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From Play to Pay: Exploring Imaginal and Emotional Virtual Item Retail Experiences in Online Game Environment

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ABSTRACT

In online gaming, selling virtual game items is a growing phenomenon designed to engage players. Despite growing adoption, little remains known regarding the gamer's perceived virtual item retail experiences, particularly in the online game retail context. Based on the hedonic consumption perspectives, we examined the role of escapism, role projection, fantasy, enjoyment, emotional involvement, and arousal in developing positive attitudes toward in-game virtual items, which eventually enhanced behavioral outcomes such as game store loyalty, willingness to pay (WTP) and word-of-mouth (WOM). We collected survey data from 281 online gamers and analyzed the data using partial least squares (PLS)-based structural equation modeling. The results indicate that fantasy, escapism, enjoyment, and arousal significantly enhance gamers' favorable attitudes toward virtual item experiences. Moreover, the findings indicate the positive influence of attitude on players' WTP, loyalty to retailers, and positive WOM. This study is the first to explore imaginal and emotional experiences as antecedents that derive gamers' favorable attitudes toward in-game item retail experiences and their subsequent influence on gamers' consumption behavior. Online game retailers may benefit from focusing on virtual item experiences to elevate premium gamers' retail attitudes and their ensuing consumption behaviors.

KEYWORDS

Online games; freemium-premium service; virtual items; imaginal and emotional experiences; willingness to pay; word-of-mouth

1. Introduction

The steered pace of competition and cutting-edge technologies in the last decade has changed consumer behavior paradigms in the virtual gaming world (Oh et al., 2023). The gaming world utilizes a different service strategy, for example, free-to-play (F2P) or freemium-premium service model (Hamari et al., 2020; Mkedder et al., 2024). The freemium-premium service model refers to a service-pricing structure where essential gaming services are free and revenue is generated by using different monetization strategies (Syahrivar et al., 2022; Yu & Huang, 2022). This business model acts as a hook to attract and engage players without any upfront cost. In these gaming services, the revenue is generated through customized service offerings at a premium rate or selling in-game items to enhance the players' experience and psychological well-being (Hussain, Abid, et al., 2023; Sun et al., 2024). The escalating popularity and expansion of in-game content purchasing have offered additional revenue generation opportunities for online game studios and publishers (Hussain et al., 2024; Mkedder et al., 2024). For instance, in the top 300 apps in the Apple app store, most downloadable game apps are free of cost, and revenue is generated mainly by selling additional in-game virtual augmenting content (Numminen et al., 2022). *PUBG Mobile*, *Honor of Kings*, *Pokémon Go*, and *League of Legends* are considered some popular online games classified as F2P games (Fang et al., 2019; Kosa & Uysal, 2021). Many online games have a worldwide presence and upsell different in-game virtual content for revenue generation.

Nonetheless, the rise of the F2P service paradigm in the online game industry has presented new issues for game developers and publishers. Due to fierce rivalry in the industry, 500 new games are developed and published online daily, with significant financial investment (Hussain et al., 2022). But, only a scarce number of players are retained as premium customers, which is the key source of revenue generation for the F2P game services model (Mai & Hu, 2023; L. Wang et al., 2021). Gaming firms invest significantly in promotions and related marketing initiatives to attract online game players toward premium in-game content. Even so, game developers can only attract and retain these premium users with a proper understanding of in-game retail experiences that drive them to purchase this content (Zhao et al., 2024).

Virtual game retail experiences are important for game developers and retailers when engaging gamers for

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customized offerings (Lintula et al., 2017). Retail experiences are cardinal in inducing consumers' intentions and attitudes toward products/services. Prior literature in virtual and traditional retail focused on user experiences such as emotional, cognitive, behavioral, social, and sensorial responses during the purchase process (Godovykh & Tasci, 2020; Jain et al., 2017). From the hedonic standpoint, J. Wu and Holsapple (2014) and Abbasi, Alqahtani, et al. (2023) have conceptualized it as imaginal (building an illusory world to fulfill the psychological need for escapism, role projection, and fantasy), and emotional (e.g., a feeling of being carried off by the action). The hedonic consumption perspective explains that consumption is a multi-sensory, fantasy, and emotive aspect of the user's experience with products (Holbrook & Hirschman, 1982; Liu et al., 2020) to induce positive outcome behavior (Yadav et al., 2023). For example, J. Wu and Holsapple (2014) investigated imaginal and emotional experiences to predict behavioral intention and usage of information technology and reported significant results. Similarly, Abbasi et al. (2019) examined the relationships between hedonic consumption experience and user engagement with using games platforms. Hollebeek et al. (2022) argued that previous research failed to understand the relationship comprehensively; hence, they integrated the hedonic consumption experience perspective with the theory of planned behavior (TPB) to predict video gaming behavior. It is evident that previous research mostly explored the theoretical link between hedonic consumption components, game engagement, and playing behavior (i.e., antecedents of playing behavior), while research concerning F2P gamers' retail behavioral outcomes, such as game store loyalty, WTP, and WOM are largely overlooked. Understanding behavioral outcomes is crucial as it provides strategic guidelines for sustaining any business model (Kumar et al., 2013). Besides, research about gamers' experience with in-game virtual items is also rare.

Based on the aforementioned research gap in the virtual game retail literature and the idiosyncratic nature of in-game content purchasing, our research aims to fill this gap by conceptualizing an integrative framework of virtual items retail experiences by employing both imaginal (fantasy, escapism, and role projection) and emotional (enjoyment, arousal, and emotional involvement) experiences that influence gamers' purchase behavior based on stimulus-organism-response (S-O-R) model. This framework explains the relationship between stimuli (e.g., experiences), organism (e.g., attitude), and responses (e.g., retail behavior) and is extensively used in different marketing and Human-Computer Interaction (HCI) retail contexts. Based on this, our proposed theoretical framework is grounded on the S-O-R model, which comprises three imaginal (fantasy, escapism, and role projection) and three emotional (enjoyment, arousal, and emotional involvement) experiences as stimuli inducing players' attitude toward in-game retail experiences. Consequently, attitude influences players' consumption behavior (e.g., game store loyalty, WTP, WOM).

