

Are Gamers Satisfied with Their Money Spent on Virtual Goods in Online Games? Understanding Gamers Satisfaction based on Perceived Values and Purchasing Motivation

*Muhammad Zhafir AFIF¹
Prawira Fajarindra BELGIAWAN²
Muhamad Abdilah RAMDANI³*

ABSTRACT

One's purchase of Virtual goods that can only be used in the virtual world becomes an exciting thing to explore further. Someone willing to exchange money in the real world for virtual goods in online mobile games indicates the value that makes users feel satisfied from purchases made continuously. This study aims to determine the values of virtual goods perceived by gamers and assess their satisfaction with purchasing virtual goods. The results indicate that users who purchased virtual goods in online mobile games fall into utilitarianism and hedonism. Utilitarianism means being influenced by functional, emotional, and social values. Hedonism, henceforth, refers to being influenced by functional and emotional values. Meanwhile, satisfied owning virtual goods are only found with hedonic purchasing motivation. In addition, perceived ease of purchase does not affect the repurchase of virtual goods. This study provides users' perceptions of virtual goods and helps developers determine the aspects and attributes of virtual goods that need to be considered so that users can be satisfied with their purchasing virtual goods.

KEYWORDS: *online mobile games, virtual goods, perceived values, gamers' purchasing motivations, customer satisfaction.*

JEL CLASSIFICATION: *C12, C30, C83, D46, M30*

1. INTRODUCTION

From having a physical form and being used in the real world, the Internet has created virtual goods that can be transacted digitally with the tap of a finger on a smartphone device. Paid virtual goods can be defined as digital goods or services traded and exchanged for real money (Atkinson, 2009; Drennan & Keefe, 2007; Lehdonvirta, 2009), which can be found in games and other products such as music or graphic design. In the online game context, virtual goods refer to virtual objects such as currency, character equipment, tools, character skins, weapons, armor, monthly pass subscriptions, map access, or character enhancement benefits obtained and used virtually (Hamari & Keronen, 2017). In general, virtual goods in online games affect character appearance and function (Lehdonvirta, 2009), such as changing hero character appearance based on ownership rarity in the multiplayer online battle arena (MOBA) or items such as equipment that affect character status in massively multiplayer online role-playing games (MMORPGs).

Online mobile games currently give users free access to play without purchasing the game. This condition changes the company's revenue model by giving certain items and access to special benefits obtained with paid purchases (Hamari et al., 2017; Holin Lin & Sun, 2011; Huang, 2012; Lehdonvirta, 2009; Shelton, 2010). Furthermore, mobile games have a revenue

¹ School of Business and Management, Institut Teknologi Bandung, Indonesia, zhafir.afif@sbm-itb.ac.id

² School of Business and Management, Institut Teknologi Bandung, Indonesia, fajar.belgiawan@sbm-itb.ac.id

³ School of Business and Management, Institut Teknologi Bandung, Indonesia, abdilah_ramdani@sbm-itb.ac.id

acquisition of 67% of the total revenue earned (Adjoe, 2021). These figures show that paid virtual goods in mobile games online are a primary source of income for the games industry.

Most of the revenue from selling virtual goods in online mobile games comes from Asia, with China leading the way in global markets, followed by India and Indonesia as the top three countries (Adjoe, 2021). The number of gamers in Indonesia, which stands at 43.7 million, further supports this high figure (BEKRAF, 2018). A study conducted by the Statista Company (2020) revealed that the actively purchased number of online game users in Indonesia increased from 37.2 million to 50.8 million between 2017 and 2020. Additionally, the number of mobile game players has increased by 18.1%. This number will reach 61.9 million by 2025, bringing the market penetration rate to 21.6%. Every mobile game user in 2017 could spend an average of 222,495 rupiahs per year (exchange rate US Dollar 1 = IDR 14,715.30). The high number of transactions for intangible goods that can only be used and enjoyed in the virtual game world makes it necessary to explore further research on users' purchasing behavior.

Values received in the first purchase and subsequent purchases have different characteristics. The subsequent purchase of virtual goods depends on the values obtained from previous purchases. The experiences obtained from these purchases are then evaluated so that in the subsequent purchase users buy because they want to get those values back (Hsu et al., 2014). Meanwhile, the user evaluates all the information obtained other than the previous virtual goods usage experience in the first purchase. In contrast, this virtual goods item is intangible, where explained values depend on user perceptions obtained from usage (Huang, 2012; Pappas et al., 2019; Parmentier & Rolland, 2009). Virtual goods can only be seen digitally and cannot be touched or function in real life. Previous studies did not consider the previous experience of using virtual goods in describing the values possessed by virtual goods in online mobile games.

A previous study by Ravoniarison & Benito (2019) explained that the desire to purchase virtual goods in online mobile games is dependent on the experience and attributes that users get from using the virtual goods in the game. However, their study does not describe what values are obtained for game users from these purchases. Another study by Hsieh & Tseng (2018) and Huang (2012) explains that the online experience strongly influences virtual goods purchase intention. The case is related to the social interaction between users on game social network sites. However, their study does not explain other values besides the increased social interaction obtained from the purchase of virtual goods. This deficiency is complemented by previous studies showing that perceived value (price, quality, emotional, and social value) influences the purchase of virtual goods (Balakrishnan & Griffiths, 2018; Chuang, 2020; Ho & Wu, 2021a; Hsu & Lin, 2015).

On the other hand, these studies do not take respondents who have bought virtual goods to describe values post-experience, but general game users who play online games. Furthermore, the studies cited above are all intent-to-purchase studies, and there are still few that compare utilitarian or hedonic purchasing categories to virtual goods in online games. Additionally, an assessment of purchasing is required to determine whether they are satisfied with the virtual goods they currently own or not, as this will significantly influence their decision to make subsequent purchases.

Not only does the current study explain the relationship between values and purchasing, but it also divides user purchasing motivation according to the values they perceive from virtual goods in online mobile games. Consistency in purchasing from users is critical in the gaming industry, as the profit pattern is based on paid virtual goods. As a result, satisfaction with virtual

goods becomes a primary criterion for determining a person's ability to engage in continuous purchasing (Choi et al., 2008; Lee et al., 2009; Lim et al., 2016; Tandon et al., 2017). Dissatisfaction with the purchased virtual goods causes someone to forego making a subsequent purchase.

Users purchasing virtual goods in online mobile games regarding the relationship between purchasing motivation distinguished from perceived values that affect user satisfaction need to be investigated further. Therefore, this study seeks to answer two things: (1) What perceived values distinguish users from hedonic and utilitarian purchasing motivations? (2) Are users with utilitarian or hedonic purchasing motivations satisfied with their paid virtual goods? With the current study, it is possible to understand users' satisfaction with purchasing paid virtual goods, which still needs many studies to explain behavior purchasing virtual goods in virtual worlds. This research also provides an overview of gamers' purchasing behavior for virtual goods based on perceived value and usefulness to online mobile game developers. It will become a concern when developing the concept of creating and improving virtual goods based on gamers' needs.

The framework for writing this paper consists of introductions to virtual goods in online mobile games, followed by a literature review that discusses perceived values, purchasing motivations, and ownership satisfaction evaluation of virtual goods. The next is the methodology and data analysis with findings and discussion of the PLS-SEM results following the structure. Furthermore, the theoretical and managerial implications accompany the results' conclusion. Finally, study limitations and improvements can be developed from this study.

2. LITERATURE REVIEW

2.1 Perceived value

Numerous definitions of value have been developed. For instance, some researchers have defined value as the consumer's overall evaluation and estimation of the product's total usefulness, which is focused on obtained and provided perceptions (Zeithaml, 1988). Another theory proposes that meaning is viewed as a single dimension (cognitive-based perception) or a composite of consumer consumption's cognitive and emotional dimensions (Karjaluoto & Leppäniemi, 2013). As a result, value can be defined as a trade-off between the benefits received in exchange for customer sacrifice (Beldona et al., 2006). According to the interpretation of the values mentioned above, the consumer perceived value describes a measure of gain and sacrifice in the technological, functional, temporal, and spatial dimensions of value (Heinonen, 2004).

The theory of consumption value (TCV) postulates that consumers place varying values on goods and influence the consumer decision to select or purchase particular products (Sheth et al., 1991). The TCV draws on various consumer behavior models and posits that various consumption principles influence consumer preference. Consumption value expectations include a range of consumer utility dimensions, including emotional value, price value, and efficiency (Sheth et al., 1991; Turel et al., 2010). The TCV further suggests that these dimensions remain independent of one another and that one's presence defines the other, but a change in one does not imply a comparable change in the other (Sheth et al., 1991). Price value, for instance, has been demonstrated to influence purchasing intention in previous studies (behavioral intention). Similarly, emotional value and price value impact willingness to pay (WTP; Rezaei & Ghodsi, 2014; Yang et al., 2009). However, another study indicates that

service quality produces a significantly more positive influence on online game satisfaction and loyalty. Game satisfaction, meanwhile, produces a beneficial influence on experience value, which comprises hedonic and utilitarian components. Furthermore, utilitarian ideals possess a clear correlation with the perceived value meanings.

