, good price, reward, and connectedness simultaneously can explain 46% of changes in in-app purchase intention.

The reliability of the instrument can be seen from the consistency of internal reliability assessed by Cronbach's alpha and composite reliability [17]. Table 1 presents the results of

Cronbach's alpha test and composite reliability of the measurement model. Based on the PLS output result, the value of Cronbach's alpha for all observed variables exceeds 0.7 with values ranging from 0.825407 to 0.948358. This can be interpreted that all observed variables have high internal consistency.

Table 1. Validity and Reliability Test Result

Variable	Indicator code	Convergent validity		Internal consistency reliability	
		Outer loadings	AVE	Cronbach's alpha	Composite reliability
Playfulness [13]			0.858881	0.948358	0.960487
I think playing MLBB is interesting.	PLA1	0.8659			
I think playing MLBB is enjoyable.	PLA2	0.9427			
I think playing MLBB is exciting.	PLA3	0.9607			
I think playing MLBB is fun.	PLA4	0.9348			
Connectedness [13]			0.858367	0.920718	0.947785
Players of MLBB share their experience and feelings with others through this mobile game.	CON1	0.9524			
Players of MLBB benefit from the user community using this mobile game.	CON2	0.9523			
Players of MLBB share a common bond with other players.	CON3	0.8724			
Access flexibility [11]			0.819363	0.891653	0.931497
I can control the time playing MLBB by myself.	ACC1	0.8758			
I can play MLBB anytime.	ACC2	0.9358			
I can begin and stop playing MLBB at any time.	ACC3	0.9030			
Good price [6]			0.801551	0.875435	0.923650
Diamonds of MLBB are reasonably priced.	PRI1	0.9247			
Diamonds of MLBB are good relative to the price.	PRI2	0.8438			
Diamonds of MLBB are economical.	PRI3	0.9152			
Reward [18]			0.865518	0.922355	0.950755
The proposed rewards have high cash value.	REW1	0.9355			
It is highly likely to get the proposed rewards.	REW2	0.9363			
The proposed rewards are what I have wanted.	REW3	0.9193			
In-app purchase intention [6]			0.910777	0.902095	0.953305
I intend to pay for the diamonds in MLBB in future.	IAP1	0.9521			
I predict that I would pay for the diamonds in MLBB in future.	IAP2	0.9566			

Table 1 shows the results of the average variance extracted (AVE) for all observed variables exceed 0.5. According to [17], AVE value exceeds 0.5 is a measurement standard which shows that on average the variables explain more than half of the indicator variants. The value of outer loadings for each indicator in this study is higher than 0.7.

Discriminant validity is the extent to which a variable is completely different from other variables [17]. The value of outer loadings of indicators for related variables must be higher than the outer loadings of other variables, and the value of outer loadings of indicators for each variable must exceed 0.7 [17]. Table 2 shows that the value of the outer loadings of each indicator is greater than all outer loadings of the other variables.

Table 2. Cross Loading

	ACC	CON	IAP	PLA	PRI	REW
ACC1	0.875779	0.563575	0.289577	0.533271	0.323724	0.442033
ACC2	0.935777	0.450694	0.416602	0.411026	0.399419	0.487642
ACC3	0.903008	0.409805	0.272203	0.345545	0.364790	0.401217
CON1	0.483945	0.952360	0.215493	0.754024	0.240574	0.573450
CON2	0.488789	0.952309	0.153332	0.744682	0.187271	0.569029
CON3	0.485540	0.872478	0.108723	0.725688	0.124669	0.525869
IAP1	0.328093	0.160206	0.952053	0.126654	0.618396	0.272038
IAP2	0.382166	0.187910	0.956635	0.162127	0.644077	0.279518
PLA1	0.408120	0.759809	0.044642	0.865889	0.053536	0.501537
PLA2	0.444697	0.719674	0.152500	0.942674	0.121202	0.527909
PLA3	0.456284	0.767454	0.138840	0.960740	0.118313	0.545376
PLA4	0.439238	0.753918	0.162738	0.934936	0.168853	0.553344
PRI1	0.394622	0.194733	0.613608	0.104067	0.924729	0.264864
PRI2	0.283764	0.272422	0.525315	0.244236	0.843766	0.332350
PRI3	0.400825	0.108502	0.633286	0.036547	0.915199	0.300960
REW1	0.452552	0.583416	0.265863	0.524934	0.289567	0.935460
REW2	0.462694	0.571335	0.263477	0.564089	0.306107	0.936337
REW3	0.465805	0.524270	0.276493	0.513946	0.331994	0.919098

4 Research Result and Discussion

Respondent Profile

Several 264 samples were collected. Data were then analyzed using the SEM-PLS statistical program. Based on data collected, the majority of players are male (87.2%), aged between 17 to 22 years (70.3%). They have an average experience playing the game Mobile Legends between six months to twelve months (53%). The most widely used mobile game platform is android (79.7%). The length of time spent playing MLBB between 1-3 hours (63.9%) per day.