The contributions of our study are multi-fold. First, we extend empirical evidence by demonstrating a significant guild among the dimensions of imaginal and emotional experiences on players' attitudes toward virtual retail and in fostering desirable consumption behavior. Further, we demonstrate game store loyalty, WTP, and WOM as potential behavioral outcomes of players' positive attitudes during the in-game retail journey. Second, the current research adopted the S-O-R model by framing both imaginal and emotional experiences to understand better the multifaceted retail experiences within virtual gaming, which is very scarce. Therefore, we contribute to the emerging gaming literature by extending the S-O-R model to examine the in-game retail experience and its outcomes. Practically, study findings substantiate that virtual item retail experiences have a valuable effect on players' behavior, warranting retail experiences' strategic importance for online game practitioners.

2. Theoretical background

2.1. Hedonic retail experiences

To gain a competitive advantage, the creation of a unique retail experience is a compelling and relevant success factor for all companies, especially in a digital retail environment where such experiences translate into a digital context. This phenomenon is more relevant in virtual game retail, where selling in-game premium content is very challenging. A customer's retail experience during shopping begins with their desire to fulfill certain needs that consequently lead to shopping motivations. Recent gaming literature conceptualized in-game purchasing that is motivated by utilitarian and hedonic experiences (Yu & Huang, 2022). Utilitarian experiences reflect the acquisitions of in-game premium goods/services for the sake of task-oriented, non-emotional, and cognitive-driven (Stein & Ramaseshan, 2019). Whereas hedonic retail experiences comprised of elements that not only provide functional aspects of games but also provide players with enjoyment, pleasure, and entertainment (Hollebeek et al., 2022).

Online gamers have long been engaged with virtual game content predominantly for hedonic reasons (W. Wang & Hang, 2021) even with functional content (L. Y. Huang & Hsieh, 2011). W. Wang and Hang (2021) illustrated that gratifying gaming experience together with monetary value, character competency, and visual authority value significantly influences in-game content purchase intention. For instance, purchasing new powerful weapons and tools at discounted prices not only enhances the player's character competency but also creates a more pleasurable retail experience. Similarly, the finding of Marder et al. (2019) suggested that gamers mostly engaged with nonfunctional items purchasing to have more experiential-oriented activities that include meaningful and long-term social interactive relationships with other gamers. For example, players might purchase some distinct avatar for team appearance which is very common in multi-player online games (Yildiz et al., 2024), however, to maintain social cohesiveness players will refrain from purchasing such avatars if their esthetics do not match those of the others in the team (Marder et al., 2019). Based on the aforementioned empirical evidence available, a

better understanding of how gaming firms can incorporate hedonic elements in the design of in-game virtual item retail experiences will offer important insight for game retailers and service providers who are always concerned about the monetization process of in-game virtual items.

2.2. Play to pay gaming business model

New product promotions typically include free samples, with the expectation that future sales will be facilitated through the immediate trial of the sample (Jiang et al., 2021). The freemium business model, on the other hand, is a notable monetization strategy for promoting modern online applications (e.g., Spotify, LinkedIn, online games), where core products/services are made available free of charge (with limited functionality, time constraints or reduce quality; Hamari, Hanner, et al., 2017). Revenue is generated by upselling in-app purchases (e.g., virtual content, upgraded plan, enhanced functionality) for those who wish to enjoy the advanced experience and in-app advertising to persuade users to pay for premium (Abbasi et al., 2021; Gong et al., 2024). Likewise, over the past few years, the freemium model has become a novel gaming service model, as it helps to attract a large user base (potential customers) to access and experience the basic version of the game free of charge before committing to the premium subscriptions or in-game purchases (Mäntymäki et al., 2020). Additionally, this increases players' engagement and retention with a game since they have more time to explore and test out the product/services (Bapna et al., 2018; Hamari et al., 2020).

However, due to this freemium gaming business model, game publishers and developers now confront additional obstacles to their sustained survival in the online gaming market (Hussain, Abid, et al., 2023). The increased competition shifted from the older (premium-based) business model to the F2P business model. For example, one of the most popular online games developed by Valve, namely - Team Fortress 2, transformed into a free game in 2007, multiplying its customer base (Alha et al., 2014). Another popular online multiplayer-based game - Dota 2- follows the F2P business model. Valve introduced in-game virtual items – cosmetics for Dota 2 enriching Dota 2 in-game characters and soundtracks, which eventually became one of Valve's most giant cash cows (Ghazali et al., 2023). On the other hand, for those who wanted to upgrade their experiences, premium packages, i.e., in-game items, were available for purchase. The thirst for attaining more allows the players to purchase premium packages, i.e., in-game items (Brockmann et al., 2015).

The primary source of revenue for the F2P game services model comes from premium users who also buy in-game items. Game developers have access to vast amounts of user data based on demographics, gaming, understanding gamers' motivation, and retail store behavior that may be used to predict online gamers' outcome behavior such as game store loyalty, WOM, and spreading positive WOM. This process helps game developers target specific virtual objects to generate revenue instead of a premium-based subscription by selling in-game items to players (Ratchford et al., 2023).

2.3. Stimulus-organism-response model

Using the S-O-R model, the current research study integrates imaginal and emotional perceived experiences to understand the role of video game players' attitudes toward in-game virtual items. The S-O-R model was introduced by Mehrabian and Russell (1974) and later modified by Jacoby (2002). The model comprises three fundamental components: "stimuli" (S), "organism" (O), and "response" (R). Stimuli refers to the external environmental factors that affect user emotions (Hussain, Hooi Ting, et al., 2023). Organism refers to the psychological process by which the user incorporates the stimulation into information (Bai et al., 2024). Response refers to the user's behavior in response to the external stimulus information (Cao et al., 2024). These elements are essential in this study for evaluating the factors that influence people's intention to respond in a certain way toward gamers' attitudes regarding in-game virtual item experiences. The model illustrates that external stimuli trigger fundamental internal processes within an individual, leading to distinct behavioral outcomes. Given that the reactions of game players are influenced by their cognitive processing of in-game virtual items, we consider this framework suitable for representing this study's theoretical foundation. The S-O-R model is a typological classification of theoretical approaches in studying consumer behavior.