Perceived value (PERVAL) is commonly considered the most effective means for identifying perceived value based on a consumer's prior experiences (Chi & Kilduff, 2011). This study is focused on Sweeney and Soutar's (2001) PERVAL, which assesses perceived importance based on four perspectives: emotion, quality, price, and social.

2.1.1 Price value

According to a previous study, the primary aspects of perceived value consist of monetary and economic value (Tseng & Chiang, 2013). Additionally, the utility obtained from reducing both short- and long-term prices is outlined as a commodity's price value (Sweeney & Soutar, 2001). Price and overall perceived value are primarily associated with online business practices that influence the behavioral intentions of individual users and consumers. According to Grace and Weaven (2011), money and price represent substantially positive predictors of customers' behavioral intentions. Furthermore, a commodity can have two primary characteristics: 1) its perceived value by customers and 2) its price (Anderson et al., 2000). For this reason, price represents a critical component of a marketing campaign, which is often accompanied by value. Therefore, we hypothesize that:

H1a: Price value has a significant relationship with utilitarian purchasing motivation.

H1b: Price value has a significant relationship with hedonic purchasing motivation.

2.1.2 Quality value

When customers become willing to purchase virtual goods, quality influences and even determines their purchase intention. In the literature, the quality value has been characterized as "utility derived from the product's perceived quality and expected efficiency" (Sweeney & Soutar, 2001). Such research generally considers how this influences behavioral intentions and satisfaction. When consumer perceptions are compared to the outcomes, however, it becomes clear that perceived value represents a mental construct (Sánchez et al., 2006), which can be calculated by measuring the customer's output and quality after purchase. The final product represents the value of the purchase and the level of expertise provided. The hypotheses formed are:

H2a: Quality value has a significant relationship with utilitarian purchasing motivation.

H2b: Quality value has a significant relationship with hedonic purchasing motivation.

2.1.3 Social value

Individuals who use the Internet for social interaction find online games extremely appealing (Huang & Hsieh, 2011). In this sense, social value is defined by "the utility derived from a product's capacity to enhance one's self-image" (Sweeney & Soutar, 2001). Individuals are believed to be linked by social communities or societies sharing nearly identical goals, purposes, and interests in a fictional universe, a world where in-game characters can have relationships and socialize with other player characters (Lo & Wen, 2010). Social interaction represents a crucial structure that stimulates online game players to be somewhat more

interactive and engaged, and it is crucial for the success of online game vendors (Lin & Lin, 2011). Beyond this, social interaction is particularly essential during pandemics. Since direct contact between people is limited, online games can meet these needs. Thus, social meaning and sociality represent important aspects of value that are believed to influence behavior. The third hypotheses in this study are:

H3a: Social value has a significant relationship with utilitarian purchasing motivation.

H3b: Social value has a significant relationship with hedonic purchasing motivation.

2.1.4 Emotional value

Emotional value is described as “a utility derived from a product’s sensation or psychological response” (Sweeney & Soutar, 2001) and constitutes “a type of consumer awareness intimately connected with uncertainty and risk perception” (Grace & Weaven, 2011). The majority of gamers choose games based on their emotional appeal. When goods or services elicit or affect emotional responses, emotional values are gained and perceived (Karjaluo & Leppäniemi, 2013). A subsequent positive or negative emotional meaning may be perceived, the values of which vary according to the type of game and the customer’s initial interpretation. As a result, emotions and thoughts heavily influence the game’s value. This study examines positive emotions regarding the users’ purchasing motivations toward virtual goods. Furthermore, the fourth hypotheses in this study are:

H4a: Emotional value has a significant relationship with utilitarian purchasing motivation.

H4b: Emotional value has a significant relationship with hedonic purchasing motivation.

2.2 Hedonic and utilitarian purchasing motivation

Motivation is the power that drives the behavioral change required to meet needs (Kumar & Yadav, 2021). In the context of a product purchase, previous studies frequently categorize motivation into 1) based on function or known as utilitarian motivation, and 2) based on pleasure or called hedonic motivation (Jungsil Choi et al., 2020). According to Ashraf et al. (2021), utilitarian consumers are “fixers”; utility-motivated and goal-oriented consumers typically carry out a well-thought-out evaluation of information and evidence during the decision-making process. Meanwhile, the hedonic consumer is a “pleasure-seeker” who pursues fantasy, entertainment, and arousal as a consideration in their decisions. These two conditions show the different standpoints of the consumer during the purchasing process, both utilitarian and hedonic.

Ashraf et al. (2021) examined perceived value as a stimulus of hedonic and utilitarian motivation using the S-O-R (Stimulus-Organism-Response) framework. Based on their in-depth literature review, they argued that perceived value is the result of the customer’s overall perception influencing shopping motivation. Meanwhile, according to other researchers, hedonic and utilitarian antecedents are highly related to purchasing intention (Cruz-cárdenas et al., 2021; Kumar & Yadav, 2021). For instance, hedonic motivation positively influences behavioral intention and is linear with utilitarianism on habit (Ashraf et al., 2021). Those previous studies examined the direct association of hedonic and utilitarian motivation. For instance, Santini & Araujo (2018) investigated how hedonic and utilitarian values influence perceived value and satisfaction. Their findings indicate that they are positively significant. In mobile online games, virtual goods are purchased to improve user in-game performance. Based on hedonic or utilitarian motivation oriented on enjoyment and function, they will encourage

users to increase their satisfaction with virtual goods after they get their values. Then the fifth and sixth hypotheses are formed:

H5: Users with utilitarian motivation have a significant relationship with ownership satisfaction when purchasing virtual goods.

H6: Users with hedonic motivation have a significant relationship with ownership satisfaction when purchasing virtual goods.

2.3 Perceived ease of purchase

Situational factors influence purchasing decisions, including perceived ease of purchase (Hesham et al., 2021). In the context of behavioral intention toward virtual goods in online mobile games, perceived ease of purchase refers to understandability and ease of use. Furthermore, perceived ease of use is defined as “the extent to which the individual believes it would also be effort-free to have a certain system,” indicating the individual’s level of trust that using a specific system does not require a great deal of effort (Andy et al., 2021). The free effort represents the primary key to defining this factor as related to personal acceptance and the ease of using the system (in technology) over another (Huseynov & Dhahak, 2020). The purchasing context leads to easy purchases that can increase consumers’ preference for specific items if presented visibly, and payments are easy to access (Huffman & Kahn, 1998). Therefore, the purchasing payment process of virtual goods in the online mobile game should be straightforward, understandable to use, and free from effort, thus enabling an individual to complete the purchasing process more accessibly. The seventh hypothesis in this study is:

H7: Perceived ease of purchase has a significant relationship with the ownership satisfaction of virtual goods.

2.4 Ownership satisfaction

The role of ownership satisfaction has a strong implication on purchase behavior; as such, ownership satisfaction needs must be discussed to strengthen the results of previous research (Homburg & Rudolph, 2001). Two measurement models can be used to ascertain consumer satisfaction with virtual goods in online games: First, using the evaluation model, consumers measure the overall virtual goods offered according to the performance and benefits compared to the effort spent. Second, with the expectancy-disconfirmation model, which measures satisfaction, the consumer compares the state he/she feels before and after using the product (Oliver, 1980).

In theory, if customers are pleased with a product, they are more likely to make a subsequent purchase or use it. If customers are unhappy with a product or service, they may look for other options, such as competitors who offer the same product or an alternative variety (Bearden & Teel, 1983; Cronin & Taylor, 1992; Oliver, 1980).

The first implication of satisfaction in online mobile games consists of increased experience in online games (Park & Lee, 2011). In online games, users interact with other users directly or indirectly. Furthermore, online game users see the game characters being played as possessing better abilities or strengths than other users (functional props) or possessing a different character appearance from others (decorative props; Lehdonvirta, 2009). When users have assessed that a virtual product can increase their interaction, they play online games more often. In such

cases, individuals are pleased with the utility of the digital products and may express a desire to make the next purchase.

3. METHODOLOGY

3.1 Data collection

This research was conducted by distributing online questionnaires in August 2021. The questionnaires were distributed using the snowballing method. Questionnaire links were given to several students from universities in Bandung who played online mobile games and asked them to share the questionnaire with their groups, friends playing online games, or social media. In filling out this questionnaire, there are two questions to verify the selection of respondents according to the criteria for the research respondents. The first question is the genre of the online game being played and the description of the game's name. Then, the second question contains whether the respondent has bought virtual goods or never.

