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DRIVING FACTORS OF LOOT BOX IMPULSE PURCHASES ON INDONESIAN FPS AND MOBA GENERATION Z PLAYERS

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Abstract

The transition of the business model from games as a product to games as a service resulted in the birth of the microtransaction business model. In its development, microtransactions have given birth to many products, one of which is loot boxes. As a definition, a loot box is a gift box that can be redeemed to get random items and exclusive products from the game. This research was conducted with the aim of finding out the driving factors for impulsive purchases of loot boxes among Indonesian Generation Z FPS and MOBA video game players. This research is a survey research applied to 300 respondents who have specific criteria in the age range 18-25, especially MOBA and FPS players and have playing experience for one year or more. This research was conducted using the PLS-SEM method using SmartPLS 3.0. The research results show that the factors that influence impulsive loot box purchases and purchase intentions are perceived performance and functional value, self-control depletion, flow of experience, hedonic browsing, and social personalization attributes. It doesn't stop there, it turns out that price also has a moderating effect on intention to buy loot boxes. The price increase for loot boxes is in the range of Rp. 10,000 to Rp. 50,000 indicates a decrease in purchasing intentions based on the results of research that has been carried out.
Keywords: Microtransactions, Consumer Behavior, Virtual Items, Loot Box, Impulse buying, Indonesian Generation Z, FPS, MOBA.

Abstrak

Transisi bisnis model dari game sebagai produk menjadi game sebagai bentuk jasa menghasilkan kepada lahirnya model bisnis mikrotransaksi. Dalam perkembangannya, microtransaction melahirkan banyak produk salah satunya adalah loot box. Sebagai definisi, loot box merupakan kotak hadiah yang dapat ditebus untuk mendapatkan barang-barang yang diacak dan produk-produk eksklusif dari game tersebut. Penelitian ini dilakukan dengan tujuan untuk mengetahui faktor pendorong pembelian impulsif loot box pada pemain video game FPS dan MOBA generasi Z Indonesia. Penelitian ini merupakan penelitian survei yang diterapkan kepada orang 300 responden yang memiliki kriteria khusus dalam rentang usia 18-25, khususnya pada pemain MOBA dan FPS dan punya pengalaman bermain selama satu tahun atau lebih. Penelitian ini dilakukan dengan menggunakan metode PLS-SEM menggunakan SmartPLS 3.0. Hasil penelitian menunjukkan bahwa faktor yang mempengaruhi pembelian impulsif loot box dan niat beli adalah perceived value performa dan fungsional, self control depletion, flow of experience, hedonic browsing, dan atribut personalisasi sosial. Tidak hanya sampai disitu, ternyata harga juga memiliki efek moderasi terhadap niat beli loot box. Kenaikan harga pada loot box pada rentang Rp. 10.000 hingga Rp. 50.000 menunjukkan adanya penurunan niat beli berdasarkan hasil penelitian yang telah dilakukan.
Kata Kunci: Mikrotransaksi, Perilaku Konsumen, Item Virtual, Loot Box, Impulse buying, Generasi Z Indonesia, FPS, MOBA.

INTRODUCTION

Many generations nowadays knows or at least plays video game every now and then, leading many game developers to change their business tactics. No longer video games comes as a simple product such as brain games into one of the major industry in the world as video games become more of a form of service. This transition into a form of service refer to the high variety of online games that can be accessed by the public that provide game content as a sustainable income model.[1] Video games as a service are also facilitated by the existence of devices such as smart phones and personal laptops that are versatile and accommodate places so that they can be used and played anywhere. Seeing this, entrepreneurs want to try the opportunities that arise in the video game industry, making business competition between video game developers increasing.

One of the business models in the world of video games is the microtransaction business model.[2] Microtransactions are small payments that offer extensions to existing services, and generally occur in transactions in the form of virtual products (including intangible product categories, which are only useful in the ecosystem and online game platform community where the product is offered).[3] Several popular video game genres such as massive multiplayer online (MMO) (example: World of Warcraft (WoW), Black Dessert Online (BDO), Destiny 2), Battle Royale (PUBG, Fortnite), and even most mobile games almost all implement microtransaction practices. Microtransactions in video games are carried out in the form of sales of additional content and premium products (virtual products, textures/"skins", in-game currency, power level bonuses and other bonuses).[4] One of the many product lines sold in this model is known as the 'loot box'.

The loot box monetization system is a gift box system within the game that can be obtained by playing games and also purchased directly using real money to randomly obtain virtual products with the lowest percentage to obtain products with the highest level and vice versa. In order to get prizes in the form of high-level products, players are encouraged by the game with purchasing incentives in the form of giving discounts when buying large quantities at once, this is also rational thinking considering that the chances of getting these products increase

[1] Vili Lehdonvirta, "Virtual Item Sales as a Revenue Model: Identifying Attributes That Drive Purchase Decisions," *Electronic Commerce Research* 9, no. 1 (June 1, 2009), https://doi.org/10.1007/s10660-009-9028-2.

[2] Fanny Vaudour and Aleksej Heinze, "Software as a Service: Lessons from the Video Game Industry," *Global Business and Organizational Excellence* 39, no. 2 (January 2020), https://doi.org/10.1002/joe.21982.

[3] B. Artz and A. Kitcheos, *Microtransactions: A Study of Consumer Behavior and Virtual Goods/Services Among Students at Linköping University in Sweden*, Thesis (Linköping University, Department of Management and Engineering., 2016).

[4] {Citation}

as the number of trials is increased.[5,6] In general, the products sold in loot boxes contain items that players use to customize the game according to their tastes, such as changing the appearance of characters or gaining access to certain weapons or accessories. The contents of each loot box are based on random numbering, and buyers don't know what they will get until after they have paid for it.[7]

In order to see how wide and successful such a business model is, we take a deeper look at the consumer segment which is the target consumer for the loot box product, video game players who are the younger generation of the 25 and under demographic are one of the largest consumer demographics, especially within the ASEAN and also Indonesia. Research data taken in 2017 from Australia identified that 67% of the population of video game players with 54% of the players being male, 23% of whom were players under 18 years of age. Additionally, it is reported that 34% of Australian youth aged 8-17 have made microtransactions in video games in the past 12 months.[8] Another source said that the size of the video game market in Southeast Asian countries at the end of 2021 was valued at $ 5 billion and consisted of 270 million players. With an estimated CAGR of 8.6% in 2020-2025 for video game revenue, it can be said that Southeast Asia is one of the fastest growing game markets in the world.[9] Among ASEAN countries alone by the end of 2021, Indonesia achieved a total revenue of $0.97 billion, ranking third in the Southeast Asian country sector. The eSports sector in Southeast Asia is growing mainly because of Indonesia, because 43% of the total number of players in this region are in Indonesia.[10] With an estimated demographic age of around 10-20 years covering 35%, 21-35 years 42% and ages 36-50 years 23% of all playerbase.[11] All this evidence shows that the main target market for video games is young people aged 10 – 25 years. However in this study the 18 – 25 year old demographic was selected for the appropriate sample criteria while still being young enough to be considered “generation Z”.

In understanding this system, it is also equally important to understand the characteristics

[5] Daniel L. King and Paul H. Delfabbro, “Predatory Monetization Schemes in Video Games (e.g. ‘Loot Boxes’) and Internet Gaming Disorder,” *Addiction* 113, no. 11 (2018), https://doi.org/10.1111/add.14286.

[6] Nettleton J. and Chong K., “Online Social Games—the Australian Position,” 2021, http://www.addisonslawyers.com.au/knowledge/assetdoc/1496179efe668027/Online%20Social%20Games%20-%20The%20Australian%20Position.pdf.

[7] Vaudour and Heinze, “Software as a Service.”