An extensive examination of the literature reveals that although numerous studies on the S-O-R model have been conducted in online video gaming (C.-H. Hsiao & Tang, 2021), more research is needed to focus explicitly on game players' attitudes toward purchasing in-game virtual items. In our current study, the S-O-R in which the environment (S) stimuli are composed of the hedonic consumption experiences demonstrates that imaginal experiences (fantasy, escapism, role projection) and emotional experiences (emotional involvement, enjoyment, arousal) act as stimuli that enhance gamers' attitudes toward virtual items. The organism (O) component reflects players' attitudes from the in-game virtual items experience. These positive attitudes, formed through deep emotional and imaginative engagement, lead to favorable behavior outcomes of game players that show a response (R), such as increased loyalty to the game store, a greater willingness to spend money on virtual items, and positive WOM. Essentially, the rich, immersive, and emotionally rewarding experiences in the game (S) positively influence players' evaluations (O), resulting in beneficial behavioral responses (R).

3. Hypotheses development

3.1. Imaginal aspects of virtual in-game items experience

Fantasy refers to the cognitive process of constructing an imaginary world or things detached from reality to fulfill psychological desires that are unattainable in the real world (e.g., having multiple identities like dwarves, orcs, or humans; Bennett et al., 2023; Meredith et al., 2009).

Gupta et al. (2024) stated that fantasy offers an ability to escape from the reality of the real world and to seek an alternate reality that matches personal needs and interests. A virtual gaming environment provides an imaginative world where gamers' needs and desires are represented. It provides them with distinct, tailored, pleasurable interactions within the game world, ultimately augmenting their attitudes and overall contentment. Likewise, enhancing environmental entities contributes to players' motivation in gameplay; however, other additional features such as the game narrative, imaginal characters, and power tools that help to progress with the game are also crucial to have a more fantasized gaming experience (Choi et al., 2013; Perreault et al., 2022). For example, in *Heroes of the Storm,* gamers exercise their fantasies by playing the role of the hero and developing the story of the game through their actions. Therefore, gamers who engage with the gaming world to express their fantasies are likely to pay for premium additional services (e.g., virtual items) to emphasize these experiences. Therefore, we hypothesize that:

H1: Fantasy positively influences gamers' attitudes toward in-game virtual item experiences.

Escapism describes the cognitive activities that fulfill a person's need to avoid unpleasant social realities or diversion from real-world problems (Abbasi, Ayaz, et al., 2023; T.-L. Huang et al., 2024). Recent literature highlighted escapism as a two-faced construct, comprised of self-suppression, and self-expansion. This means people not only engage in online platforms to escape from the self, but they also want to expand the self (Mir, 2023). In online game settings, people engage in this activity to seek constant avoidance from different problems they encounter in the real world. Alongside, they also gain escapism by expanding their self-concept; for example by acquiring new resources, enhancing competencies, and developing new virtual identities that they are missing in the real world (Ahn et al., 2024). After the rise of freemium game services, players have limited opportunities to fully enjoy the game and consequently take some temporal breaks from real-world problems. To make the gaming experience more immersive and escapist, players purchase different in-game items for instance, customized weapons, avatars, game plots, and game-related esthetics (Hussain, Abid, et al., 2023). This illustrates how in-game items help gamers to freely develop their own escapist gaming experiences and empower them to achieve what is impossible in the real world. Hence:

H2: Escapism positively influences gamers' attitudes toward in-game virtual item experiences.

Role projection pertains to the cognitive processes through which individuals can mentally project themselves into specific roles or characters (Abbasi, Alqahtani, et al., 2023; Hirschman, 1983). Online games are considered to provide an ideal opportunity to project themselves into fictional characters that they would like to be (e.g., Ryu Hayabusa, Enoch). Similarly, in F2P games players can build and select some personalized in-game virtual characters or avatars that help them to project their desired identities (Szolin et al., 2023). In multiplayer games, the choice of characters is often based on the players' preference for play style and the needs of their team, ensuring that the team can successfully tackle a variety of challenges within the game world (Dimitriadou et al., 2021; Vahlo & Karhulahti, 2020). For example, a warrior may be portrayed with armor and weapons, while a healer appears serene and mystical. These virtual items not only allow gamers to effectively project themselves into these distinct roles but also augment their overall virtual game retail experience. Hence, we propose the following:

H3: Role projection positively influences gamers' attitudes toward in-game virtual item experiences.

3.2. Emotional aspects of virtual game items experience

Emotional involvement is the psychological state in which an individual gets deeply involved in something (e.g., brand, place, or event) based on internal needs, values, or experiences (Abbasi, Alqahtani, et al., 2023). Recent gaming literature highlighted that most people engage with online games to fulfill some unique emotional needs namely social connections, passion, and affection (Lei et al., 2024). It is also noticed that playing with strong emotional involvement can give a more pleasurable and rewarding gaming experience together with meaningful social connections. For example, most role-playing games offer different personalized avatars, a medium through which players can travel in the virtual gaming world. These personalized avatars look almost like reflections of themselves and gamers develop strong emotional involvement with such virtual content; in turn, feel that spending more time and money in the gaming world is worthwhile (Mancini et al., 2019). Furthermore, S.-L. Wu and Hsu (2018) claimed that the premium esthetic design of online games (e.g., game plots, animations, and settings) can influence players' emotional responses and willingness to interact with them. Analogously, purchasing some personalized and favorite virtual items may elicit different emotional responses that enhance gamers' in-game retail experience. Based on the above reasoning, we hypothesize that:

H4: Emotional involvement positively influences gamers' attitudes toward in-game virtual item experiences.

Enjoyment is a subjective emotional state characterized by feelings of pleasure and joy an individual experiences while engaging in a particular activity (Kneer et al., 2022). Perceived enjoyment is considered a key intrinsic motivation and an important reason to participate in online games. Prior research indicates that different virtual items are deliberately incorporated into the virtual gaming world to generate more pleasure and experiential gaming experiences for the players (Cai et al., 2022). For instance, in the freemium version players may have limited access to game services and to have full immersive, and enjoyable gaming experiences they are more inclined to purchase virtual items that enhance their gameplay experience, appearance, and social status within the game community (Hamari, 2015; Mkedder & Özata, 2024). Like traditional shopping, acquiring rare or

desirable virtual goods may provide additional enjoyment and satisfaction, positively shaping gamers' attitudes and willingness to make in-game purchases (Huo et al., 2023). The findings of Jiao et al. (2022) suggested that if virtual items are reasonably priced, highly engaged players may be more open to improving their enjoyable gameplay experience through various microtransaction options. Thus, in online game retail settings, enjoyable experiences stimulate positive attitudes toward in-game virtual item experiences, enhancing players' purchase-related behavior. We propose:

H5: Enjoyment positively influences gamers' attitudes toward in-game virtual item experiences.