From hundred ninety-four responses obtained, which meet the criteria and have been screened for valid data, there are 321 responses finally used as data for this study. The questionnaire that was created is divided into three sections. The first section addresses the issue of verification and respondent selection. The following section contains a response question for each of the research constructs. The final section contains demographic data about the respondents. To protect the respondents' data, each respondent is classified as anonymous.

3.2 Data analysis

Two statistical measurement methods were used in conducting data analysis: Principal Component Analysis (PCA) and Partial Least Squares Structural Equation Modeling (PLS-SEM). PCA is a technique for lowering the dimensionality of such datasets, boosting their interpretability, while minimizing information loss. This is accomplished by increasing the variance of uncorrelated variables (Jolliffe et al., 2016). The use of PCA to reduce multicollinearity prior to PLS-SEM testing. Prior to PLS-SEM testing, PCA is used to reduce multicollinearity. Thus, the indicators in each construct can accurately represent their respective constructs while remaining unaffected by the indicators in the other constructs. As a result, a new construct and hypothesis are formed.

Following that, PLS-SEM analysis was used to assess the revised PCA hypothesis. There are several advantages in combining SEM and the PLS approach. First, PLS-SEM is not constrained by these tight distributional assumptions; it is frequently a more viable technique than CB-SEM (Hair et al., 2014). Another significant advantage of PLS-SEM is that it enables formative measurements that are qualitatively distinct from reflecting measures (Hair et al., 2014). Formatively assessed constructs are especially advantageous for research seeking to explain and predict crucial dimensions such as competitive advantage or business success (Albers, 2010). Additionally, the partial least squares statistical technique may accommodate a large number of independent variables, even if they are multicollinear (Ramzan & Khan, 2010). This study was conducted using the IBM SPSS 26 and SmartPLS 3.0.

3.3 Measurement

To explain the seven constructs in this study, 34 measurement indicators were used (see Table 1). The indicators used in this study are based on previous research that discusses the topic of behavioral purchasing, although the context is different from this research. The following section will analyze these temporary structures using the method of principal component analysis (PCA). Each question was evaluated using seven-point Likert scales ranging from one (strongly disagree) to seven (strongly agree).

Table 1. Measurement items

Code	Items	Loadings
Functional value (Fan et al., 2012; Ho & Wu, 2012) (AVE = 0.676; CR = 0.943; Cronbach's Alpha = 0.931)		
PV 1	Virtual goods in-game online is an excellent virtual product, given the price.	0.823
PV 2	The prices of virtual goods in-game online are reasonable	0.801
PV 3	The virtual goods in-game online offer value for money spent.	0.849
PV 4	The virtual goods offered in-game online are considered affordable in terms of price.	0.675
QV 1	The virtual goods in-game online have an acceptable standard of quality.	0.872
QV 2	The virtual goods in-game online are reliable in their performance.	0.829
QV 3	The virtual goods in-game online are good in terms of their overall excellence	0.852
QV 4	The virtual goods in-game online possess a degree of quality that is satisfactory	0.858
Emotional value (Wu et al., 2008) (AVE = 0.770; CR = 0.930; Cronbach's Alpha = 0.900)		
EV 1	When I purchase virtual goods in-game, I more enjoy the game.	0.882
EV 2	When I purchase the virtual goods in the game, I find the game more exciting.	0.905
EV 3	Purchasing virtual goods in a game is interesting to me.	0.894
EV 4	Purchasing the features of virtual goods in-game here stimulates my curiosity.	0.827
Social value (Hsieh & Tseng, 2018) (AVE = 0.777; CR = 0.933; Cronbach's Alpha = 0.904)		
SV 1	Purchasing virtual goods in-game online better enables me to form interpersonal bonds with others.	0.895
SV 2	Purchasing virtual goods in-game online helps me maintain my social relationships with others.	0.912
SV 3	Purchasing virtual goods in-game online helps me make new friends.	0.897
SV 4	Popular game items on social network sites increasing me to purchase virtual goods	0.820
Hedonic purchasing motivation (To et al., 2007) (AVE = 0.759; CR = 0.940; Cronbach's Alpha = 0.919)		
HM 1	I think purchasing virtual goods makes me: Feel Fun / not fun	0.903
HM 2	I think purchasing virtual goods makes me: Exciting/dull	0.859
HM 3	I think purchasing virtual goods makes me: Feel Delightful / not	0.910

Code	Items	Loadings
	delightful	
HM 4	I think purchasing virtual goods makes me: Thrilling / not thrilling	0.759
HM 5	I think purchasing virtual goods makes me: Enjoyable/unenjoyable	0.914
Utilitarian purchasing motivation (To et al., 2007) (AVE = 0.690; CR = 0.918; Cronbach's Alpha = 0.888)		
UM 1	I think purchasing virtual goods: Effective / ineffective	0.836
UM 2	I think purchasing virtual goods: Helpful/unhelpful	0.864
UM 3	I think purchasing virtual goods: Functional/ Not functional	0.861
UM 4	I think purchasing virtual goods: Necessary / unnecessary	0.774
UM 5	I think purchasing virtual goods: Practical/impractical	0.816
Perceived ease of purchase (Verkuyl et al., 2018) (AVE = 0.791; CR = 0.950; Cronbach's Alpha =0.933)		
PE 1	It was easy to learn how to purchase virtual goods through mobile game	0.874
PE 2	The text information presented on the screen when purchasing the virtual mobile game was clear	0.933
PE 3	The text information presented on the screen when purchasing the virtual mobile game was easy to read	0.924
PE 4	The visual quality when purchasing the virtual mobile game was good	0.894
PE 5	I did not have any technical problems when purchasing virtual goods or mobile game	0.815
Ownership satisfaction (Hsu & Lin, 2015) (AVE = 0.883; CR = 0.958; Cronbach's Alpha =0.934)		
SF 1	Purchasing virtual goods online game makes me feel delighted	0.928
SF 2	Purchasing virtual goods online game gives me a sense of enjoyment	0.955
SF 3	Purchasing virtual goods online game makes me feel very contented	0.935

Source: authors' own conception

In using this measurement construct in the questionnaire, translation is carried out from English to Indonesian. Due to the data collection location, the primary language used is Indonesian. Before the questionnaire was distributed, a pilot test was conducted to validate the measurements used to test with a larger number of samples. We asked these 33 previous respondents to evaluate the questionnaire's content, format, readability, logical incoherencies, item sequence, and contextual relevance. The pilot test results indicated that Cronbach's alpha was greater than 0.7 and loadings were greater than 0.5 for each construction, indicating that each item was accepted.

4. FINDINGS AND DISCUSSION

4.1 Principal component analysis

The principal component analysis (PCA) comprises a statistical method that converts the original variable into a smaller set of variables. There is no correlation between variables and can represent information from the original variables (Dunteman, 1989). Applying PCA in research determines which variables in the group possess a relationship in forming variables (Tabachnick & Fidell, 2019). The purpose of PCA in this study is to summarize the pattern of correlation between the observed variables (Umar, 2009).

This study performs PCA analysis using SPSS-26 software to analyze the variables in the created model. The Bartlett improved approach extracted customer perceived value (price, quality, emotional, and social value) toward purchasing motivation of virtual goods (Bartlett, 1937). This method was chosen because it generates unbiased estimates of accurate factor scores with a mean of zero and a standard deviation (Belgiawan et al., 2016). We analyze the perceived value which consists of price value, quality value, emotional value, and social value (Table 2). The analysis results revealed no eliminated indicators, with the lowest component value being the quality value of three indicators with a score of 0.639, which is still included to inform the customer value perception dimension.

Table 2. PCA result rotated component matrix perception value

Code	Component		
	1	2	3
PV_2	.851		
PV_3	.819		
PV_1	.814		
QV_1	.735		
PV_4	.722		
QV_4	.645	.509	
QV_2	.641		
QV_3	.639		
EV_2		.867	
EV_1		.839	
EV_3		.762	
EV_4		.648	
SV_2			.887
SV_3			.861
SV_1			.840
SV_4			.710

Source: authors' own conception

In Table 2, three variables' dimensions are formed based on the results of the PCA statistical test. The first dimension in component model one—indicators one to four of price and quality value—forms the same dimension. Because the number of forming indicators is the same, the dimension is used as a new value—namely, functional value (Sheth et al., 1991). The functional value is gained by an alternate potential for efficient, practical, or physical efficiency. An alternative acquires functional merit by possessing useful, practical, or physical qualities. The profile of the optional attributes calculates the available meaning (Sheth et al., 1991). Following this, other factors can represent their respective factors. The following lists the new hypotheses we developed for this study:

H1a: Functional value has a significant relationship with utilitarian motivation.