[8] Daniel L King and Paul H Delfabbro, “The Convergence of Gambling and Monetised Gaming Activities,” *Current Opinion in Behavioral Sciences*, Gambling, 31 (February 1, 2020), https://doi.org/10.1016/j.cobeha.2019.10.001.

[9] nikopartners.com, “Asia Games Market Report,” 2022, https://nikopartners.com/asia-games-market-report/?lang=en.

[10] H. Nurhayati-Wolff, “Indonesia: Gaming Market Size 2021,” 2022, https://www.statista.com/statistics/1344828/indonesia-gaming-market-size/.

[11] allcorrectgames.com, “The Indonesian Gaming Market,” allcorrectgames.com, 2022, https://allcorrectgames.com/insights/indonesia.

of consumer behavior towards video game microtransactions. Caetano in his research on mobile video game microtransactions states that there is a tendency for consumers to buy impulsively with component factors in the form of flow of experience, social factors, hedonic/emotional factors and performance.[12] This is in line with the research by Shahpasandi et al regarding impulse buying which states that the flow of experience generated by hedonic browsing is an important component that influences impulse buying.[13] To understand more deeply the theory of impulsive buying and the tendency of buyers to buy impulsively, it is necessary to look further at research that analyzes this theory of buying virtual items.

The topic of virtual item purchase microtransactions is closely related to impulse purchases. The reason for the relationship lies in how the business model is monetized. Basically microtransactions are online micropayments in order to buy virtual goods in games which usually involve very small amounts of money and people may not really feel the burden of their investment plus in-game purchases are often coupled with the potential for satisfying emotional or social needs, this is can create strong incentives to spontaneously buy certain skins or add-ons.[14,15] Apart from that, microtransactions are also facilitated by the ease of making good transactions by banks by way of debit and credit and even other third party shops so that players can complete microtransactions in seconds, without having to get up from a chair or even close the game they are playing. This system, according to Iyer et al, allows impulse purchases to occur, just like chocolate bars and chewing gum next to the cashier should trigger impulse purchases for customers.[16] This can also be seen in the loot box, where players are sometimes given a limited amount of time to buy. This increases the pressure on players to buy them, even though most of them are only offered one of the items available from the in-game shop. Loot boxes are also offered as prizes for gamers who reach certain levels in the game, or as part of promotions organized by publishers.[17]

The phenomenon of loot boxes as a line of products sold in the microtransaction business model has generated a lot of controversy. A literature review was conducted by Yokomitsu el at who reviewed 20 of 201 studies identifying a relationship between the variables of purchasing

[12] R. G. F. Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*, Thesis (Instituto Universitário de Lisboa (ISCTE-IUL), 2017).

[13] Forough Shahpasandi, Azim Zarei, and Mohsen Shafiei Nikabadi, "Consumers' Impulse Buying Behavior on Instagram: Examining the Influence of Flow Experiences and Hedonic Browsing on Impulse Buying," *Journal of Internet Commerce* 19, no. 4 (October 1, 2020), https://doi.org/10.1080/15332861.2020.1816324.

[14] Casey B Hart, *Free to Play? Considering the Interaction of Functional Factors in Video Game Design Influencing the Economic Effectiveness of Microtransactions. The Evolution and Social Impact of Video Game Economics* (Lanham, Maryland: Lexington Books, 2017).

[15] Vaudour and Heinze, "Software as a Service."

[16] Gopalkrishnan R. Iyer et al., "Impulse Buying: A Meta-Analytic Review," *Journal of the Academy of Marketing Science* 48, no. 3 (May 2020), https://doi.org/10.1007/s11747-019-00670-w.

[17] Vaudour and Heinze, "Software as a Service."

loot boxes, gaming, gambling and other variables such as mood, gender, psychological state, and motivation with. In a study by Yokomitsu et al, found that these seven variables indicated a positive relationship with symptoms related to internet gaming disorder, disordered gambling symptoms, and involvement with, or investment in, loot boxes. Specifically, individuals who spend more in-game on loot boxes exhibit gambling symptoms and behaviors related to internet-games. In contrast to the research by Yokomitsu et al, this research was conducted by looking at the point of view of consumer behavior as an academic, finding out the factors that influence loot box purchase intentions because there is still little literature discussing the theory of purchasing behavior for specific products in the microtransaction product line.[18] Using Caetano's research as a theoretical basis for driving factors of intention to purchase virtual goods, microtransaction products and adopting hedonic browsing and flow theories for online impulse purchases based on research conducted by Shahpasandi et al.[19,20]

In a previous research showed that functional performance scores should have a positive effect on people who have not purchased microtransaction items as stated by Artz and Kitcheos, in their research about microtransaction among students of Linkoping University in Sweden. Artz and Kitcheos also studied the effects of ego depletion in relation to microtransaction but did not find conclusive evidence showing it having any adverse effect on purchase intention. Artz and Kitcheos research however carried out in a very controlled manner and also in a very small population of university students which made it hard for it to be representing the general populace.[21] One thing that was mentioned in Artz and Kitcheos research was the link between impulse purchase and microtransaction and was more elaborated in Caetano research in modelling the main drivers from previous researches (Lehdonvirta, 2009; Wu, et al., 2016; and Yoo, 2015) that leads to impulse purchases in mobile game game applications and understand if a price increase will lead to a lower purchase intention.[22,23,24,25,26]

Modelling the purchase drivers for microtransactions impulse purchases in mobile games

[18] Kengo Yokomitsu et al., "Characteristics of Gamers Who Purchase Loot Box: A Systematic Literature Review," *Current Addiction Reports* 8, no. 4 (December 2021), https://doi.org/10.1007/s40429-021-00386-4.

[19] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.

[20] Shahpasandi, Zarei, and Nikabadi, "Consumers' Impulse Buying Behavior on Instagram."

[21] Artz and Kitcheos, *Microtransactions: A Study of Consumer Behavior and Virtual Goods/Services Among Students at Linköping University in Sweden*.

[22] Artz and Kitcheos.

[23] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.

[24] Lehdonvirta, "Virtual Item Sales as a Revenue Model: Identifying Attributes That Drive Purchase Decisions."

[25] Ing-Long Wu, Kuei-Wan Chen, and Mai-Lun Chiu, "Defining Key Drivers of Online Impulse Purchasing: A Perspective of Both Impulse Shoppers and System Users," *International Journal of Information Management* 36, no. 3 (June 1, 2016), https://doi.org/10.1016/j.ijinfomgt.2015.11.015.

[26] Jae Mee Yoo, "Perceived Value of Game Items and Purchase Intention," *Indian Journal of Science and Technology* 8, no. 19 (August 8, 2015), https://doi.org/10.17485/ijst/2015/v8i19/77148.

found out that there are six components which comprises of perceived value of performance and functional related item, hedonic and social cosmetic personalization attribute of virtual items, perceived risks, and flow of experience, four of which was performance related items, social content, hedonic/emotional objects and the flow experience of the game are important aspects to consider regarding impulse buying tendency; functionality content however was not found to be significantly correlated with impulse buying tendency and so does low perceived risks.[27] In regarding to prices, intention to purchase is generally medium and by increasing price in the order of the average purchase volume (≈ 5€/5$), intention to purchase is significantly reduced. One notable limitation on Caetano's research however does not differentiate what kind of games people are playing and the survey done were applied to all games that had microtransaction in it.[28] This indicates that results have a chance of fluctuating based on different games – some games might offer specific types of content while relinquishing others which would obviously reflect on survey answers. Still in line with Caetano's research, Shahpasandi et al found out that in regards to impulse purchases, flow of experience that was being influenced by hedonic browsing have a positive effect on impulse purchases.[29,30] This research however was carried on in the consumers and users of Instagram in Iran so it may not relevant to the wider context of microtransaction but still in line with virtual item purchase intention however.