Arousal is a psychological state characterized by elevated emotional activation, excitement, or alertness triggered by external sensory stimulation (Abbasi, Alqahtani, et al., 2023). Prior studies on HCI and marketing literature indicated that being highly aroused facilitates recognition and long-term retention. Findings also indicate that not only playing but also spectating online game events (e.g., eSports events) have engaging and arousing experiences for gamers, especially those who have some interactive control over the game (Juvrud et al., 2022). For example, premium gamers who can control specific attributes, such as game plots, in-game characters, and audio and visual esthetics feel more excited and aroused compared to freemium gamers (Toh, 2023; Woods, 2022). Furthermore in F2P games, when gamers find a similar and repeating environment, they try to stimulate their excitement and arousal from additional resources available in the games; for example, premium content that enhances the overall gaming experience (Hussain, Abid, et al., 2023). Therefore, game players are more likely to engage with such virtual content that helps to enhance their overall retail as well as game experience. Accordingly, we posit:

H6: Arousal positively influences gamers' attitudes toward in-game virtual item experiences.

3.3. Loyalty, WTP, and WOM behavior

In-game virtual item experiences act as a key component in online game retail, as a positive attitude toward virtual item experiences enables game retailers to bind with players on an imaginal and emotional level. Recent gaming literature focused on the role of the F2P game retail experience as a factor influencing gamers' loyalty to premium games (Hussain, Abid, et al., 2023). For instance, K.-L. Hsiao and Chen (2016) indicated that players with high involvement and positive experiences with in-game content showed loyalty toward it (Balakrishnan & Griffiths, 2018). Likewise, high involvement and positive experiences with virtual game content reinforce attitudinal and behavioral loyalty and also result in higher rates of repeat purchases (L. Wang et al., 2023). In F2P games, WTP is illustrated as the degree to which players intend to spend money to purchase additional resources (e.g., in-game content) offered by game retail platforms (Salehudin & Alpert, 2022). As in the freemium version, players have limited access to game features in the freemium version, so they understand the need to engage in microtransactions to have a more immersive gaming experience. Game service providers and retailers can encourage players to acquire premium in-game content if they offer some unique game experiences that are engaging and distinct that they are not available in the freemium format (Rezaei & Ghodsi, 2014). WOM implies a willingness to provide positive/negative feedback or opinions about a product or service to a referent group (Purohit et al., 2023). Users with positive or negative experiences with a given system are often more likely to share their distinct experiences with others. In the virtual retail setting, M. Huang et al. (2017) illustrated that most gamers value the opinion of other users who already purchased and used virtual items. Like online fan communities, different groups or clans within games often have open discussion forums or chat systems for discussing and recommending additional game features during gameplay. Thus, we proposed that:

H7: Gamers' attitudes positively influence their game store loyalty.

H8: Gamers' attitudes positively influence their WTP.

H9: Gamers' attitudes positively influence their WOM behavior.

Our current study proposes a conceptual model derived from the above literature review. We test the association between the identified drivers and their ensuing respective effects on gamers' attitudes toward in-game virtual item experiences (see Figure 1).

4. Methods

4.1. Questionnaire development

Each construct included in our model was adapted from existing multi-item measurement scales, with slight modifications to reflect our research context of in-game virtual content experiences. For example, items measuring imaginal experiences comprising fantasy, escapism, and role projection, and emotional experiences comprising enjoyment, emotional involvement, and arousal were adapted from Abbasi, Alqahtani, et al. (2023), J. Wu and Holsapple (2014). Items for attitude toward in-game virtual items experience were modified from Purohit et al. (2023), Hamari et al. (2016). Similarly, the scale for game store loyalty was adapted from Chou et al. (2015), WTP from Nyadzayo et al. (2020), and WOM from Purohit et al. (2023). We collected our survey in English from a sample of Malaysian online gamers who self-reported to be gamers and familiar with in-game virtual item purchases. Items were measured using five-point Likert-type scales, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). An overview of our measurement items is presented in the Appendix.

4.2. Data collection and sample

Respondents were first screened as regular players of online games (playing online games a minimum of once a week)

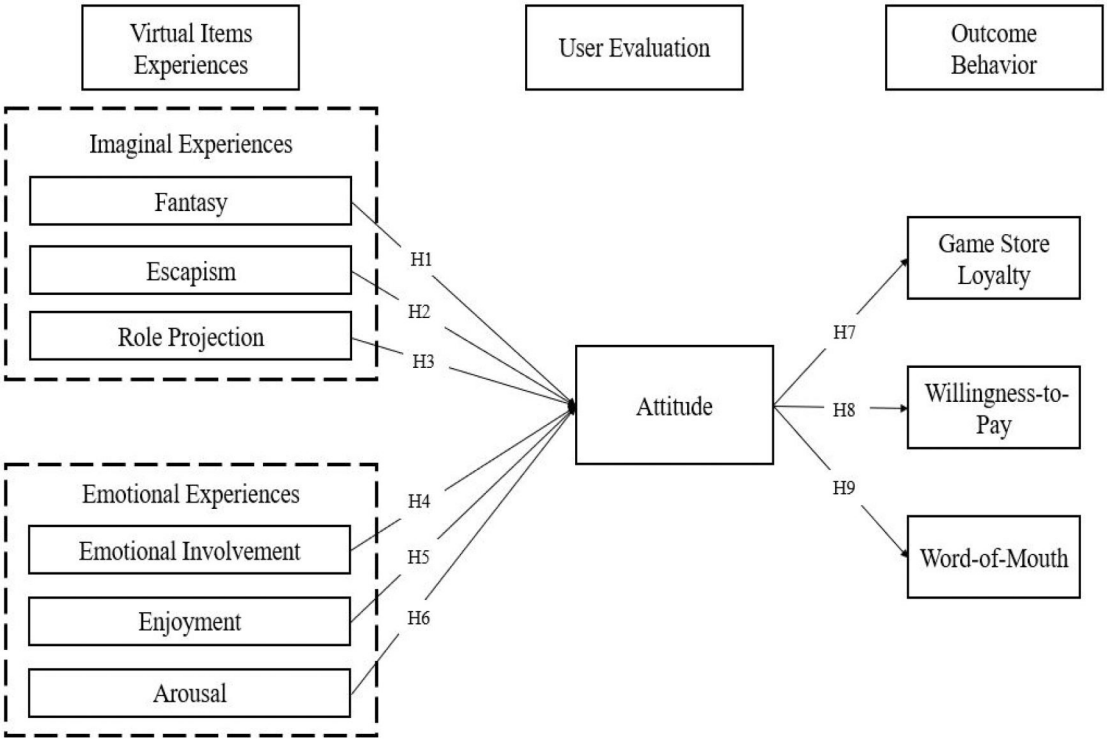

Figure 1. Hypotheses-based conceptual model.