H1b: Functional value has a significant relationship with hedonic motivation.

H2a: Emotional value has a significant relationship with hedonic motivation.

H2b: Emotional value has a significant relationship with utilitarian motivation.

H3a: Social value has a significant relationship with utilitarian motivation.

H3b: Social value has a significant relationship with hedonic motivation.

H4: Users with utilitarian motivation have a significant relationship with ownership satisfaction when purchasing virtual goods.

H5: Users with hedonic motivation have a significant relationship with ownership satisfaction when purchasing virtual goods.

H6: Perceived ease of purchase has a significant relationship with ownership satisfaction of virtual goods.

It should be emphasized that the combination of factors also changes the numbering of hypotheses in the previous. The numbering of hypotheses in the PLS-SEM analysis section uses the PCA model results. Therefore, Figure 1 represents the final models for gamers purchasing motivation and overall satisfaction with virtual goods.

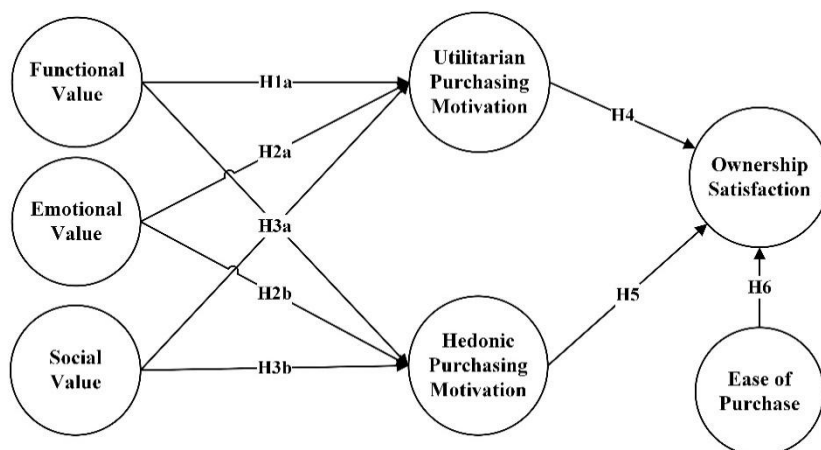


Figure 1. Revised conceptual framework based on PCA results
Source: authors' own conception

4.2 Descriptive analysis

According to a descriptive statistical analysis of 321 respondents, the respondents are between 21 and 25 years old (41.51%). Meanwhile, in terms of gender, most of the filled-out presentations were male (72.01%). The respondents are students based on the division of occupations (72.01%). As for income, because most of the respondents are still students, most of them have an income of no more than IDR 5,000,000 (87.11%). Furthermore, when looking at the distribution of respondents based on online mobile games played, most of them are MOBA genre players (24.16%), Battle Royale (18.27%), and the third largest is RTS (11.52%). This number appears to be more than the number of respondents because the questionnaire may choose more than one genre of online mobile games to be played.

4.3 Measurement model PLS-SEM

In measuring statistical modelling in PLS-SEM, three measurements are taken: internal consistency, convergent validity, and discriminant validity, to state that the model is robust (Hair et al., 2017). Internal consistency consists of Cronbach Alpha and Composite Reality (CR) measurements of the reliability of the data used. Based on Hair et al. (2019) criteria, the required CR value for explanatory research is 0.70 to 0.95. Based on table 1, it is found that the CR for each factor is above 0.90. Then, for Cronbach Alpha, the value is said to have reliable reliability and exceeds the recommended threshold if it is greater than 0.7 (Eisingerich & Rubera, 2010). The results of statistical testing show that all constructs meet the minimum Cronbach alpha, with the smallest value being 0.88. Therefore, it can be said with internal consistency that the measurement used is reliable.

Furthermore, measurements of convergent validity were carried out, which consisted of measuring the factor loadings of each questionnaire indicator and the Average Variance Extracted (AVE). Convergent validity aims to determine the validity of each relationship between the indicator and its latent construct or variable. According to Awang et al. (2015), the minimum value of the loading factor is 0.6 for established items. The factor loadings of each indicator meet these criteria, with the lowest value at 0.675. The subsequent measurement is AVE as the grand mean value of the squared loadings of the indicators. The minimum score that must be achieved is greater than 0.5 (Hair 2019). From the results of the statistical testing, the AVE value exceeds the minimum criteria, with the lowest value of 0.676. Therefore, convergent validity meets all the criteria.

The last measurement model that was carried out was discriminant validity. According to Hair et al. (2019), Discriminant Validity is measured based on how much it correlates with other constructs in the theoretical model, compared to how many indicators represent only a single construct associated with the construct. The Heterotrait-Monotrait (HTMT) value quantifies discriminant validity in variance-based structural equation modelling (Henseler et al., 2015), with a cutoff of HTMT 0.90. From the results of the HTMT measurement in Table 3, none of them crossed the limit, with the most considerable value of 0.861. Therefore, the model and measurement of the questionnaire used have met the validity and reliability criteria.

Table 3. Discriminant validity Heterotrait-Monotrait ratio (HTMT)

Variables		1	2	3	4	5	6	7
1	Emotional Value							
2	Functional Value	0.686						
3	Hedonic Motivation	0.844	0.616					
4	Ownership Satisfaction	0.804	0.62	0.926				
5	Perceived Ease of Purchase	0.728	0.632	0.763	0.715			
6	Social Value	0.59	0.564	0.508	0.508	0.419		
7	Utilitarian Motivation	0.722	0.724	0.708	0.677	0.673	0.654	

Source: authors' own conception

4.4 Structure model PLS-SEM

The next stage in the PLS-SEM modelling is to evaluate the research model. There are at least four evaluations carried out, coefficient of determination (R^2), Predictive Relevance (Q^2), effect size (f^2), and significance of path coefficients in measuring the statistical results of the tested hypothesis. In PLS-SEM, testing is done by using the PLS-Algorithm to get the value of R^2 and f^2 . To get Q^2 , blindfolding data processing was carried out. Meanwhile, for testing the path coefficients, bootstrapping was performed with a sub-sample of 5000, with a confidence level of 0.05.

The first test was conducted to measure R^2 and Q^2 . According to Hair et al. (2019), the R^2 value represents the amount of variance explained by endogenous latent variables in a structural model. The structural model's latent variables explain that the greater the R^2 value, the better the construct is explained. In Table 4, each construct has an R^2 score of more than 0.5, which means that more than half of the mentioned variance dependent variables are explained by independent variables in the model. Furthermore, the calculation of Q^2 to test prediction relevance in the model is performed. Q^2 values above zero indicated that values are well reconstructed and that the model has predictive relevance (Henseler et al., 2009). In Table 4,

each construct has a Q^2 value above 0.35, which indicates that the model achieves predictive relevance for these constructs.

Table 4. Adjusted R squared, Q squared

Variables	Adjusted R Squared	Q Squared
Hedonic Shopping Motivations	0.611	0.457
Ownership Satisfaction	0.753	0.657
Utilitarian Shopping Motivations	0.568	0.387

Furthermore, measurements of the effect size (f^2) were carried out to assess the relative impact of a predictor construct on an endogenous construct. Hair et al. (2019) defined f^2 values of 0.02, 0.15, and 0.35 as indicating modest, medium, and significant effects. Table 6 shows the value of f^2 for each hypothetical relationship made. In addition, the results of the path coefficient (Table 5) consisting of t statistic and p-value are also shown to measure the significance of the relationship and standardized β to measure the significance values of the relationship between independent variables in the dependent variable.