The phenomenon of microtransactions, especially the emergence of the loot box system, is a natural thing in the context of the development of a company's business model. This innovation however, brings up new problems and controversies, such as the problem addresed in the research conducted by Yokomitsu et al, and knowing that the target market with the largest demographic lies in young adults and teenagers.[31] However, as mentioned earlier, by looking at the perspective of consumer behavior as an academic, research was conducted to determine the factors that influence loot box purchase intentions because there is still little literature discussing the theory of buying behavior for specific products in the microtransaction product line. The research was conducted by adopting two theories regarding purchase intentions related to impulsive buying behavior among consumers in Indonesia's Gen Z Democracy who play games with the FPS and MOBA genres, and their relation to microtransactions of loot box products and other variables that compose the driving factors for purchasing these products.

[27] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.
[28] Caetano.
[29] Caetano.
[30] Shahpasandi, Zarei, and Nikabadi, "Consumers' Impulse Buying Behavior on Instagram."
[31] Yokomitsu et al., "Characteristics of Gamers Who Purchase Loot Box."

RESEARCH METHOD

This study used PLS-SEM method in order to analyze the data. In measuring and estimating the structural model with a special focus on impulse buying as the mediating variable and purchase intention as the dependent variable and also price as the moderating variable for the relationship between impulse buying and loot box purchase intention. The researcher will be using SmartPLS 3.0. The two main features of this software are that it highlights the relationships between structures and describes the impact of each measured construct on impulse buying, price and also purchase intention. In addition, a non-parametric bootstrap procedure was used to estimate the statistical significance of factor loading and path coefficient.[32]

This study will be using primary data as the main source of data. Primary data collection was done by using a questionnaire. The questionnaire will be distributed to the online game player community, student and student study groups, and other complementary communities. Dissemination of the questionnaire will use sites such as Surveymonkey for data collection. Questionnaires will be distributed online through forums and other message boards as a medium for gaming websites that are popular among gamers. Social networking communities can also be targeted as well as make direct contact with members who are eligible to answer surveys by sending them direct messages. Activities like this are an opportunity to get more responses to be higher. The goal is to target Gen Z who also play video games and this location and method provides a large number of such individuals. This means the research will be based on a convenience sample.

Table 1. Demographic profile of the respondents.

Profile	Percentage
Gender	
Man	80.67%
Woman	19.33%
Job Status	
Student	65.00%
Employed	25.00%
Unemployed	10.00%
Education	
Elementary School	0.33%
High School	52.00%
Bachelor	41.67%
Post Graduates	1.67%
Professional Degree	4.33%
Video Game Genre	
First Person Shooter	44.00%
MOBA	56.00%
Gaming Experience	
One year	2.00%
One to three years	20.00%
More than three years	78.00%

[32] J. F. Hair, C. M. Ringle, and M. Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Los Angeles: Sage, 2017).

Number of Loot Box Bought	
1 – 10	33.67%
11– 20	34.33%
21– 30	17.00%
> 30	15.00%
Spending Estimation on Loot Boxes	
Less than Rp. 100.000,00	18.00%
Rp. 100.000,00 – Rp. 1.000.000,00	45.67%
Rp. 1.000.000,00 – Rp. 5.000.000,00	22.44%
Rp. 5.000.000,00 – Rp. 10.000.000,00	8.33%
More than Rp. 10.000.000,00	5.67%

Sample screening includes criterias such as within the age of 18-25, gamers who have been playing games for at least one year or more who spend a minimum of two hours a week playing games. The sample criteria are also limited specifically to players of competitive multiplayer arena action games such as MOBA (multiplayer online battle arena) and FPS (first person shooters). The two genres were chosen because they are popular genres with Southeast Asian players,[33] from the similarities in game design where both are competitive action games played by more than one player (either two players or free arenas), playing In a predetermined arena, players are generally given a set of objectives (objectives) that must be met in order to win. [34,35] And the most important thing is microtransactions of loot box products that are sold especially in MOBA games in general (eg. : Dota 2, League of Legends, Mobile Legends, Arena of Valor) is not an item related to the performance of the players, meaning that this product does not provide a direct advantage in the context of gameplay for the players. For the FPS genre, some games such as CS:GO, Apex Legend, and Valorant, the tendency for microtransactions of loot box products that are sold is also not related to player performance, but some other games do microtransaction items related to user performance depending on the business model of each intelectual properties. Table 1 shows the respondents' demographic information such as gender, education, job status, and etc.

The initiation of the questionnaire survey will begin with a brief description of the purpose of the survey, the criteria of the respondents, and a brief description of the survey to be conducted. Followed by a brief description of the key terms that will be used frequently in the survey. The questionnaire consists of three sections: the first section consisted of demographic charactreristics; second section consisted of the first set of questions regarding the independent variable and IBT; and the last section are a set of questions regarding the continuiation of pruchase intention variabel with a total of 47 questions. All the responses for the items were measured on a 5-point Likert scale, where 1 represents "Strongly Disagree", 2 "Disagree", 3

[33] Nurhayati-Wolff, "Indonesia: Gaming Market Size 2021."
[34] E. Adams, *Fundamentals of Game Design* (Berkeley, CA: New Riders, 2010).
[35] Cheese Hasselberger, *Guide to FPS* (UGO Networks, 2022).

"Neutral", 4 "Agree" and 5 "Strongly Agree".[36] The research requires valid answers from many respondents, as many as three hundred respondents being the optimal goal to be collected to ensure reliable and useful information on the themes discussed. A pretest stage were carried out to 30 respondents who met the criteria and were asked to respond to 46 questions. Using the feedback from this stage, a few modifications were made to ensure the validity and clarity of the questions. The results of which 4 questions were removed due to their poor outer loadings while the remaining 42 were chosen for the development of the research framework and continue with the main test.

RESULTS AND DISCUSSION

Evaluation of the measurement model - Convergent validity and reliability

Assessment of the PLS-SEM model initially focused on evaluation of the measurement model. Examination of the PLS-SEM estimates allows the researcher to evaluate the reliability and validity of construct measures. In particular, multivariate measurement involves using several variables to measure a construct. Assessment of reflective measurement models includes composite reliability (CR) to assess internal consistency, individual indicator reliability, and average variance extracted (AVE) to assess convergent validity. Using SmartPLS, it required for the outer loading to be 0.7 or above to be valid. Hair et al. however, in his study said that indicators with an outer loading between 0.40 and 0.70 may be used but should be considered for removal from the scale only if removing the indicator causes an increase in composite reliability above the recommended threshold value of 0.7. In addition to assessing construct variables, the recommended AVE value must be above 0.5 to be valid and the Cronbach Alpha value above 0.7 to be declared reliable.[37] Table 2 confirms the result oThe following are the results of the validity and reliability tests of the main test research stage. The AVE value of all variables as shown on Table 2 showed that all variable to be valid and reliable with all of the CR value for all the construct are above 0.7. Therefore, convergent validity has been established.

Evaluation of the measurement model – Discriminant validity

In determining discriminant validity, we assess the cross-loadings and also through HTMT ratio. In evaluating the cross loadings, the author observe the values in the table by looking at the rows for indicators and columns for latent variables. If the outer loading value of is greater than the cross loading shown in the table, it means that discriminant validity has been

[36] Noora Shrestha, "Factor Analysis as a Tool for Survey Analysis," *American Journal of Applied Mathematics and Statistics* 9, no. 1 (February 19, 2021), https://doi.org/10.12691/ajams-9-1-2.

[37] Hart, *Free to Play? Considering the Interaction of Functional Factors in Video Game Design Influencing the Economic Effectiveness of Microtransactions. The Evolution and Social Impact of Video Game Economics*.

established.[38] An attenuated correlation between the two constructs close to 1 indicates a lack of discriminant validity.[39] According to Henseler et al. HTMT values above 0.90 indicate a lack of discriminant validity.[40] Results shown in Table 3 for cross loadings and Table 4 for HTMT ratio, both shown that discriminant validity were determined as both had fulfilled the criteria.