and familiar with in-game virtual content purchasing. A self-administered survey was developed and distributed among members of major Malaysian online gaming and esports social media discussion groups. According to Lou et al. (2019), this approach is efficient for reaching distinct online game players. Several studies, including (Hamari et al., 2020; Sharma et al., 2022; W.-K. Tan & Yang, 2022), used multiple online discussion forums to solicit survey respondents. In addition, our study did not focus solely on one online game discussion forum and fan pages; instead, we contacted multiple forums to approach major gamers with diverse demographic characteristics (gender, age, and occupation) to ensure that representative samples were selected. In line with Teng (2021) and W.-K. Tan and Yang (2022), our study did not focus on a specific online game and consider all those games that offer additional or premium virtual items (either through a loot box or privately), which further helps to enhance the generalizability of the research. Explanations were provided in the questionnaire to ensure that respondents fully understood the scope of the study, the loot box method, and the direct purchase method. Those who met the criteria of having purchased virtual items (through loot boxes or direct purchases) from the online game were allowed to complete the questionnaire. After eliminating incomplete surveys, we retained 281 usable questionnaires for further analysis (see Table 1).

Table 1. Respondent profile (n = 281).

Items	Category		Percentage (%)
Gender			
	Female	93	33.1
	Male	188	66.9
Age			
	15-20	73	25.9
	21 - 25	98	34.9
	26 - 30	56	19.9
	31 - 35	32	11.4
	36 and above	22	7.83
Frequency of playing a videogame			
	Daily	131	46.6
	A few times a week	89	31.6
	Once a week	53	18.8
	Monthly	08	2.84
Monthly in-game spending (RM)			
	<100	41	14.6
	100-200	68	24.1
	201-300	96	34.1
	301-400	38	13.5
	401-500	22	7.82
	> 500	16	5.69

4.3. Common method bias (CMB)

Since we used a single source for the data collection, prior literature suggests that the data may be prone to CMB (Baumgartner et al., 2021; Kock et al., 2021). Therefore, it is recommended that the CMB be examined before further analysis is conducted. To assess CMB, we used Harman's single factor (Fuller et al., 2016; Mkedder & Özata, 2024) and variance inflation factor (VIF) (Hair et al., 2019) which are commonly used techniques to identify CMB. Results revealed that the maximum variance explained by any single factor was 31.76%, well below the acceptable threshold of 0.50 (Sarker et al., 2021). Similarly, we accessed the VIF values and found that all the values between 1.651 and 2.673 were below the threshold value of 3.3 (Sarstedt et al., 2021). Both empirical findings show that CMB is not a concern in our study.

Table 2. Measurement model assessment.

Construct	Items	Outer Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Escapism	ES1	0.729	0.752	0.855	0.664
	ES2	0.859			
	ES3	0.850			
Fantasy	FA1	0.730	0.846	0.895	0.681
	FA2	0.833			
	FA3	0.908			
	FA4	0.821			
Role projection	RP1	0.852	0.918	0.941	0.799
	RP2	0.927			
	RP3	0.929			
	RP4	0.864			
Enjoyment	EN1	0.784	0.784	0.871	0.692
	EN2	0.818			
	EN3	0.891			
Emotional involvement	EI1	0.852	0.922	0.941	0.800
	EI2	0.873			
	EI3	0.932			
	EI4	0.919			
Arousal	AR2	0.843	0.824	0.881	0.651
	AR3	0.824			
	AR4	0.725			
	AR5	0.830			
Attitude	AT1	0.786	0.858	0.904	0.701
	AT2	0.856			
	AT3	0.890			
	AT4	0.814			
Game store loyalty	GSL1	0.824	0.875	0.914	0.727
	GSL2	0.876			
	GSL3	0.861			
	GSL4	0.849			
Willingness-to-pay	WTP1	0.954	0.796	0.902	0.821
	WTP2	0.856			
Word-of-mouth	WOM1	0.908	0.771	0.897	0.814
	WOM2	0.896			

5. Results

5.1. Measurement model results

First, we assessed the measurement model's convergent validity by examining the outer loadings of the items for each construct, composite reliability (CR), and average variance extracted (AVE). According to Hair et al. (2013), the outer loading of an item for each construct should exceed the recommended value of 0.7. Each item had outer loadings above 0.7, except for ES4, EI4, EN4 AR1, and WOM3. These five items were deleted due to low factor loading criteria (see Table 2).

We next assessed the model's Cronbach's alphas (CA) and CR scores, where both exceeded the recommended value of 0.7 (Henseler et al., 2009). In addition, Table 2 shows that the CAs and CRs for all constructs were greater than 0.7, thereby meeting the scale reliability criterion. We performed a convergent validity test by examining the AVE. The AVE value must be at least 0.5, thereby explaining at least 50% of the variance of its indicators (Y. J. Kim & Han, 2014). As can be seen in Table 2, each of our latent constructs had AVE values higher than the recommended level of 0.5, thereby fulfilling the conditions for convergent validity.

The heterotrait-monotrait (HTMT) ratio of correlation (Henseler et al., 2015) was used to evaluate the discriminant validity of the construct. HTMT is considered a more rigorous method for establishing discriminant validity, with a cutoff ratio of 0.85 (Roemer et al., 2021). Our HTMT values were all below 0.85, demonstrating the discriminant validity of our model (see Table 3).

5.2. Structural model results

After achieving satisfactory measurement model results, the next step is to test the structural model. First, we employed standardized root mean square residual (SRMR) criteria to examine the overall model fit (Dash & Paul, 2021). The results revealed that, overall, our model fits well as the SRMR value was 0.06 below the threshold level of 0.08 (Hair et al., 2019). Further, we also examine the study model's in-sample exploratory power by using the coefficient of determination (R^2). The R^2 value for attitude toward in-game retail was 0.595, explaining 59.5% of the observed variation in attitude. The R^2 value for game store loyalty was 0.227, WOM was 0.152, and WTP was 0.419 (Hair et al., 2019).