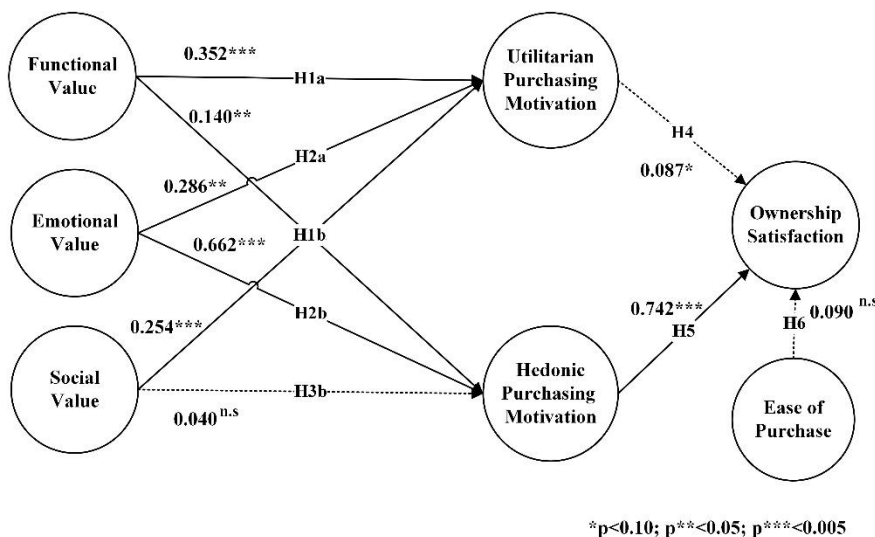


Figure 2. PLS-SEM model results

Source: authors' own conception

Table 5. Path coefficient

Hypothesis/Relationship	β	t	p-value	f^2	Supported
H1a Functional Value → Utilitarian Motivation	0.352	6.902	0	0.157	Yes
H1b Functional Value → Hedonic Motivation	0.14	2.734	0.006	0.027	Yes
H2a Emotional Value → Utilitarian Motivation	0.286	4.886	0	0.101	Yes
H2b Emotional Value → Hedonic Motivation	0.662	14.122	0	0.604	Yes

Hypothesis/Relationship		β	t	<i>p-value</i>	f^2	Supported
H3a	Social Value → Utilitarian Purchasing Motivation	0.254	4.677	0	0.099	Yes
H3b	Social Value → Hedonic Purchasing Motivation	0.04	0.833	0.405	0.003	No
H4	Utilitarian Purchasing Motivation → Ownership Satisfaction	0.087	1.883	0.06	0.016	No
H5	Hedonic Purchasing Motivation → Ownership Satisfaction	0.742	14.331	0	0.959	Yes
H6	Perceived Ease of Purchase → Ownership Satisfaction	0.09	1.577	0.115	0.015	No

Source: the authors

The path coefficient results indicated the relationship between functional value and users' purchasing motivation. For users with utilitarian purchasing motivation, there is a significant relationship with the functional value (**H1a**: $\beta = 0.352$, $t = 6.902$, $f^2 = 0.157$, $p\text{-value} = 0.00$). Meanwhile, users with a hedonic purchasing motivation also demonstrated a significant relationship with the stimulus functional value in virtual goods (**H1b**: $\beta = 0.140$, $t = 2.734$, $f^2 = 0.027$, $p\text{-value} = 0.006$). Regarding the next result for emotional value in virtual goods, a significant relationship was found for users with utilitarian purchasing motivation (**H2a**: $\beta = 0.286$, $t = 4.886$, $f^2 = 0.101$, $p\text{-value} = 0.000$) and hedonic purchasing motivation (**H2b**: $\beta = 0.662$, $t = 14.112$, $f^2 = 0.604$, $p\text{-value} = 0.000$). Regarding social value, a significant relationship for users with utilitarian purchasing motivation (**H3a**: $\beta = 0.254$, $t = 4.677$, $f^2 = 0.099$, $p\text{-value} = 0.000$). Meanwhile, users with hedonic purchasing motivation demonstrated that there is no significant relationship with the social value stimulus in virtual goods (**H3b**: $\beta = 0.04$, $t = 0.833$, $f^2 = 0.003$, $p\text{-value} = 0.405$).

Users who have purchased virtual goods in online mobile games, which in this study belong to the in-app purchasing category, are divided into two categories, hedonic and utilitarian purchasing motivation. This difference is based on the user's perception of the use-value of virtual goods in the past experienced purchasing. Users with utilitarian motivation value perception towards virtual goods can provide functional, emotional, and social uses. Otherwise, users with hedonic motivations perceive virtual goods to function functionally and emotionally. From the results of this modelling, the differentiator that significantly distinguishes hedonic and utilitarian users is social value. Although functionally and emotionally significant values affect utilitarian and hedonic users for purchasing motivations, the significance level of the influence of values on each user can be seen in the difference with the standardized β value.

Functional values have more influence on users with utilitarian purchasing motivations ($\beta = 0.352$) compared to users with hedonic purchasing motivations ($\beta = 0.140$). On the other hand, emotional values have more influence on users of hedonic purchasing motivations ($\beta = 0.662$) compared to utilitarian purchasing motivations ($\beta = 0.087$). The difference in the significant value of this effect also distinguishes the values that affect the purchasing motivations of utilitarian and hedonic users.

For online mobile game users driven by utilitarian motivation, their perception of virtual goods is influenced by functional, emotional, and social values. Increasing the beneficial perception of functional value (price and quality) means that this value leads to the price and quality of the virtual goods offered to be equal to the money spent by the user (value for money) and the

virtual goods quality meeting the minimum performance standards of the game characters being played. These results support previous research, which states that utilitarian motivation users of the multiplayer online battle arena (MOBA) game purchase virtual goods to accelerate character progress, perform main functions in the game with features or items, and pay to keep playing (functional value; Marder et al., 2019). Furthermore, previous research has explained that users with utilitarian motivation are stimulated by attributes of goods that prioritize optimal cost, convenience, and accessibility (functional value; Qing & Haiying, 2021).

For utilitarian motivation, these emotional values are influential because there is a correlation between purchasing virtual goods, helping them improve the progress of the characters in the game, and indirectly making them more enjoyable and exciting about the online mobile games they play. However, utilitarian users consider virtual goods to provide values as items that increase character abilities or assist users in solving obstacles in games (Lehdonvirta, 2009).

Furthermore, social values that lead to virtual goods can create social interactions that encourage online game users to interact more and engage with actors (users and virtual users). Meanwhile, the perception of virtual goods as beneficial media (for socialization with actors) will trigger users to repurchase virtual goods. Isomursu et al. (2007) stated that enjoyment and other pleasurable emotions could be formed through social interaction between online mobile game users. It encompasses a range of communication media, most notably the interactivity of entertainment content (Davis, 2010). Social values subsequently influence purchase intentions for utilitarian motivations by assigning a social value to interactions with like-minded users, resulting in group affiliations (Chiu et al., 2014).

For users with hedonic motivation, their perception of virtual goods provides values in the form of functional and emotional values. However, the influence of functional values is more influential on users with utilitarian purchasing motivations than on hedonic purchasing motivations. Although hedonic users perceive virtual goods purchases as increasing enjoyment and emotional satisfaction, they still perceive that virtual goods also have functional value by impacting the progress of their characters in the game (Lehdonvirta, 2009). At the same time, considering the price and quality of the virtual goods purchases made, in the sense that the virtual goods they buy are considered to be under the quality of the virtual goods received.

Furthermore, users' hedonic purchasing motivations want increased enjoyment (emotional value) from the virtual goods. In this case, the previous condition consists of the feelings that all other players can obtain. However, users can add more enjoyment conditions by purchasing certain virtual goods. Furthermore, virtual goods can also add more excitement to online mobile games than other players. The results of this study strengthen the research conducted by Shi et al. (2016), which relates the emotional value stimulus to the behavioral intention response. For instance, in the online mobile game Pokémon-Go, Thongmak (2020) stated that emotional and functional values represent crucial stimuli shaping behavioral intention.

The subsequent analysis of the model concerned the relationship between users' hedonic and utilitarian purchasing motivation toward ownership satisfaction of virtual goods. The results indicate that the significance of the relationship between ownership satisfaction paid virtual goods is not significant for users with utilitarian purchasing motivation (**H4**: $\beta = 0.087$, $t = 1.883$, $f^2 = 0.016$, $p\text{-value} = 0.060$), while for hedonic motivation there is a significant relationship to ownership satisfaction (**H5**: $\beta = 0.742$, $t = 14.331$, $f^2 = 0.959$, $p\text{-value} = 0.000$).

This study corroborates the study findings of Marder et al. (2019) that classified purchasers of non-functional virtual goods in free-to-play games into utilitarian, social, and hedonic motivations, with additional subcategories for the item or dominant payment. The current study explains that although perceived values influence purchase motivation from purchases, only users with hedonic purchasing motivations affect the satisfaction of ownership of paid virtual goods. This study resembles previous digital studies, which indicated that customer experiences such as pleasure and value could influence the purchase intention of users of hedonic motivation (Akram et al., 2021; To et al., 2007).