Table 2. Measurement model assessment.

Variable	Indicator	Outer Loading	Cronbach Alpha	Rho_a	Composite Reliability	AVE
Loot Box Impulse Buying (IBT)	IBT1	0.732	0.862	0.862	0.892	0.509
	IBT2	0.735				
	IBT3	0.684				
	IBT4	0.702				
	IBT7	0.724				
	IBT8	0.669				
	IBT9	0.772				
	IBT10	0.682				
Performance (PFM)	PFM1	0.910	0.861	0.864	0.916	0.784
	PFM2	0.910				
	PFM3	0.834				
Functionality (FCT)	FCT1	0.872	0.814	0.817	0.890	0.729
	FCT2	0.841				
	FCT3	0.848				
Hedonic Attributes (HED)	HED1	0.810	0.806	0.819	0.885	0.719
	HED2	0.884				
	HED3	0.849				
Social Attributes (SOC)	SOC1	0.839	0.836	0.837	0.902	0.754
	SOC2	0.894				
	SOC3	0.870				
Hedonic Browsing (HEDB)	HEDB1	0.712	0.647	0.658	0.810	0.589
	HEDB3	0.737				
	HEDB4	0.846				
Flow of Experience (FLOW)	FLOW1	0.775	0.853	0.857	0.888	0.532
	FLOW2	0.769				
	FLOW3	0.766				
	FLOW4	0.727				
	FLOW5	0.672				
	FLOW6	0.662				
	FLOW7	0.724				
Perceived Risk (RISK)	RISK1	0.750	0.744	0.763	0.832	0.554
	RISK2	0.754				
	RISK3	0.712				
	RISK4	0.761				
Self Control Depletion (EGO)	EGO1	0.844	0.840	0.841	0.904	0.758
	EGO2	0.875				
	EGO3	0.893				
Loot box puchase intention normal price (NPRC)	NPRC1	0.842	0.794	0.797	0.879	0.708
	NPRC2	0.856				
	NPRC3	0.826				

[38] J. F. Hair, *Multivariate Data Analysis* (Andover (Hampshire: Cengage Learning EMEA, 2019).

[39] Hair, Ringle, and Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*.

[40] Jörg Henseler, Christian M. Ringle, and Marko Sarstedt, "A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling," *Journal of the Academy of Marketing Science* 43, no. 1 (January 1, 2015), https://doi.org/10.1007/s11747-014-0403-8.

Structural model and path analysis

Structural model evaluation was carried out by evaluating the predictive ability of the model and the relationship between constructs. However, before proceeding with this analysis, the collinearity of the model needs to be checked because the estimated path coefficient in the structural model is based on the OLS regression of each endogenous latent variable with relation to the independent exogenous construct.[41] In evaluating collinearity, we consider a VIF value above 5 in the predictor construct as a critical level of collinearity and subsequently, none of the constructs in the structural model had VIF output above 5 (as shown in Table 5). indicating a lack of collinearity among them.

Table 3. Cross-loading.

Indicator	Flow	FCT	HEDB	HED	IBT	NPRC	RISK	PFM
EGO1	0.574	0.343	0.482	0.305	0.517	0.469	-0.304	0.338
EGO2	0.563	0.417	0.497	0.364	0.533	0.442	-0.233	0.405
EGO3	0.546	0.506	0.527	0.324	0.535	0.451	-0.270	0.477
FCT1	0.515	0.872	0.421	0.351	0.558	0.384	-0.144	0.645
FCT2	0.476	0.841	0.442	0.370	0.509	0.430	-0.111	0.471
FCT3	0.511	0.848	0.467	0.466	0.584	0.385	-0.172	0.600
FLOW1	0.775	0.414	0.604	0.481	0.551	0.456	-0.227	0.388
FLOW2	0.769	0.444	0.536	0.431	0.541	0.515	-0.248	0.382
FLOW3	0.766	0.478	0.553	0.440	0.566	0.476	-0.214	0.414
FLOW4	0.727	0.441	0.512	0.564	0.574	0.497	-0.243	0.437
FLOW5	0.672	0.384	0.475	0.387	0.444	0.350	-0.258	0.327
FLOW6	0.662	0.335	0.452	0.480	0.458	0.341	-0.250	0.388
FLOW7	0.724	0.484	0.551	0.498	0.602	0.429	-0.233	0.398
HED1	0.469	0.300	0.515	0.810	0.432	0.303	-0.152	0.246
HED2	0.589	0.470	0.540	0.884	0.565	0.323	-0.156	0.484
HED3	0.567	0.396	0.552	0.849	0.528	0.330	-0.238	0.346
HEDB1	0.518	0.388	0.712	0.538	0.453	0.337	-0.268	0.464
HEDB3	0.535	0.427	0.737	0.367	0.514	0.475	-0.218	0.416
HEDB4	0.610	0.386	0.846	0.545	0.582	0.432	-0.219	0.364
HPRC1	0.482	0.297	0.408	0.303	0.473	0.483	-0.201	0.294
HPRC2	0.494	0.284	0.412	0.327	0.463	0.456	-0.183	0.264
HPRC3	0.469	0.295	0.461	0.294	0.472	0.428	-0.095	0.238
IBT1	0.539	0.482	0.459	0.371	0.732	0.440	-0.176	0.506
IBT10	0.506	0.413	0.485	0.459	0.682	0.422	-0.213	0.473
IBT2	0.579	0.416	0.553	0.523	0.735	0.464	-0.161	0.449
IBT3	0.523	0.386	0.504	0.562	0.684	0.421	-0.096	0.423
IBT4	0.511	0.493	0.428	0.267	0.702	0.436	-0.156	0.432
IBT7	0.491	0.507	0.459	0.372	0.724	0.389	-0.157	0.454
IBT8	0.545	0.504	0.526	0.486	0.669	0.381	-0.224	0.462
IBT9	0.503	0.491	0.439	0.406	0.772	0.446	-0.107	0.456
NPRC1	0.526	0.343	0.462	0.295	0.487	0.855	-0.214	0.264
NPRC2	0.499	0.376	0.433	0.284	0.466	0.868	-0.215	0.294
NPRC3	0.502	0.461	0.473	0.372	0.555	0.802	-0.228	0.460
PFM1	0.499	0.563	0.501	0.445	0.598	0.373	-0.231	0.910
PFM2	0.454	0.537	0.480	0.405	0.552	0.333	-0.254	0.910
PFM3	0.471	0.693	0.439	0.296	0.549	0.360	-0.127	0.834
RISK1	-0.202	-0.104	-0.154	-0.119	-0.153	-0.205	0.750	-0.058
RISK2	-0.175	-0.012	-0.141	-0.098	-0.108	-0.127	0.754	-0.101
RISK3	-0.241	-0.138	-0.251	-0.216	-0.148	-0.110	0.712	-0.207
RISK4	-0.305	-0.187	-0.302	-0.182	-0.222	-0.275	0.761	-0.264
SOC1	0.562	0.439	0.554	0.608	0.545	0.376	-0.203	0.377
SOC2	0.510	0.442	0.532	0.624	0.570	0.317	-0.193	0.422
SOC3	0.531	0.469	0.543	0.584	0.555	0.351	-0.225	0.492

[41] Hair, *Multivariate Data Analysis*.