Bootstrapping of 5000 resamples was used to examine statistical significance of path coefficients and T-value. Table 4 illustrates the results of the structural model assessment and hypothesis testing. Results show that fantasy ($\beta = 0.352$, $t = 5.894$), escapism ($\beta = 0.259$, $t = 5.508$), enjoyment ($\beta = 0.201$, $t = 4.045$), and arousal ($\beta = 0.345$, $t = 5.248$) positively and significantly influence gamers' attitudes toward in-game virtual items, thus supporting *H1, H2, H5*, and *H6*. However, role projection ($\beta = 0.070$, $t = 1.704$) and emotional involvement ($\beta = -0.032$, $t = 0.636$) do not

Table 3. Discriminant validity (HTMT) analysis.

	ARO	ATT	EMI	ENJ	ESC	FAN	GSL	ROP	WOM	WTP
Arousal										
Attitude	0.635 [0.488, 0.749]									
Emotional involvement	0.056 [0.033, 0.065]	0.101 [0.051, 0.177]								
Enjoyment	0.278 [0.146, 0.447]	0.551 [0.368, 0.710]	0.095 [0.038, 0.134]							
Escapism	0.154 [0.085, 0.206]	0.419 [0.265, 0.572]	0.113 [0.047, 0.233]	0.266 [0.135, 0.422]						
Fantasy	0.462 [0.345, 0.569]	0.641 [0.527, 0.741]	0.206 [0.101, 0.339]	0.394 [0.251, 0.534]	0.168 [0.101, 0.248]					
Game store loyalty	0.491 [0.316, 0.639]	0.547 [0.391, 0.687]	0.082 [0.039,0.145]	0.247 [0.108, 0.399]	0.072 [0.032, 0.103]	0.296 [0.167, 0.435]				
Role projection	0.128 [0.062, 0.219]	0.195 [0.088, 0.329]	0.04 [0.016, 0.046]	0.165 [0.065, 0.304]	0.124 [0.051, 0.246]	0.077 [0.035, 0.103]	0.076 [0.031, 0.160]			
WOM	0.485 [0.345, 0.619]	0.784 [0.677, 0.870]	0.082 [0.032, 0.180]	0.255 [0.127, 0.403]	0.477 [0.290, 0.635]	0.543 [0.396, 0.669]	0.472 [0.310, 0.618]	0.082 [0.039, 0.135]		
WTP	0.326 [0.167, 0.481]	0.439 [0.279, 0.589]	0.112 [0.043, 0.254]	0.312 [0.149, 0.464]	0.064 [0.028, 0.079]	0.301 [0.164, 0.449]	0.721 [0.602, 0.825]	0.043 [0.009, 0.073]	0.458 [0.306, 0.596]	

significantly affect gamers' attitudes toward in-game virtual items. Thus, H3 and H4 are not supported. In addition, attitude toward in-game virtual items experience has a significant and positive influence on game store loyalty ($\beta = 0.477$, $t = 7.084$), WTP ($\beta = 0.390$, $t = 5.729$), and WOM ($\beta = 0.648$, $t = 14.458$), confirming hypotheses *H7, H8,* and *H9*.

We examined the out-of-sample prediction accuracy of the research model using Q^2 predict values and compared the prediction error between PLS-SEM and Linear Model (LM), respectively (Hair et al., 2019; Sarstedt et al., 2021; Shmueli et al., 2019). First, the Q^2 predict values for the three final dependent variables ranged from 0.08 and 0.31, demonstrating the theoretical model's small to medium out-of-sample prediction power. We also compared indicator prediction errors between the PLS-SEM model and LM, as shown in Table 5. It was observed that the Q^2 predict value of each indicator is above zero, substantiating predictions outperform the most naïve benchmark (Hair et al., 2019). Next, indicators' prediction errors of game store loyalty were lower in PLS-SEM compared to the LM model (e.g., differences in RMSE or MAE) implying superior prediction accuracy. WTP has moderate to high predictive power, as one of the indicator errors was higher based on the RMSE metric, but all indicator errors were lower in the PLS-SEM model based on the MAE metric. Finally, no predictive power was found for predicting WOM (Hair et al., 2022; Shmueli et al., 2019)

6. Discussion

Given the paucity of attention paid to video game-related consumer behavior in the marketing and HCI literature particularly concerning in-game virtual items experiences and outcome behavior, our study explored the role of in-game virtual items' imaginal and emotional experiences such as fantasy, escapism, role projection, emotional involvement, enjoyment and arousal on players attitude toward virtual items. This, in turn, influences their loyalty toward the game store and WOM behavior. The findings broadly suggest the important and significant effect of our proposed model associations, demonstrating vital implications for the premium game marketers seeking to retain fully paying gamers as per the game as a service (GaaS) paradigm.

First, our findings highlighted that fantasy (*H1*) played a dominant role in driving players' positive attitude toward the in-game virtual items experiences. Recent studies that explore digital games consistently find that fantasy contributes significantly to enhancing the overall gaming experience (Sarkar & Sarkar, 2023; X. Wang et al., 2021). Similarly, the fantasized experiences associated with virtual content also enhance players' self-absorption and attention, enabling gamers to have a more immersive gaming experience. Choi et al. (2013) and Jiao et al. (2022) support this notion that different virtual entities and additional resources play a pivotal role in evoking players' fantasy and engrossment within the virtual environment. For example, customized functions (e.g., avatar, game plots) and missions allocated at different

Table 4. Structural model assessment.

Hypothesis	Std. beta	Std. dev.	t values	f^2	p values	Supported	R^2
H1: Fantasy → Attitude	0.352	0.060	5.894	0.227	0.000	Yes	
H2: Escapism → Attitude	0.259	0.047	5.508	0.154	0.000	Yes	
H3: Role projection → Attitude	0.070	0.041	1.704	0.012	0.089	No	
H4: Emotional involvement → Attitude	−0.032	0.050	0.636	0.002	0.525	No	
H5: Enjoyment → Attitude	0.201	0.050	4.045	0.081	0.001	Yes	
H6: Arousal → Attitude	0.345	0.066	5.248	0.239	0.001	Yes	0.595
H7: Attitude → Loyalty	0.477	0.067	7.084	0.294	0.000	Yes	0.227
H8: Attitude → WTP	0.390	0.068	5.729	0.179	0.001	Yes	0.152
H9: Attitude → WOM	0.648	0.045	14.458	0.722	0.000	Yes	0.419

Table 5. Model predictive power analysis.