This result demonstrates that the virtual goods sales model, primarily concerned with influencing users' emotions rather than with functional use in games, affects user purchase satisfaction. This level of satisfaction with paid virtual goods results from an evaluation of the process of purchasing and using virtual goods in online mobile games. Satisfaction with the virtual goods experience affects the user's decision to continue purchasing and playing. This study reinforces previous research on digital ownership satisfaction, an important indicator in user decisions to continue purchases (Pee et al., 2018; Trivedi & Yadav, 2020). Similarly, previous research also stated that hedonic and utilitarian motivated purchasing influence ownership satisfaction (Herpen et al., 2002; Hsiao et al., 2016) regarding spending on digital products. The digital products relate to virtual goods in the game context, so our results support previous research. The final analysis concerns the relationship between perceived ease of purchase and ownership satisfaction of virtual goods. The findings indicate that the perceived ease of purchase has no significant effect on owner satisfaction. (**H6**: $\beta = 0.090$, $t = 1.577$, $f^2 = 0.015$, $p\text{-value} = 0.115$). The insignificance of the ease of purchasing shows that the ease of flow of virtual goods transactions with real money is not a consideration for evaluation satisfaction for purchasing virtual goods. This result explains that users are motivated to purchase virtual goods more for the experience and values given to users and characters in the game, not from payment operations that satisfy users.

5. CONCLUSION

The study's findings include perceptions of the value contained in virtual goods and categories of user motivation to purchase. Users who purchase virtual goods in online mobile games can be classified as hedonic or utilitarian, with the distinction being the perceived values associated with post-experience virtual goods purchases. Users motivated by utilitarian values are influenced by the functional value (quality and price), emotional value, and social value. Meanwhile, the functional and emotional values stimulate users' hedonic purchasing motivation. Moreover, only users who engage in hedonic purchasing are satisfied with the virtual goods they receive. Additionally, the technical ease of purchase does not affect users' satisfaction when purchasing virtual goods. However, satisfaction occurs due to the user's emotional response to the online mobile game being played, influenced by the perceived values of virtual goods and purchases.

5.1 Theoretical implications

Previous studies have explained that online games' purchase of virtual goods is influenced by perceived values (price, quality, social, and hedonic) (Balakrishnan & Griffiths, 2018; Chuang, 2020; Ho & Wu; Hsu & Lin, 2015). This study seeks to further assess perceived values by dividing virtual goods values based on hedonic or utilitarian purchasing motivations, which previous studies have not explored. So that we get a clearer picture of the user's characteristics and what values influence him to be satisfied with purchasing virtual goods. Furthermore, this

study describes the virtual goods values by considering users who have already purchased them. Virtual goods include intangible goods so that in describing values, post-experience is needed both in terms of use and purchase. Thus, the results theoretically describe values more precisely because it assesses users who have received the post-experience.

5.2 Managerial implications

The recommendations from this study can be divided into two categories: users with utilitarian and hedonic purchasing motivations to intend their satisfaction towards virtual goods in online mobile games. For users driven by utilitarian motivation, game developers are recommended to create virtual goods to increase user competitiveness with players who have played longer or help increase game progress quickly. Additionally, developers could host promotional events where users can obtain free items or a gratuity discount in the game by inviting friends who have not played in a long time or by adding new friends (social value). It can be complemented by providing in-game items with minimal designs and prices that are easier to reach, but possess almost the same functions. For example, this can include character rarity skins ranging from regular to rare, and ranking in-game functions according to ability (functional value).

Meanwhile, for users driven by hedonic motivation, we recommend that online mobile game developers design virtual goods in such a way as to increase the fun and excitement experienced by players in the game, such as by making the game items more personal. Emotional value can also be obtained by making items aesthetically attractive in the game and having meaning when the condition of players and characters is growing. Different experiences with users who do not purchase virtual goods are crucial for hedonic purchasing motivations. Therefore, developers are recommended to provide in-game items that can increase enjoyment compared to users who do not possess these items. For example, this can be achieved by holding a limited game item event featuring rare virtual goods that can only be purchased at that time.

6. LIMITATIONS AND FURTHER RESEARCH

This study has some limitations, and further research is needed to develop theory and results. First, this study only describes the general values of virtual goods purchases. Meanwhile, virtual goods can be perceived based on experience from previous purchases and uses. Further research can add in-game experience from purchasing virtual goods, such as the experience obtained in the virtual world after purchasing virtual goods. Second, this study discusses the purchasing behavior of online mobile game users in general, not specific game genres. Further research can use the model in this study to be explicitly discussed in certain genre games or on specific playing devices. Finally, this study discusses things that affect satisfaction based on internal evaluations from users and input from perceived experiences in buying and using virtual goods in online mobile games. Further studies can expand the topic of this study by analyzing input from the external environment or the influence of outside information that affects a user's purchasing behavior towards virtual goods.

REFERENCES

- Adjoe Company. (2021). *Mobile Game Index 2021*. <https://adjoe.io/app/uploads/2021/11/adjoe-statista-Mobile-Games-Index.pdf>
- Akram, U., Junaid, M., Zafar, A. U., Li, Z., & Fan, M. (2021). Online purchase intention in Chinese social commerce platforms: Being emotional or rational? *Journal of Retailing and Consumer Services*, 63(May), 102669. <https://doi.org/10.1016/j.jretconser.2021.102669>

- Albers, S. (2010). *PLS and Success Factor Studies in Marketing*. Springer Berlin Heidelberg.
- Anderson, J. C., Thomson, J. B. L., & Wynstra, F. (2000). Combining value and price to make purchase decisions in business markets. *International Journal of Research in Marketing*, 17(4), 307–329. [https://doi.org/10.1016/s0167-8116\(00\)00029-x](https://doi.org/10.1016/s0167-8116(00)00029-x)
- Andy, R., Dewi, A. C., & As'adi, M. (2021). An Empirical Study to Validate The Technology Acceptance Model (TAM) In Evaluating “Desa Digital” Applications. *IOP Conference Series: Materials Science and Engineering*, 1125(1), 012055. <https://doi.org/10.1088/1757-899x/1125/1/012055>
- Ashraf, A. R., Thongpapanl Tek, N., Anwar, A., Lapa, L., & Venkatesh, V. (2021). Perceived values and motivations influencing m-commerce use: A nine-country comparative study. *International Journal of Information Management*, 59(April 2020), 102318. <https://doi.org/10.1016/j.ijinfomgt.2021.102318>
- Atkinson, T. (2009). *Teaching & Learning in Second Life*. in Society for Information Technology & Teacher Education International Conference, Volume: 2009, 1354-1358.
- Awang, Z., Afthanorhan, A., Mohamad, M., & Asri, M. A. M. (2015). An evaluation of measurement model for medical tourism research: The confirmatory factor analysis approach. *International Journal of Tourism Policy*, 6(1), 29-45. <https://doi.org/10.1504/IJTP.2015.075141>
- Badan Ekonomi Kreatif (BEKRAF) Indonesia. (2018). *Opus Creative Economy Outlook*.
- Balakrishnan, J., & Griffiths, M. D. (2018). Loyalty towards online games, gaming addiction, and purchase intention towards online mobile in-game features. *Computers in Human Behavior*, 87(February), 238–246. <https://doi.org/10.1016/j.chb.2018.06.002>
- Bartlett, M. S. (1937). Properties of Sufficiency and Statistical Tests. *Proceedings of the Royal Society of London. Series A, Mathematical and Physical Sciences*, 160(901), 268-282. <http://www.jstor.org/stable/96803>
- Bearden, W. O., & Teel, J. E. (1983). Selected determinants of consumer satisfaction and complaint reports. *Journal of Marketing Research*, 20(1), 21-28. <https://doi.org/10.2307/3151408>
- Beldona, S., So, S. I., & Morrison, A. (2006). Trade-off analysis of perceived customer value: The case of a travel vacation club. *Journal of Hospitality and Leisure Marketing*, 14(3), 65–80. https://doi.org/10.1300/J150v14n03_06
- Belgiawan, P. F., Schmöcker, J., & Fujii, S. (2016). *Understanding car ownership motivations among Indonesian students*. 8318(March). <https://doi.org/10.1080/15568318.2014.921846>
- Chi, T., & Kilduff, P. P. D. (2011). Understanding consumer perceived value of casual sportswear: An empirical study. *Journal of Retailing and Consumer Services*, 18(5), 422–429. <https://doi.org/10.1016/j.jretconser.2011.06.004>
- Chiu, C.-M., Wang, E. T. G., Fang, Y.-H., & Huang, H.-Y. (2014). Understanding Customers' Repeat Purchase Intentions in B2C e-Commerce: The Roles of Utilitarian Value, Hedonic Value and Perceived Risk. *Info. Sys. Jour.*, 24(1), 85-114. <https://doi.org/10.1111/j.1365-2575.2012.00407.x>
- Choi, Jeewon, Seol, H., Lee, S., Cho, H., & Park, Y. (2008). Customer satisfaction factors of mobile commerce in Korea. *Internet Research*, 18(3), 313-335. <https://doi.org/10.1108/10662240810883335>
- Choi, Jungsil, Madhavaram, S. R., & Young, H. (2020). The Role of Hedonic and Utilitarian Motives on the Effectiveness of Partitioned Pricing. *Journal of Retailing*, 96(2), 251-265. <https://doi.org/10.1016/j.jretai.2019.10.003>
- Chuang, Y.-W. (2020). Why do you buy digital goods in the mobile game? The value perspective. *Advances in Management & Applied Economics*, 10(1), 1792-7552. <https://search.proquest.com/docview/2311896462?accountid=17225>