R2 values of the endogenous and latent variabels such as flow of experience, loot box impulse buying, and normal price purchase intention with values such as 0.526, 0.685, and 0.416 respectively. According to Henseler et al. and Hair et al. for a discipline such as consumer behavior an R^2 value of 0.20 is considered high; in studies of enabling and driving factors of success (for example, in studies of customer satisfaction or loyalty).[42,43] Safe to say that R2 values of the latent and endogenous variabels are in the realms of acceptable and satisfactory value. Using SmartPLS to examine predictive relevance of the model using blindfolding procedure (with omission distance of 7) showed that the

Table 4. HTMT Ratio

	FLOW	FCT	HEDB	HED	IBT	NPRC	RISK	PFM	Price	EGO	SOC
FLOW											
FCT	0.700										
HEDB	0.872	0.720									
HED	0.770	0.563	0.874								
IBT	0.805	0.771	0.804	0.718							
NPRC	0.730	0.583	0.756	0.470	0.722						
RISK	0.390	0.196	0.411	0.263	0.263	0.310					
PFM	0.626	0.802	0.725	0.506	0.744	0.487	0.262				
Price	0.620	0.388	0.629	0.403	0.605	0.610	0.203	0.342			
EGO	0.752	0.585	0.779	0.455	0.713	0.638	0.376	0.551	0.601		
SOC	0.725	0.627	0.850	0.842	0.756	0.492	0.297	0.583	0.465	0.572	

Table 5. Inner VIF value

Variabel	FLOW	IBT	NPRC
FLOW		2.810	
FCT		2.184	
HEDB	1.000		
HED		2.329	
IBT			1.379
NPRC			
RISK		1.154	
PFM		2.017	
HPRC			1.380
EGO			1.003
SOC		1.875	

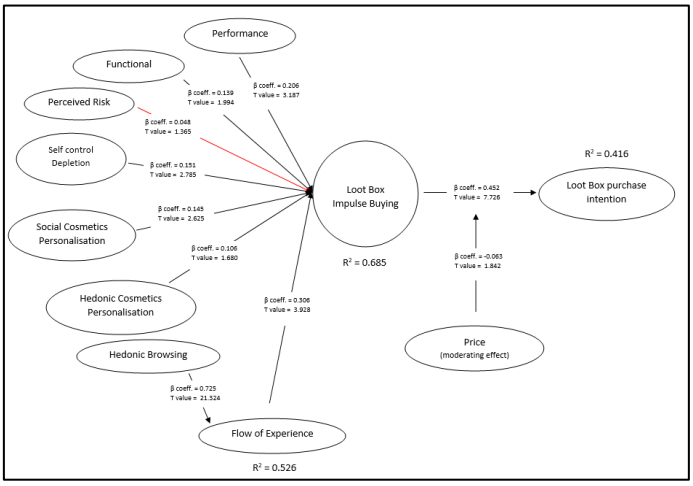
[42] Henseler, Ringle, and Sarstedt, "A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling."

[43] Joe F. Hair, Christian M. Ringle, and Marko Sarstedt, "PLS-SEM: Indeed a Silver Bullet," *Journal of Marketing Theory and Practice* 19, no. 2 (April 1, 2011), https://doi.org/10.2753/MTP1069-6679190202.

Values of Q2 of all of the latent variable were positive (flow = 0.276; impulse buying = 0.338; normal price purchase intention = 0.281), indicating the predictive relevance of the model.[44,45]

Table 6 and figure 1 shows the summary of structural model and result, and the significance analysis were carried out by non-parametric bootstrap procedure with 5000 resamples. As shown in Table 6 and figure 1, the path hypothesis were displayed, and also standardized path coefficient (β), T values, P values and the corresponding result. The direct relationship between each construct must be further reviewed for its significance, which is done by calculating empirical t values and p values for all path coefficients in the structural model. When the empirical t value is greater than the critical value, it can be concluded that the coefficient is statistically significant at a certain probability of error. The critical value for the empirical t value used in this study is 1.645 at a significance level of 5% for one-tail research. Coupled with the p-value which must be smaller than 0.05 at 5% significance to reject or accept the hypothesis proposed in the study.[46] the results of the analysis as a whole almost all variables have significant values shown at $p < 0.05$ except for perceived risk. There are two variables with hypotheses that are rejected on each internal and external element of the independent variable, namely the perceived risk variable with the H3 hypothesis on the internal part and the hedonic cosmetics personalization variable with the H6 hypothesis on the external variable. Other variables such as H1, H2, H4, H5, H6, H7, H8, H9, and H10 are all accepted because they are considered significant with a p value smaller than 0.05.

Figure 1. Structural Model Result.



[44] W. W. Chin, *How to Write up and Report PLS Analyses* (Berlin, Germany: Springer, 2010).

[45] J. F. Hair, G. M. Hult, C. M. Ringle, et al., *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Thousand Oaks: Sage, 2016).

[46] Hair, *Multivariate Data Analysis*.

Table 6. Summary of the Structural Model.

Hypotheses	Hypotheses paths	Path coefficient (β)	T value	P value	Results
H1	*Performance -> Loot Box Impulse Buying*	0.206	3.203	0.001	Accepted
H2	*Funcionality -> Loot Box Impulse Buying*	0.139	1.999	0.024	Accepted
H3	*Perceived Risk -> Loot Box Impulse Buying*	0.048	1.348	0.088	Rejected
H4	*Self Control Depletion -> Loot Box Impulse Buying*	0.151	2.715	0.003	Accepted
H5	*Social Cosmetics Personalisation -> Loot Box Impulse Buying*	0.145	2.631	0.004	Accepted
H6	*Hedonic Cosmetics Personalisation -> Loot Box Impulse Buying*	0.106	1.680	0.046	Accepted
H7	*Hedonic Browsing -> Flow of Experience*	0.725	21.428	0.000	Accepted
H8	*Flow of Experience -> Loot Box Impulse Buying*	0.306	3.928	0.000	Accepted
H9	*Loot Box Impulse Buying -> Loot box Purchase Intention*	0.452	7.726	0.000	Accepted
H10	*Price -> Loot Box Purchase Intention*	-0.063	1.842	0.033	Accepted

Note: *p < 0.05 statistically significant

Assessment was continued by measuring the effect size result by examining the value of f2. Effect size f2 can be said to be the change in R^2 value when certain exogenous constructs are removed from the model and can be used to evaluate whether the removed constructs have a substantive impact on endogenous constructs.[47] Guidelines for assessing f^2 according to Cohen in the writings of Hair et al. when these values are respectively 0.02, 0.15, and 0.35 representing small, medium, and large effects of exogenous latent variables.[48,49,50] An effect size value of less than 0.02 indicates that there is no effect. Based on the results, the effect value f2 of perceived risk, and hedonic cosmetics personalization, on loot box impulse buying variable has a value below 0.02 with perceived risk at 0.006. On the other hand, the hedonic browsing variable for flow of experience and loot box impulse buying for both normal price purchase intentions are very high with hedonic browsing having a value of 1.108 on flow and impulse buying having a value of 0.254 for purchases at normal prices.

Discussion

Three hundred samples have been obtained and analyzed using the SmartPLS 3.0 application. The descriptive analysis carried out on the respondent's profile as shown in Table 1 indicates that approximately 80% of the sample population are male and 20% female.

[47] Hair.

[48] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences* (Mahwah, NJ: Lawrence Erlbaum, 1988).

[49] J. F. Hair, G. M. Hult, C. M. Ringle, et al., *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Los Angeles: Sage, 2017).

[50] J. Cohen, *Statistical Power Analysis for the Behavioral Sciences.* (Routledge Academic, 2013).

Dissemination of online questionnaires was carried out by means of manual dissemination to groups and community forums playing FPS and MOBA video games and advertised using Instagram and Facebook, one of the explanations for this inequality is that the groups and communities where the survey was distributed were dominated by men. Moreover, at the time of writing this report, there was no official survey that provided data to divide the demography of Indonesian lay video game players in general to explain the disparity between the demographics of Indonesian male and female video game players.