Constructs	Q^2predict						
GSL	0.133						
WOM	0.312						
WTP	0.080						
		PLS-SEM		LM		PLS-SEM-LM	
Items	Q^2predict	RMSE	MAE	RMSE	MAE	RMSE	MAE
GSL1	0.091	1.259	0.996	1.289	1.029	−0.030	−0.033
GSL2	0.112	0.974	0.678	0.979	0.713	−0.005	−0.035
GSL3	0.087	1.167	0.863	1.179	0.906	−0.012	−0.043
GSL4	0.097	1.116	0.827	1.144	0.845	−0.028	−0.018
WOM1	0.262	0.893	0.696	0.848	0.594	0.045	0.102
WOM2	0.242	1.020	0.763	0.967	0.728	0.053	0.035
WTP2	0.089	1.041	0.791	1.068	0.830	−0.027	−0.039
WTP1	0.033	1.260	0.992	1.251	1.017	0.009	−0.025

stages to make a game story more fantasied that keep motivating players in the gameplay (Hussain, Abid, et al., 2023). In line with prior studies, escapism (*H2*) is considered a significant predictor of a player's positive attitude toward the in-game virtual items experiences (Bowditch et al., 2018; Chen & Lu, 2016). This is aligned with the findings of past studies suggested that game players upgrade from freemium to premium services to enjoy additional values such as enhanced features, superior support, and improved character ability to enjoy a fully immersive gaming experience that helps them to escape from the unpleasant reality and avoid problems that they are facing in the real world as well in the virtual game environment (Lin et al., 2015; Mkedder & Özata, 2024). For example, in F2P games, acquiring some unique and powerful tool gives a sense of accomplishment that boosts the immersive gaming experience, and consequently offers some temporal escape. Hamari, Alha, et al. (2017) demonstrated that in-game resources give players control over their environment and enable them to master challenging situations. This also helps gamers to perceive themselves as detached from the real-world aspects that are out of their control.

Moreover, in line with our conceptualization, enjoyment (*H5*) (e.g., hedonic emotions, self-gratification) and arousal (*H6*) are key motivating factors for online gamers to use in-game virtual items to satisfy their emotional or hedonic facet (e.g., escapism, enjoyment; T.-L. Huang et al., 2024). These results are also consistent with the findings of Li et al. (2015) and Abbasi, Alqahtani, et al. (2023), where enjoyment and arousal are essential antecedents of game-related engagement and intention. As online games fundamentally aspire to find pleasure and amusement (i.e., hedonic experience), players are more willing to purchase in-game virtual items or premium services to make their gaming journey more exciting and maximize the overall gaming experience. Likewise, game players may feel compelled to maintain and enhance their social circle (or camaraderie), especially when playing within groups or teams (Freeman & Wohn, 2017). Gamers who purchase premium services in virtual games are often willing to develop interactive in-game premium networks (or guilds).

However, contrary to prior studies, role projection (*H3*) was found not to affect gamers' attitudes toward in-game virtual item experiences (J. Wu & Holsapple, 2014). The possible explanation might be that with the rapid development of role-playing games and the proliferation of different genres in online games, there may be difficulty connecting players' caprices to games, and they may have difficulty projecting themselves into the games' roles. Moreover, the tasks involved in many role-playing games are complex, requiring strategic planning, problem-solving, and collaboration between team members (Fioravanti et al., 2022). Therefore, making sure all members of the team understand and execute their roles is very challenging. Similarly, the finding also contradicts previous studies regarding emotional involvement (*H4*) and shows an insignificant relation to attitude toward virtual item retail experience. This can be explained by the finding of Cai et al. (2022), which highlighted that most gamers purchase in-game content just for emotional expressions for example; sharing resources, being helpful, or being supportive of another player; and they are less interested in emotional involvement.

Our study also found a positive relationship between gamers' attitudes toward in-game virtual items experiences and game store loyalty (*H7*), WTP (*H8*), and WOM (*H9*) (Ravoniarison & Benito, 2019). The relationship between attitude and WTP, store loyalty, and WOM behavior supports earlier research on virtual game retailing (Hamari, 2015; Hussain et al., 2022; Setterstrom & Pearson, 2019). Our results support that gamers have favorable attitudes toward virtual item experiences which enhance players' purchase behavior. Further, players who have a positive attitude toward virtual items experiences are not only loyal to virtual game stores but also spread positive WOM with other players.

6.1. Theoretical implications

Our study contributes to the online games and in-game virtual retailing literature in the following ways. First, although online game services providers are at the forefront of embracing the F2P or freemium business model, many are concerned about its successful adoption and value to

consumers for their continuous existence (Hussain, Abid, et al., 2023). Also, academic research investigating the comprehensive role of in-game virtual items experience with attitude and outcome behavior is limited despite having prodigious significance for knowledge contribution and strategic decision-making. Our study contributes to the nascent literature by empirically investigating gamers' multifaceted virtual items experiences i.e., fantasy, escapism, role projection, enjoyment, emotional involvement, and arousal, analyzing their influence on attitude and gamer outcome behavior. We report that gamers' outcome behavior, such as loyalty, WOM, and WTP premium, is strongly related to gamers' attitudes toward in-game virtual items and hedonic experiences.

Second, our study provides a comprehensive theoretical understanding of how multifaceted imaginal (fantasy, escapism, role projection) and emotional experience (enjoyment, emotional involvement, and arousal) form a positive attitude that leads to favorable outcome behavior. As previous research overlooked investigating the outcome behavior of F2P gamers, built on the S-O-R model, we extend the theoretical view of hedonic consumption experience by including game store loyalty, WTP, and WOM. We explain that ensuring gamers' imaginal and emotional experiences related to in-game retail plays a vital role in building favorable attitudes toward in-game virtual items. Having this type of attitude strengthens game store loyalty, motivates gamers to pay premium prices for buying in-game virtual items and spreads positive WOM. Among the outcome behaviors, game store loyalty followed by WTP is a superior predictive power in this study setting.

Finally, our study highlighted multiple experience components of in-game virtual items and provided empirical support that fantasy, escapism, enjoyment, and arousal are central to forecasting the positive attitude toward virtual items experienced in freemium online games (Hodge et al., 2022; Milanesi et al., 2023). Fantasy and arousal are the keys to developing a favorable attitude toward in-game virtual items. Identifying the imaginal and emotional dimensions of in-game virtual items and investigating the influences of multiple-dimensional experiences on gamers' attitudes augment existing understanding of how free game users can be converted into paid consumers in varying and overwhelming scenarios of virtual game retailing (Hamari, Alha, et al., 2017; S. J. Kim et al., 2023).