- Cronin, J. J., & Taylor, S. A. (1992). Measuring Service Quality: A Reexamination and Extension. *Journal of Marketing*, 56(3), 55–68. <https://doi.org/10.2307/1252296>
- Cruz-cárdenas, J., Guadalupe-ianas, J., & Ramos-galarza, C. (2021). Drivers of technology readiness and motivations for consumption in explaining the tendency of consumers to use technology-based services. *Journal of Business Research*, 122(August 2020), 217-225. <https://doi.org/10.1016/j.jbusres.2020.08.054>
- Davis, R. (2010). Conceptualizing fun in mobile commerce environments. *International Journal of Mobile Communications*, 8(1), 21-40. <https://doi.org/10.1504/IJMC.2010.030518>
- Drennan, P., & Keeffe, D. A. (2007). Virtual Consumption: Using Player Types to Explore Virtual Consumer Behavior. In L. Ma, M. Rauterberg, & R. Nakatsu (Eds.), *Entertainment Computing -- ICEC 2007* (pp. 466–469). Springer Berlin Heidelberg.
- Dunteman, G. (1989). *Principal Components Analysis*. <https://doi.org/10.4135/9781412985475>
- Eisingerich, A. B., & Rubera, G. (2010). Drivers of brand commitment: A cross-national investigation. *Journal of International Marketing*, 18(2), 64-79. <https://doi.org/10.1509/jimk.18.2.64>
- Fan, L., Gu, J., Suh, Y., & Lee, S. (2012). How to attract Chinese online game users. *Asian Journal on Quality*, 13(1), 7–21. <https://doi.org/10.1108/15982681211237798>
- Grace, D., & Weaven, S. (2011). An Empirical Analysis of Franchisee Value-in-Use, Investment Risk and Relational Satisfaction. *Journal of Retailing*, 87(3), 366-380. <https://doi.org/10.1016/j.jretai.2010.06.001>
- Hair, Joe F, Hopkins, L., Georgia, M., & College, S. (2014). Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research. *European Business Review*, 26(2), 106-121. <https://doi.org/10.1108/EBR-10-2013-0128>
- Hair, Joseph F., Hult, G. T., Ringle, C., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) - Joseph F. Hair, Jr., G. Tomas M. Hult, Christian Ringle, Marko Sarstedt. In *Sage* (Second Edi). SAGE Publications Inc.
- Hamari, J., Alha, K., Järvelä, S., Kivikangas, J. M., Koivisto, J., & Paavilainen, J. (2017). Why do players buy in-game content? An empirical study on concrete purchase motivations. *Computers in Human Behavior*, 68, 538–546. <https://doi.org/10.1016/j.chb.2016.11.045>
- Hamari, J., & Keronen, L. (2017). Why do people buy virtual goods: A meta-analysis. *Computers in Human Behavior*, 71, 59–69. <https://doi.org/10.1016/j.chb.2017.01.042>
- Heinonen, K. (2004). Reconceptualizing customer perceived value: The value of time and place. *Managing Service Quality: An International Journal*, 14, 205-215. <https://doi.org/10.1108/09604520410528626>
- Henseler, Jörg, Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Henseler, Jorg, Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, 20, 277-319. [https://doi.org/10.1108/S1474-7979\(2009\)0000020014](https://doi.org/10.1108/S1474-7979(2009)0000020014)
- Herpen, E. Van, Pieters, R., Herpen, E. Van, & Pieters, R. (2002). The Variety of an Assortment : An Extension to the The Variety of an Assortment : An Extension to the Attribute-Based Approach. *Marketing Science*, 21(2002), 331-331. <https://doi.org/10.1287/mksc.21.3.331.144>
- Hesham, F., Riadh, H., & Sihem, N. K. (2021). What have we learned about the effects of the covid-19 pandemic on consumer behavior? *Sustainability (Switzerland)*, 13(8). <https://doi.org/10.3390/su13084304>
- Ho, C.-H., & Wu, T.-Y. (2012a). Factors Affecting Intent To Purchase Virtual goods in Online Games. *International Journal of Electronic Business Management*, 10(3), 204-212.

- Ho, C.-H., & Wu, T.-Y. (2012b). FACTORS AFFECTING INTENT TO PURCHASE VIRTUAL GOODS IN ONLINE GAMES. In *International Journal of Electronic Business Management* (Vol. 10, Issue 3).
- Holin Lin, & Sun, C. T. (2011). Cash trade in free-to-play online games. *Games and Culture*, 6(3), 270–287. <https://doi.org/10.1177/1555412010364981>
- Homburg, C., & Rudolph, B. (2001). Customer satisfaction in industrial markets: Dimensional and multiple role issues. *Journal of Business Research*, 52(1), 15-33. [https://doi.org/10.1016/S0148-2963\(99\)00101-0](https://doi.org/10.1016/S0148-2963(99)00101-0)
- Hsiao, C. H., Chang, J. J., & Tang, K. Y. (2016). Exploring the influential factors in continuance usage of mobile social Apps: Satisfaction, habit, and customer value perspectives. *Telematics and Informatics*, 33(2), 342–355. <https://doi.org/10.1016/j.tele.2015.08.014>
- Hsieh, J.-K., & Tseng, C.-Y. (2018). Hsieh and Tseng: The Social Influence on Hedonic Buying of Digital Goods EXPLORING SOCIAL INFLUENCE ON HEDONIC BUYING OF DIGITAL GOODS-ONLINE GAMES' VIRTUAL ITEMS. *Journal of Electronic Commerce Research*, 19.
- Hsu, C. L., & Lin, J. C. C. (2015). What drives purchase intention for paid mobile apps?-An expectation confirmation model with perceived value. *Electronic Commerce Research and Applications*, 14(1), 46–57. <https://doi.org/10.1016/j.elerap.2014.11.003>
- Hsu, M. H., Chang, C. M., Chu, K. K., & Lee, Y. J. (2014). Determinants of repurchase intention in online group-buying: The perspectives of DeLone & McLean is success model and trust. *Computers in Human Behavior*, 36, 234-245. <https://doi.org/10.1016/j.chb.2014.03.065>
- Huang, E. (2012). Online experiences and virtual goods purchase intention. *Internet Research*, 22(3), 252–274. <https://doi.org/10.1108/10662241211235644>
- Huang, L. Y., & Hsieh, Y. J. (2011). Predicting online game loyalty based on need gratification and experiential motives. *Internet Research*, 21(5), 581-598. <https://doi.org/10.1108/10662241111176380>
- Huffman, C., & Kahn, B. E. (1998). Variety for sale: Mass customization or mass confusion? *Journal of Retailing*, 74(4), 491–513. [https://doi.org/10.1016/S0022-4359\(99\)80105-5](https://doi.org/10.1016/S0022-4359(99)80105-5)
- Huseynov, F., & Dhahak, K. (2020). The Influence of Gamification on Online Consumers Attitude and Intention to Purchase Fast Moving Consumer Goods. *Business and Economics Research Journal*, 11(3), 769–791. <https://doi.org/10.20409/berj.2020.281>
- Isomursu, M., Tähti, M., Väinämö, S., & Kuutti, K. (2007). Experimental evaluation of five methods for collecting emotions in field settings with mobile applications. *International Journal of Human Computer Studies*, 65(4), 404-418. <https://doi.org/10.1016/j.ijhcs.2006.11.007>
- Jolliffe, I. T., Cadima, J., & Cadima, J. (2016). Principal component analysis : a review and recent. *Philosophical Transactions A*. <https://doi.org/http://dx.doi.org/10.1098/rsta.2015.0202>
- Joseph F Hair, J., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (Eight). Cengage.
- Karjaluoto, H., & Leppäniemi, M. (2013). Social identity for teenagers: Understanding behavioral intention to participate in virtual world environment. *Journal of Theoretical and Applied Electronic Commerce Research*, 8(1), 1–16. <https://doi.org/10.4067/S0718-18762013000100002>
- Kumar, S., & Yadav, R. (2021). The impact of shopping motivation on sustainable consumption : A study in the context of green apparel. *Journal of Cleaner Production*, 295, 126239. <https://doi.org/10.1016/j.jclepro.2021.126239>
- Lee, H., Choi, S. Y., & Kang, Y. S. (2009). Formation of e-satisfaction and repurchase intention: Moderating roles of computer self-efficacy and computer anxiety. *Expert Systems with Applications*, 36(4), 7848–7859. <https://doi.org/10.1016/j.eswa.2008.11.005>