Based on the results of hypothesis testing, H1 and H2 are accepted with p value less than 0.5 on both hypotheses. This means that the performance and functional variables have a statistically significant effect and both hypotheses are accepted. Based on the accepted hypotheses, the performance variable has a positive effect on the impulse buying loot box as measured by a beta coefficient of 0.206 and a functional variable of 0.139 (Table 6). This meant that both types of customer perceived value that are discussed in this research are both contributing to loot box impulse buying. These results are different however from the results of previous researches on the topic on consumer's behavior of microtransaction conducted by Yoo and Caetano.[51,52] Yoo and Caetano in their research found that performance had a positive but functional effect on impulsive purchases and then purchase intention.[53,54] Yoo's research about perceived value of game items and purchase intentions further explained that functional value includes performance and function but in this case it is divided into two more that performance provides a competitive advantage in gameplay and function does not provide a competitive advantage but provides and expands game options from video games.[55] Just like Yoo's research, Caetano in his research stated that the competitive advantage provided causes impulse buying triggers and based on the results of his research concluded that if an item that has perceived value will be more to buy then in the eyes of consumers the item associated with performance, social, and hedonic/emotional more or less contribute to consumers' impulse buying.[56,57]

However, it is necessary to understand the difference in context between this study and research conducted by Yoo and Caetano.[58,59] This study discusses the driving factors of microtransactions discussed in the two previous studies (with additional literature from Shahpasandi et al. regarding hedonic browsing and its relation to flow of experience) on

[51] Yoo, "Perceived Value of Game Items and Purchase Intention."
[52] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.
[53] Yoo, "Perceived Value of Game Items and Purchase Intention."
[54] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.
[55] Yoo, "Perceived Value of Game Items and Purchase Intention."
[56] Yoo.
[57] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.
[58] Yoo, "Perceived Value of Game Items and Purchase Intention."
[59] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.

impulsive buying of loot box generation Z (age 18-25) Indonesia in video games with the FPS and MOBA genres.[60] Taking in to consideration that this research was primarily done on Indonesian youth, it seems that loot boxes in FPS and MOBA video games have a value in terms of performance and function that have a positive effect on the loot box impulse buying among Indonesian generation Z video game players.

Regarding perceived risk, based on the statistical test results, H3 was rejected because it had a p value > 0.05 (p value = 0.470). This means that perceived risk does not have a negative impact on consumer impulse purcahase decision and subsequently on loot box purchase intentions, both at normal prices and at rising prices. Based on these findings, this suggests that Indonesian generation Z FPS and MOBA game players do not really consider or even ignore the potential performance and financial risks in purchasing loot boxes that contain the items/content they want. This is in line with the results of research by Caetano and Chen and Zhang, where perceived risk does not affect the tendency to buy impulsively and purchase intention.[61,62]

Continuing with hypothesis 4 regarding self control depletion, it was accepted as the statistical test results had a p value < 0.05 (p value = 0.001). Self-control depletion variable has a positive effect on consumer IBT as measured by a beta coefficient of 0.181 as shown in Table 6. Previous research conducted by Artz and Kitcheos in their study of consumer behavior towards microtransactions among Linköping University students in Sweden found that ego depletion (a concept with the same definition but updated by Forestier et al. becomes self-control fatigue due to an error in the choice of words) found that the loss of self-control due to repetitive microtransaction solicitations did not contribute to increasing student buying opportunities for microtransactions.[63,64] It needs to be outlined that in Artz and Kitcheos' research, one question assessing these variables is only related to challenges and repetitive activities and whether they will buy items via microtransactions if they can help solve these challenges.[65]

In contrast to the results of research by Artz and Kitcheos, In this study it seems that Indonesian generation Z who play video games with the FPS and MOBA genres will be more impulsive in purchasing loot box microtransactions if they are in a state of low mental capacity,

[60] Shahpasandi, Zarei, and Nikabadi, "Consumers' Impulse Buying Behavior on Instagram."

[61] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.

[62] Ya-Ling Chen and Liang Zhang, "Influential Factors for Online Impulse Buying in China: A Model and Its Empirical Analysis," *International Management Review*, April 1, 2015.

[63] Artz and Kitcheos, *Microtransactions: A Study of Consumer Behavior and Virtual Goods/Services Among Students at Linköping University in Sweden*.

[64] Cyril Forestier et al., "From Ego Depletion to Self-Control Fatigue: A Review of Criticisms along with New Perspectives for the Investigation and Replication of a Multicomponent Phenomenon.," *Motivation Science* 8, no. 1 (March 2022), https://doi.org/10.1037/mot0000262.

[65] Artz and Kitcheos, *Microtransactions: A Study of Consumer Behavior and Virtual Goods/Services Among Students at Linköping University in Sweden*.

willingness and patience to respond to challenges.[66] It needs to be clarified further that the depletion self control variable has been divided into three dimensions as mentioned in the previous sentence, namely: resources, willingness, and capacity. The results of this study are supported by the arguments made by Forestier el al. where in his literature study stated that loss of self-control (self-control faitgue) can trigger various impulsive actions, meaning actions that were not thought through beforehand are good or bad and are characterized by short decision-making periods.[67]

The three components of self-control fatigue which form the theoretical basis for this research based on a literature review by Forestier et al are self-control resources, self-control willingness, and self-control capacity. Self-control resources can be psychological in nature, such as perceived energy, perceived vitality and perceived depletion. In the context of this research, the resource that we want to look at is the energy capacity to be able to control oneself from the temptation of the wide variety of loot boxes that are available in the virtual shop. The test is carried out when players condition themselves in a low self-control position whether they will be tempted to buy a loot box or not. The second basis is self control willingness. What is meant by willingness here is the player's motivation to engage in action to control themselves.[68] In the context of research related to video games, the aspect that plays a role in this case is flow of experience, especially the aspect of the 'challenge' dimension because it is closely related to 'gameplay'. This research then questions whether with low self-control willingness, players will be more tempted to buy loot boxes.

The last aspect of self control fatigue is capacity. Based on its definition, capacity is a top-down process that makes actions possible for self-control, furthermore Forestier et al then adds that good memory, inhibition and cognitive flexibility represent self-control capacity.[69] Operationalizing this concept can be done with behavioral markers such as reaction time and errors in cognitive activities.[70] In the context of video games this means having to measure the cognitive level of the players which was not done in this study, but based on the assumption that with low mental capacity are players more easily tempted to buy loot boxes or not. Based on the results of the study, the three aspects of self control that have been mentioned when players are in a low level of self control are more likely to buy loot boxes on impulse.

The hedonic and social personalization variables are attributes that make up virtual items which are also factors of influence in age-based microtransactions according to Lehdonvirta in the

[66] Artz and Kitcheos.
[67] Forestier et al., "From Ego Depletion to Self-Control Fatigue."
[68] Forestier et al.
[69] Forestier et al.
[70] R. Baumeister and K. Vohs, *Handbook of Self-Regulation*, 3rd ed (New York: The Guilford Press, 2018).

study of influencing factor of microtransactions consumer behavior conducted by Caetano.[7172] In this study, hedonic and social personalization of products/items are the constituent attributes of virtual items (especially products offered in loot boxes sold) based on the definition of Lehdonvirta.[73]

Based on the results of the statistical tests conducted, the hypothesis that the hedonic/emotional and social personalization variable has a p value < 0,05 (p value = 0.046 and 0.009) so that the hypothesis is accepted. Based on the hypothesis, hedonic/emotional and social personalization attributes have an effect on impulsive loot box purchases with path coefficient values of 0.106 and 0.145 as shown in Table 6. These findings are in accordance with the results of research found by Caetano where hedonic/emotional and social personalization is statistically significant so that the hypothesis regarding hedonic/emotional and social personalization has a positive effect on IBT consumers is accepted. Similar to the results of Caetano's research, these two drivers – hedonic and social, have a positive relationship with impulsive buying based on the results of research on the driving factors of virtual item purchases conducted by Lehdonvirta.[74,75]

Based on the results of statistical tests conducted, the hypothesis H7 of the hedonic browsing variable has a p value <0.05 (p value = 0.000) so that the hypothesis is accepted. Based on the hypothesis, the hedonic browsing attribute influences the flow of experience variable with a beta coefficient value of 0.725 as shown in Table 6. Previous research on hedonic browsing on the flow of Iranian Instagram users on impulse purchases was conducted by Shahpasandi et al., found that hedonic browsing has a positive effect on flow of experience. Shahpasandi et al. in their research that the pleasure felt by consumers while they are playing social media Instagram, increases flow.[76] Referring to some previous research that why this can happen is due to the availability of interactive features for consumers which then increase flow dimensions such as curiosity.[77,78] Adjusting to the context of this study, hedonic browsing has a positive effect on the flow of experience of Indonesian generation Z FPS and MOBA video game players. Which means that playing video games increases the chances for players to reach a state of flow.