6.2. Practical implication

Freemium to premium game developers and service providers anticipated that they could enhance their retail revenue by providing better virtual item retail experiences to players. In response to such expectations, many game retailers have invested considerable resources to integrate various hedonic retail experiences. This research suggested some critical new insights into how virtual game retailers should gauge their resources. We identified a significant influence of fantasy on players' attitudes toward virtual items retail, thus recommending that game retailers create a more imaginary or fantasy retail journey. For instance, by incorporating fantasy scenarios (e.g., Combat Mission), Artificial intelligence (AI) or Machine learning (ML) algorithms can be used by game developers and retailers to determine the gamer's probability of using different virtual items and offer them cutting-edge solutions based on their playing patterns (Hussain et al., 2024). Similarly, game players seek escapism in the virtual game retail experience. In premium games, augmented reality (AR) can enhance escapist gaming experiences by promoting exclusive, immersive content that can improve the perceived value of premium items through overly structured imagining. AR can consider including virtual try-ons for in-game cosmetics or interactional previews of premium content and also assess product fit before making a purchase (Y.-C. Tan et al., 2022). These added values allow gamers to easily transition from real to digital identities and encourage a deeper connection (and engagement) with the gaming world, leading to increased WTP and greater loyalty. Based on the study findings, we recommend that virtual game retailers focus on improving gamers' enjoyment and arousal-seeking retail experience. For example, to help gamers to have a more enjoyable and memorable purchase experience game retailers can offer mystery or Loot boxes that add an element of enjoyment and stimulation to the retail experience.

Further, our study provides evidence that gamers' favorable attitude toward in-game content experiences plays a critical role in driving gamers' outcome behavior. Positive experiences with in-game virtual items can improve gamers' satisfaction and overall impressive game experience. Game vendors can achieve behavioral intentions toward premium content purchases, WOM intentions, and stickiness toward virtual game retail stores. Finally, the in-game virtual content experiences scale proposed in the current research can help game retailers and premium content vendors better understand premium game experiences for players missing in freemium versions. Using the in-game virtual item experience scale, companies can assess, plan, and track their interactions with gamers.

6.3. Limitations and future research avenues

We conclude by offering an overview of the limitations associated with this research, which provides opportunities for further investigation. First, our sample was sourced from gamers in just one country, Malaysia, thereby yielding potentially limited generalizability of our findings in other cultures (e.g., more individualist cultures; Hussain et al., 2022). Second, we need to distinguish between game genres and their dynamic differences when analyzing our aggregate game data. Further research can be conducted by reapplying the conceptual model for various gaming categories and their respective uses of in-game virtual items experience (Carvalho et al., 2015). Findings may reveal varying levels of importance among our identified drivers of attitude toward virtual item experiences, in addition to unique dynamics in the association between gamers' attitude and behavior outcomes (e., g WTP, store loyalty, and WOM), thereby

offering further insight. Third, despite the importance of the retail experiences framework in online games, there are comparatively few studies available in this domain. One possible explanation could be the lack of valid and reliable instruments for assessing online games' views toward in-game retail experiences. Therefore, further studies can develop and validate a reliable scale of in-game retail experiences by following established guidelines (Churchill, 1979). Fourth, there is also a need to examine male and female gamers' attitudes toward in-game retail experiences. We suggest that future studies explore the moderation effect of gender through Multi-group Analysis (MGA). Finally, our cross-sectional data were collected at a single point in time. Therefore, adopting a longitudinal research methodology would help uncover the unfolding of the modeled dynamics over time.

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Appendix

Construct	Items
Fantasy	Virtual items from the [X] game help me construct fantasies.
	Virtual items from the [X] game stimulate my imagination
	Virtual items from the [X] game help me create daydreams.
	Virtual items from the [X] game help me augment reality.
Escapism	Virtual items from the [X] game help me escape from the world of reality.
	Virtual items from the [X] game help me escape from problems and pressures.
	Virtual items from the [X] game help me escape from things that are unpleasant and worrisome.
	Virtual items from the [X] game make me feel as if I am in a different world of reality.***
Role projection	Virtual items from the [X] game enable me to project myself into a particular role.
	Virtual items from the [X] game enable me to project myself into a particular character.
	Virtual items from the [X] game enable me to project myself into a particular task
	Virtual items from the [X] game enable me to project myself into someone else.
Emotional involvement	When I purchase virtual items from the [X] game, I feel deeply about the game.
	When I purchase virtual items from the [X] game, I get into about the game.
	After purchasing a virtual item from [X] game, I may carry the purchase experience
	When I am purchasing virtual items from the [X] game, I feel as if I am part of the game.
	When I am purchasing virtual items from the [X] game, I feel "carried off" by the game.***
Enjoyment	I have fun purchasing virtual items from the [X] game.
	Purchasing virtual items from the [X] game provides me with a lot of enjoyment.
	Purchasing virtual items from the [X] game is enjoyable.
	Enjoy purchasing virtual items from the [X] game.***
Arousal	Virtual items from the [X] game enable me stimulated.***
	Virtual items from the [X] game make me excited.
	Virtual items from the [X] game make me inspired.
	Virtual items from the [X] game make me wide-awake.
	Virtual items from the [X] game makes me motivated.
Attitude toward virtual item experiences	Using "virtual item experiences" is a good idea.
	Sharing resources like knowledge, ideas, and experiences within the gaming community makes sense.
	"Virtual items experiences" is better than freemium game choices.
	I would be positively inclined toward using "virtual items experiences".
Game store loyalty	I will likely repurchase from [X] virtual game store in the near future.
	I expect to repurchase from [X] virtual game store in the near future
	If another virtual game store offers services as good as this store, I would still prefer [X] store.
	It makes sense to buy at [X] virtual game store compared to others, even if they are the same.
Willingness-to-pay	I am willing to pay a higher service fee for [X] virtual game store products/services over another store.
	I am willing to pay a lot more for [X] virtual game store products/services than another service provider.
Word-of-mouth	I will be glad to recommend virtual item experiences to other gamers.
	I will speak favorably about virtual item experiences.
	I will encourage others to use virtual item experiences.***

***items dropped due to low factor loadings.