- Lehdonvirta, V. (2009). Virtual item sales as a revenue model: Identifying attributes that drive purchase decisions. *Electronic Commerce Research*, 9(1-2), 97-113. <https://doi.org/10.1007/s10660-009-9028-2>
- Lim, Y. S., Heng, P. C., Ng, T. H., & Cheah, C. S. (2016). Customers' online website satisfaction in online apparel purchase: A study of Generation Y in Malaysia. *Asia Pacific Management Review*, 21(2), 74–78. <https://doi.org/10.1016/j.apmr.2015.10.002>
- Lin, Y. L., & Lin, H. W. (2011). A study on the goal value for massively multiplayer online role-playing games players. *Computers in Human Behavior*, 27(6), 2153-2160. <https://doi.org/10.1016/j.chb.2011.06.009>
- Lo, Y. F., & Wen, M. H. (2010). A fuzzy-ahp-based technique for the decision of design feature selection in massively multiplayer online role-playing game development. *Expert Systems with Applications*, 37(12), 8685–8693. <https://doi.org/10.1016/j.eswa.2010.06.059>
- Marder, B., Gattig, D., Collins, E., Pitt, L., Kietzmann, J., & Erz, A. (2019). The Avatar's new clothes: Understanding why players purchase non-functional items in free-to-play games. *Computers in Human Behavior*, 91(January 2018), 72-83. <https://doi.org/10.1016/j.chb.2018.09.006>
- Oliver, R. L. (1980). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. *Journal of Marketing Research*, 17(4), 460-469. <https://doi.org/10.2307/3150499>
- Pappas, I. O., Mikalef, P., Giannakos, M. N., & Kourouthanassis, P. E. (2019). Explaining user experience in mobile gaming applications: an fsQCA approach. *Internet Research*, 29(2), 293–314. <https://doi.org/10.1108/IntR-12-2017-0479>
- Park, B. W., & Lee, K. C. (2011). Exploring the value of purchasing online game items. *Computers in Human Behavior*, 27(6), 2178-2185. <https://doi.org/10.1016/j.chb.2011.06.013>
- Parmentier, G., & Rolland, S. (2009). Consumers in Virtual Worlds: Identity Building and Consuming Experience in Second Life. *Recherche et Applications En Marketing (English Edition)*, 24(3), 43–55. <https://doi.org/10.1177/205157070902400302>
- Pee, L. G., Jiang, J., & Klein, G. (2018). Signaling effect of website usability on repurchase intention. *International Journal of Information Management*, 39(September 2017), 228-241. <https://doi.org/10.1016/j.ijinfomgt.2017.12.010>
- Qing, T., & Haiying, D. (2021). How to achieve consumer continuance intention toward branded apps—from the consumer–brand engagement perspective. *Journal of Retailing and Consumer Services*, 60(January), 102486. <https://doi.org/10.1016/j.jretconser.2021.102486>
- Ramzan, S., & Khan, M. I. (2010). Dimension Reduction and Remedy of Multicollinearity Using Latent Variable Regression Methods. *World Applied Sciences Journal*, 8, 404-410. [https://www.idosi.org/wasj/wasj8\(4\)10/3.pdf](https://www.idosi.org/wasj/wasj8(4)10/3.pdf)
- Ravoniarison, A., & Benito, C. (2019). Mobile games: players' experiences with in-app purchases. *Journal of Research in Interactive Marketing*, 13(1), 62-78. <https://doi.org/10.1108/JRIM-06-2016-0060>
- Rezaei, S., & Ghodsi, S. S. (2014). Does value matters in playing online game? An empirical study among massively multiplayer online role-playing games (MMORPGs). *Computers in Human Behavior*, 35, 252–266. <https://doi.org/10.1016/j.chb.2014.03.002>
- Sánchez, J., Callarisa, L., Rodríguez, R. M., & Moliner, M. A. (2006). Perceived value of the purchase of a tourism product. *Tourism Management*, 27(3), 394-409. <https://doi.org/10.1016/j.tourman.2004.11.007>
- Santini, F., & Araujo, C. (2018). A meta-analytic review of hedonic and utilitarian shopping values Article information: *Journal of Consumer Marketing*, April. <https://doi.org/10.1108/JCM-08-2016-1914>

- Shelton, A. K. (2010). Defining the lines between virtual and real world purchases: Second Life sells, but who's buying? *Computers in Human Behavior*, 26(6), 1223-1227. <https://doi.org/10.1016/j.chb.2010.03.019>
- Sheth, J. N., Newman, B. I., & Gross, B. L. (1991). Why We Buy What We Buy: A Theory of Consumption Values: Discovery Service for Air Force Institute of Technology. *Journal of Business Research*, 22(2), 159–170. <http://eds.b.ebscohost.com.afit.idm.oclc.org/eds/detail/detail?vid=3&sid=c553a916-c484-4f2b-8f4a-263242c3e223%40sessionmgr120&bdata=JnNpdGU9ZWRzLWxpdmU%3D#AN=17292155&db=bth>
- Shi, S., Chen, Y., & Chow, W. S. (2016). Key values driving continued interaction on brand pages in social media: An examination across genders. *Computers in Human Behavior*, 62, 578–589. <https://doi.org/10.1016/j.chb.2016.04.017>
- Statista. (2020). *Mobile games - indonesia statista market forecast*. Statista.Com. <https://www.statista.com/outlook/dmo/digital-media/video-games/mobile-games/indonesia#market-age>
- Sweeney, J. C., & Soutar, G. N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77, 203-220. [https://doi.org/https://doi.org/10.1016/S0022-4359\(01\)00041-0](https://doi.org/https://doi.org/10.1016/S0022-4359(01)00041-0)
- Tabachnick, B. G., & Fidell, L. S. (2019). *Using Multivariate Statistics* (Seventh). Pearson.
- Tandon, U., Kiran, R., & Sah, A. (2017). Analyzing customer satisfaction: users perspective towards online shopping. *Nankai Business Review International*, 8(3), 266-288. <https://doi.org/10.1108/NBRI-04-2016-0012>
- Thongmak, M. (2020). Determinants of intention to play Pokémon Go. *Heliyon*, 6(12). <https://doi.org/10.1016/j.heliyon.2020.e03895>
- To, P. L., Liao, C., & Lin, T. H. (2007). Shopping motivations on Internet: A study based on utilitarian and hedonic value. *Technovation*, 27(12), 774-787. <https://doi.org/10.1016/j.technovation.2007.01.001>
- Trivedi, S. K., & Yadav, M. (2020). Repurchase intentions in Y generation: mediation of trust and e-satisfaction. *Marketing Intelligence and Planning*, 38(4), 401-415. <https://doi.org/10.1108/MIP-02-2019-0072>
- Tseng, F. M., & Chiang, H. Y. (2013). Exploring consumers to buy innovative products: Mobile phone upgrading intention. *Journal of High Technology Management Research*, 24(2), 77–87. <https://doi.org/10.1016/j.hitech.2013.09.002>
- Turel, O., Serenko, A., & Bontis, N. (2010). User acceptance of hedonic digital artifacts: A theory of consumption values perspective. *Information and Management*, 47(1), 53-59. <https://doi.org/10.1016/j.im.2009.10.002>
- Umar, H. B. (2009). PRINCIPAL COMPONENT ANALYSIS (PCA) DAN APLIKASINYA DENGAN SPSS. *Andalas Journal of Public Health*, 3. <https://doi.org/https://doi.org/10.24893/jkma.v3i2.68>
- Verkuyl, M., Romaniuk, D., & Mastrilli, P. (2018). Virtual gaming simulation of a mental health assessment: A usability study. *Nurse Education in Practice*, 31(June 2017), 83-87. <https://doi.org/10.1016/j.nepr.2018.05.007>
- Wu, J., Li, P., & Rao, S. (2008). WHY THEY ENJOY VIRTUAL GAME WORLDS? AN EMPIRICAL INVESTIGATION. In *Journal of Electronic Commerce Research* (Vol. 9).
- Yang, H. E., Wu, C. C., & Wang, K. C. (2009). An empirical analysis of online game service satisfaction and loyalty. *Expert Systems with Applications*, 36(2 PART 1), 1816-1825. <https://doi.org/10.1016/j.eswa.2007.12.005>
- Zeithaml, V. A. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-End Model and Synthesis of Evidence. *Journal of Marketing*, 52(3), 2-22. <https://doi.org/10.1177/002224298805200302>