[71] Lehdonvirta, "Virtual Item Sales as a Revenue Model: Identifying Attributes That Drive Purchase Decisions."

[72] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.

[73] Lehdonvirta, "Virtual Item Sales as a Revenue Model: Identifying Attributes That Drive Purchase Decisions."

[74] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.

[75] Lehdonvirta, "Virtual Item Sales as a Revenue Model: Identifying Attributes That Drive Purchase Decisions."

[76] Shahpasandi, Zarei, and Nikabadi, "Consumers' Impulse Buying Behavior on Instagram."

[77] Sojung Kim and Matthew S. Eastin, "Hedonic Tendencies and the Online Consumer: An Investigation of the Online Shopping Process," *Journal of Internet Commerce* 10, no. 1 (March 30, 2011), https://doi.org/10.1080/15332861.2011.558458.

[78] Guda van Noort, Hilde A. M. Voorveld, and Eva A. van Reijmersdal, "Interactivity in Brand Web Sites: Cognitive, Affective, and Behavioral Responses Explained by Consumers' Online Flow Experience," *Journal of Interactive Marketing* 26, no. 4 (2012).

Based on the results of the statistical tests performed, the H8 flow of experience hypothesis is accepted because it has a p value < 0.05. Based on the hypothesis, flow of experience has an effect on loot box impulse buying with a beta coefficient value of 0.306 as shown in Table 6. Based on the results, flow of experience has an R2 value of 0.526, which means that the hedonic browsing variable explains 52.6% of the variance flow of experience, according to Hair et al., this shows a moderate explanatory effect phenomenon. Based on the results of the effect size (f2) from the structural model analysis, the effect size of the hedonic browsing variable on the flow of experience variable is relatively large (with a value of f2 = 1.108) according to the assessment criteria of Hair et al..[79] This means, if the hedonic browsing variable is removed from the model construct, it will significantly reduce the value of the coefficient of determination (R2) of the flow of experience variable. It is reasonable to know on SmartPLS that as a latent variable, hedonic browsing is an exogenous variable rather than a flow of experience.

The findings of this study where flow of experience has a positive effect on loot box impulse buying are in line with the results of research by Caetano et al. and related previous research conducted by Wu et al, found that flow of experience is positively associated with impulsive purchases, meaning that the more immersive and fun a video game is, the tendency for impulsive purchases will increase.[80,81] Another study conducted by Shahpasandi et al. also found that flow of experience has a positive association with impulsive purchases among Iranian Instagram users.[82] Just like previous studies, it seems that flow of experience has a positive influence on the tendency of impulsive purchases in generation Z video game players of the FPS and MOBA genre in Indonesia.

As previous stated, the eight component factors that influence purchases explain 68.5% (R2 = 0.685) of the variance of loot box impulse buying variable. Based on Hair assessment criteria, shows that the phenomenon of explanatory effects falls within the moderate to substantial range.[83] Therefore it is very important to study which components significantly affect loot box impulse buying and identify which components have the most influence. The path with the greatest beta coefficient value that influences loot box impulse buying is flow of experience (β coefficient = 0.306), followed by perceived value of performance-related items (β coefficient = 0.206), self control depletion (β coefficient = 0.151), social cosmetic attributes (coefficient β = 0.145), perceived value of functional-related items (coefficient β = 0.139) and finally the hedonic

[79] Hair, Hult, Ringle, et al., *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 2017.
[80] Caetano, *Main Drivers for Microtransactions as Impulse Purchases in E-Commerce*.
[81] Wu, Chen, and Chiu, "Defining Key Drivers of Online Impulse Purchasing."
[82] Shahpasandi, Zarei, and Nikabadi, "Consumers' Impulse Buying Behavior on Instagram."
[83] Hair, *Multivariate Data Analysis*.

personalization attribute (coefficient β = 0.106). The remaining variables in the form of perceived risk have very low path values (each of which has a coefficient value β = 0.048), and these variables also do not show a significant value indicated by the variable p value greater than 0.05.

Based on the results of the statistical tests conducted, the H9 hypotheses regarding the relationship between impulsive loot box purchases and purchase intentions is accepted because it has a p value <0.05. Based on the hypothesis, impulsive purchases of loot boxes affect the intention to buy loot boxes at normal prices with a beta coefficient of 0.452 as shown in Table 6. Based on the results of structural model on SmartPLS shown in Figure 1, the intention to buy a loot box has an R2 value of 0.416, which means that this variable explains 41.6% of the variance in the intention to buy a loot box. According to Hair et al., this shows the phenomenon of explanatory effects in the weak to moderate range. Based on the results of the effect size (f2) from the structural model analysis, the effect size of the loot box impulsive purchase variable on the loot box purchase intention variable is classified as large (with a value of f2 = 0.254) according to Hair et al.'s assessment criteria.[84] This means, if the impulse buying loot box variable is removed from the model construct, it will reduce the value of the coefficient of determination (R2) of the two purchase intention variables to a moderate size.

Based on Table 6 and Figure 1, prices can moderate the relationship between impulse buying loot boxes and loot box purchasing intentions. According to the information contained in the table, the beta coefficient value of the price moderating variable is negative (-0.063). This means that price affects the loot box purchase intention inversely, the higher the price the lower the loot box purchase intention. Next, is to look at the size of the price variable moderating effect. The price moderating effect can be seen based on the interaction between the independent variable (in this case the impulse buying loot box as mediating variable) and the dependent variable (loot box purchase intention).[85] As can be seen in Table 6 and Figure 1, the interaction between price variables has a negative effect on purchase intention (–0.063), while the simple effect of loot box impulse buying on purchase intention is 0.452. Together, these results show that the relationship between impulse buying loot boxes and loot box purchasing intentions is 0.452 for the average level of loot box prices. For a higher price point (for example, the price is increased by one standard deviation unit), the relationship between impulse buying loot boxes and loot box purchasing intentions decreases by the interaction term (ie, 0.452 – 0.063 = 0.389). Conversely, for lower prices (for example, variable price minus one standard deviation), the relationship between impulse buying loot boxes and loot box purchase intentions becomes 0.452 + 0.063 = 0.515. The simple slope plot in Figure 2 visualizes the two-way interaction effect.

[84] Hair, Hult, Ringle, et al., *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 2017.

[85] Hair, Hult, Ringle, et al.

Further analysis of the price moderating effect by looking at the simple slope of the SmartPLS application. The analysis shown in Figure 2 represents the relationship between impulse buying loot boxes and loot box purchasing intentions. The middle line in Figure 2 represents the relationship for the mean level of the price moderator variable. The other two lines represent the relationship between impulse buying loot boxes and loot box purchase intentions for the higher (mean price value plus one unit standard deviation) and lower (mean price price minus one standard deviation unit) level of the moderator variable. price. As can be seen, the relationship between impulse buying loot boxes and loot box purchasing intentions is positive for all three lines indicated by their positive slope. Therefore, a higher level of impulse buying loot boxes goes hand in hand with a higher level of loot box purchasing intent.