Hypothesis Testing

The hypothesis will be supported if the path has a t-statistic value greater than the t-table ($\alpha=0.05$). For data of 264 (∞) and $\alpha=0.05$, the value of t-table=1.96 (Hair et al., 2014). Based on the result shows that H1($t=0.039389$), H2($t=1.009435$), H3($t=0.742170$), H5($t=0.123653$), and H6($t=0.143314$) are rejected. While H4($t=4.435841$), H7($t=3.008566$), are supported. These mean that playfulness, accessibility, reward, connectedness do not affect in-app mobile games intention.

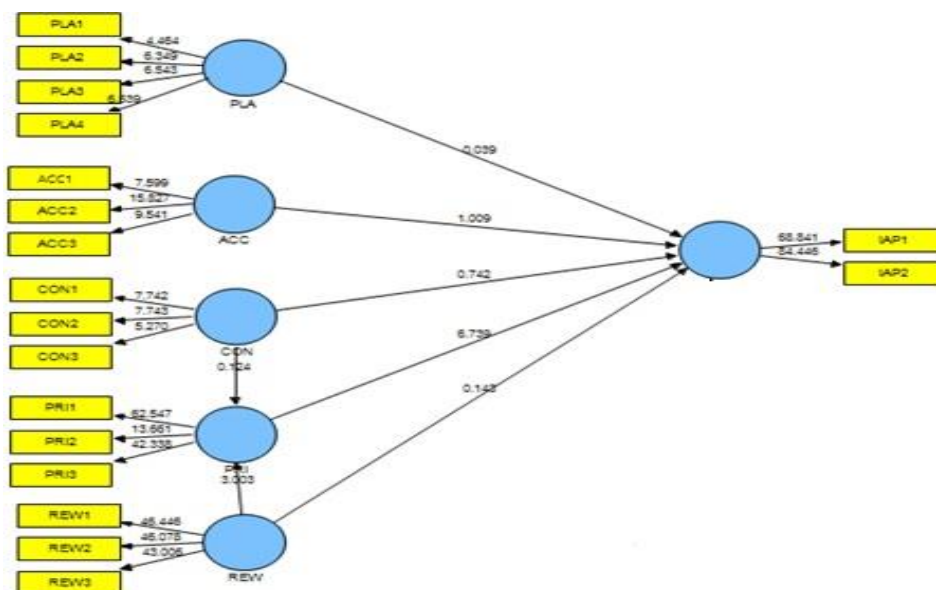


Fig 2. The Structural Model Test Result

Good price effects positively and significantly on in-app purchase intention ($\beta=0.597$; $t\text{-stat}>1.96$), H4 is supported. This study indicates that the more appropriate the price offered in the game will increase in-app purchase intention. Reward influence positively and significantly on good price ($\beta=0.324$; $t\text{-stat}>1.96$), H7 is supported. The results of this study indicate that the higher the level of reward available in the game will increase gamer perception of a good price. playfulness, accessibility, connectedness, and reward do not affect in-app purchase intention. The only variable that directly influences on in-app purchase intention of mobile games is good price, and it has the biggest β -value. Good price has proven to be the main key for marketers to increase in-app purchase intention. Partially the independent variables do not significantly influence on in-app purchase intention variable, but simultaneously playfulness, accessibility, good price, reward, and connectedness influence intention of in-app purchases by 46 percent ($R^2=0.460061$).

This study found that connectedness does not affect the player perception of good price. The experience of playing games with friends, the benefits gained, and attachment to other players does not affect the perception of good price. This study is in line with a study conducted by [5]. It stated that connectedness did not have a significant effect on good price for respondents who have never had experience buying in a game application. However, reward affects the perception of good price ($R^2=0.111220$). This means that simultaneously, connectedness and reward can explain good price of 11.12 percent. This value is very small, so indeed the effect is very low. This finding is in line with the results of previous research conducted by [5]. Reward in in-app mobile games is expected by gamers to be able to save funds and to play longer. The higher the reward, the better the perception of the price offered.

5 Implications, Limitations and Suggestions for Further Research

This study result indicates that all observed variables such as pleasure in playing games, ease of players in accessing the game, the connectedness of players with other players, and reward are given do not influence on in-app purchase intention. This study found that good price effect on in-app purchase intention. This might be related to the majority of respondents who are teenagers and still in school. They may not prioritize buying virtual items in the game, but their expenses are mostly used for school needs. Therefore, gamers will only buy virtual items which are a good price.

The study results found that reward has an effect on a good price. To attract gamers to intend to pay for virtual items, a marketing manager should focus on increasing the perceived value of mobile game services through a bonus, the package offers, or promotions. Consumer makes a buying decision based on a good price given by the game. The reward given by the game to players for free will affect player perception of the price offered.

For further research demographics, characteristics such as education, employment, and income levels need to be added so that a more detailed profile of gamers will be obtained for the benefit of consumer segmentation. In this study, respondents were not differentiated between paying and non-paying players for in-app mobile games. The fact, the behavior of paying and the non-paying player is likely to be different. For future research, respondents need to be classified into paying and non-paying players.

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