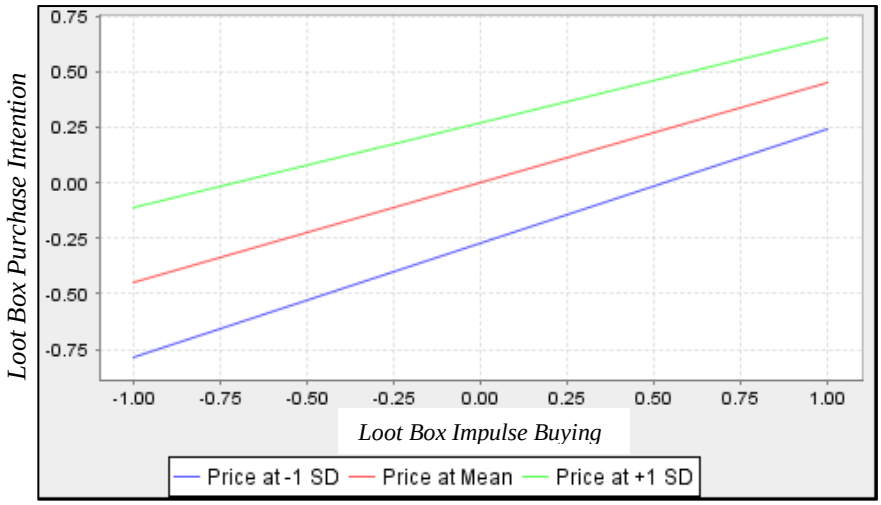


Figure 2. Simple Slope Analysis of the moderating variable

In addition, an analysis of the moderating effect can be carried out in more detail in Figure 2. The upper line, which represents the high-level price moderator construct, has a slightly flatter slope than the lower line, which represents the low-level price moderator construct, has a slightly steeper slope. This makes sense because the interaction effect is negative. As an approximation, the slope of the high-level price moderator construct is simple effects (ie, 0.467) plus interaction effects (−0.071), while the low-level slope of the price moderator construct is simple effects (ie, 0.467) minus interaction effects (−0.071). Therefore, the simple slope plot supports the previous discussion of negative interaction terms: A higher price level leads to a weaker relationship between impulse buying loot boxes and loot box purchase intentions, whereas a lower price level leads to a stronger relationship between impulse loot boxes. buying and intention to buy loot boxes.

CONCLUSION

The conclusions from this study can be compiled based on the proposed formulation of the problem are as follows. Factors that influence impulsive purchases of loot box products are perceived value in the form of performance and function of virtual items, reduced self-control (self-control fatigue), social personalization item attributes on virtual items and hedonic browsing and flow of experience because statistics have the greatest relationship. Based on the research that has been done and the literature review that was carried out in formulating the theoretical basis of this research, it can be said that the purchase of loot box content is the result of an impulse purchase. As mentioned in the results section, the price increase is in the range of Rp. 10.000 up to Rp. 50,000 has a moderating effect on the purchase intention of purchasing loot boxes. What's more, the price moderating effect is shown when a higher price will result in a lower relationship between impulse buying loot boxes and loot box buying intentions and vice versa.

Based on the results of the research that has been done, few managerial implications that can be used as recommendations and suggestions for related digital marketing practitioners, especially those working in the game developer field with the target market for generation Z FPS and MOBA video game players in Indonesia.

Reflecting on the results of research that has been done, game developers must ensure that video games played by players are fun because research results show that flow of experience is the biggest factor that drives impulse buying loot boxes. In the process of creating a state of flow in the players, video games must be designed in such a way as to reflect the dimensions of hedonic motives with activities such as adventure, gratification and idea shopping in order to induce a state of flow in the players. The success of this stage triggers a state of flow of experience in video game players which increases their level of impulse buying.

The items offered and sold in the loot box also affect the players' impulse buying decision based on the perceived value of the players. Based on this research, the perceived value of the players is divided into two: performance value and functional value related items. Performance values refer to items that can give players a direct competitive advantage, and functional values are items that expand gameplay options for players (new maps, new levels, new stories, and so on). For video games such as FPS and MOBA whose games have high competitive balancing, items with performance values are usually more unorthodox, such as Dota+ in the game Dota 2. If game developers can create items loot boxes that find a balance between performance and functional value for their players is the most optimal step in increasing players impulse buying tendency to buy loot boxes.

Increasing the chances of impulsive purchases of loot boxes for players can also be done by diluting the level of self-control of video game players (in this study, the variable is also called

self-control depletion). The dimensions of self-control of video game players discussed in this research are resources (psychological), willingness (motivation), and capacity. Some examples of low self-control felt by players adapted to the research context based on the three aspects of self-control in the discussions that have been carried out, if the players are in a low level of self-control then: in the resources aspect is to increase the availability of existing loot boxes: can be performance, functional, hedonic and social related items. In the willingness aspect, this relates to motivation related to challenges or barriers in gameplay that large developers can change to reduce the level of self-control, based on a survey conducted, this is also related to flow of experience. With a low level of self-control, motivation becomes low to face the level of challenge given by the game. This has the implication that a high level of challenge when motivation is low can tempt players to buy loot boxes that can help them complete the challenges given. However, developers should be careful about this. A very big challenge will actually reduce flow, making players not want to play (the double edged sword phenomenon). In the capacity aspect, it is closely related to memory, inhibition and cognitive flexibility. This research does not touch on these three aspects at all because research on these three matters is beyond the reach of management science, but other sciences such as, for example, psychology, makes this one of the limitations of this research. However, one thing that is certain from the research results is that when capacity is at a weak point it can tempt consumers to buy loot boxes.

Game developers can also set the external attributes that make up the virtual items that will be sold in the loot box. The attributes in this study are divided into two, one of which influences the impulsive purchases of video game players is the social personalization attribute and the hedonic/emotional personalization attribute does not affect the player's impulsive purchases. Based on the results of the study it seems that Indonesian generation Z FPS and MOBA video game players tend to have impulses towards goods with social attribute orientation compared to hedonic/emotional attributes.

The interesting thing about this research is that the researchers found that the risk perceived by the players (perceived risk) actually did not affect the impulse buying loot box and the loot box buying intention of the players. It can be said that if the factors previously mentioned have been implemented properly (hedonic browsing – flow, perceived value, depletion of self control, and social personalization) generation Z Indonesian FPS and MOBA video game players are willing to buy regardless of the risks involved.

Few limitations of this research including the scope of the microtransaction which only discusses loot box products, meaning that they may be relevant or even irrelevant to other microtransaction products. This research only focuses on Indonesian Z generation gamers, which means it may not be relevant to other types of player demographics (both demographics in terms

of age, gender, and even geography). Results cannot be generalized to other demographic groups. The research only focuses on video game players in the FPS and MOBA genres. The application of this research may not be relevant to other microtransaction research subjects (for example: different genres, Ips (Intelectual Properties), titles, or certain game franchises, and many more). The basic literature for compiling the model used in this research is quite old, namely research conducted in 2017. The self-control aspect is an aspect that has not been touched by much management behavior research as in this study. One of them is capacity. This aspect of capacity can be expanded further in future research in fields of knowledge that discuss and touch on representation of these aspects such as memory, inhibition and cognitive flexibility.

Based on the research limitations, it is suggested that researchers for future research can review specific virtual products (for example, this research is virtual loot box products), specific and different genres, IPs, titles, or certain game franchises, or even to other demographics. This suggestion is based on previous research conducted on microtransactions in general. Another suggestion is that regarding the aspect of self-control capacity it can be expanded further in further research in the field of science that discusses and touches on the representation of these aspects such as memory, inhibition and cognitive flexibility.

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