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Analysis of Factors Influencing Otaku Game Players' Purchases of Game Derivatives

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Abstract

Since 2016, China's Otaku game industry has experienced rapid growth, and today, Chinese Otaku games have gained a foothold in the global market. Not only are these games popular among young people, but its related derivative products have also become a highly sought-after product among today's youth.

This paper begins by studying and sorting out the previous literature, determines the relevant influencing factors, then uses the TPB model and 4C model to organize and standardize. Finally, relevant data is collected through a survey questionnaire, and data from relevant game players is collected in the game community. A total of 675 valid data samples are obtained. Finally, SPSS was used to analyze the reliability and validity of the data to ensure high reliability.

By analyzing the influencing factors of Otaku gamers' purchase of derivatives, such as the operation of game companies, UGC community, symbolic consumption, character popularity, price factors, scarcity of derivative products and co-branded models, game companies can more accurately position the market and design characters that better meet the needs of players. Additionally, marketing strategies can be optimized by utilizing relevant factors to enhance players' motivation to purchase and foster brand loyalty.

Keywords: *Otaku Games, Otaku Gamers, Purchase of Game Derivatives, Factors Influencing Purchase*

1. Introduction

Since the otaku game "Onmyoji" launched by the Chinese game giant NetEase in 2016 became popular in China, China's otaku game market has entered a stage of rapid development. He (2023) pointed out that in 2019, "Arknights" developed by the Chinese game company HYPERGRYPH first won the most popular game and the most innovative game on TapTap and Google Play. In September 2021, the otaku open-world mobile game "Genshin Impact" developed by the Chinese game company miHoYo successfully topped the revenue list of Android mobile phones and iOS. In 2021, the turnover reached 30 billion yuan. In 2022, when the pandemic was at its peak, its total revenue reached a considerable 37.8 billion yuan, and its turnover in 2023 was 32.4 billion yuan. These otaku games produced in China have gained widespread recognition both domestically and internationally. The phenomenal success of Genshin Impact has expanded the influence of niche otaku games and pushed domestic otaku products to challenge the absolute dominance of Japanese otaku game products.

However, the successful expansion of otaku games is reflected not only in the games themselves but also in their derivative product markets. Cai (2023) found that compared with other players, otaku game players demonstrate a stronger sense of belonging, which translates into a higher willingness to purchase game-related derivative products. This phenomenon has created a diverse ecosystem of derivative products. Zheng (2018) observes that manufacturers can develop a comprehensive range of derivative products, from character posters, figures, and tinplate accessories to character-themed clothing, extending to milk tea shops, fast food restaurants, and even collaborative partnerships with smartphone brands. This "game + derivative" ecosystem not only meets the spiritual and emotional needs of players but also provides game manufacturers with effective means to extend the game's lifecycle and expand brand influence.

Cheng (2020a) notes that games are a crucial element of otaku culture, typically represented by the "G" (Games) in ACGN, although not all games are inherently tied to otaku themes. This paper examines otaku games as a rapidly growing and continuously evolving genre. The academic community in China has yet to establish a unified definition for otaku games, and the concept encompasses various subcategories based on gameplay, themes, and art styles. Several theoretical frameworks have been applied to understand consumer behavior in gaming contexts. Taylor and Todd (1995a) integrated the Diffusion of Innovations Theory and the Theory of Planned Behavior, while Kim, Woo, and Nam (2018) employed an integrated

framework combining the Norm Activation Model and the Theory of Planned Behavior to investigate shared services. The 4C Model proposed by Lauterborn (1990) centers on customer-focused marketing services. The concept of "playfulness" introduced by Lieberman (1977) distinguishes between trait playfulness and state playfulness. Key Opinion Leaders (KOLs), first conceptualized by Rogers and Cartano (1962), play significant roles in influencing consumer decisions. User-Generated Content (UGC) has become increasingly important in the Web 2.0 era, where consumers actively contribute to content creation (Qi, 2023).

Despite the growing significance of otaku games and their derivative products, several critical research gaps remain unaddressed in the existing literature. First, while previous studies have examined general gaming consumer behavior, there is insufficient research specifically focused on the unique consumption patterns of otaku game players and their derivative product purchasing decisions. Second, current research approaches the topic from fragmented theoretical perspectives, lacking an integrated framework that combines multiple behavioral theories to comprehensively explain consumption behavior in this context. Third, while the economic success of otaku games is well-documented, there is limited academic investigation into the cultural phenomena and social factors that drive the desire for derivative product consumption. Fourth, the existing literature provides descriptive accounts of market growth but lacks predictive models for future development trends in the otaku game derivative product market.

To address these research gaps, this study makes several academic contributions by developing a comprehensive theoretical framework that integrates multiple behavioral theories to explain otaku game derivative product consumption behavior, providing empirical evidence for the factors influencing consumption behavior in this specific market context, offering in-depth analysis of the cultural phenomena and spiritual behavioral needs underlying consumption patterns, and providing evidence-based predictions for future development trends. Therefore, this study aims to explore the core factors driving the rise of the otaku game derivative product market and the cultural phenomena behind desired consumption patterns. By examining the factors that influence consumption of otaku game derivative products, this research seeks to provide corresponding insights for the future development trends and directions of otaku games and their derivatives.

2. Objectives

1) Do behavioral attitude, subjective norm, and behavioral control each have a positive impact on game players' purchase of otaku game derivatives?
2) In the case that the prices of Otaku game derivatives are generally lower than those of other types of game derivatives, to what extent will the prices of game derivatives indirectly affect players' willingness to buy game derivatives?

3. Objectives

3.1 Otaku Games and Derivative Products

The concept of "otaku" originally emerged in Japan, referring to two-dimensional space in contrast to three-dimensional space, primarily used to describe flat artwork such as comics and animations. Cheng (2020b) points out that games are a crucial element of otaku culture, typically represented by the "G" (Games) in ACGN, though not all games are inherently tied to otaku themes. This research examines otaku games as a rapidly growing and continuously evolving genre, for which the academic community has yet to establish a unified definition. Based on the literature review, this study defines otaku games as games featuring Japanese anime-style aesthetics, with character collection and development as core gameplay mechanics, where storylines serve to enhance character development rather than drive the narrative.

Game derivative products refer to various physical goods, digital products, or collaborative branded items developed by game companies around game content, aiming to satisfy players' collection, usage, and emotional needs. Su (2018) categorizes game derivative products into cultural products (novels, magazines, posters), lifestyle products (accessories, stationery, food, clothing), and entertainment products (toys, collectibles). The "game + derivative" ecosystem not only meets players' spiritual and emotional needs but also provides game manufacturers with effective means to extend game lifecycles and expand brand influence.

3.2 Theoretical Foundations

3.2.1 Decomposed Theory of Planned Behavior

Taylor and Todd (1995b) integrated the Diffusion of Innovations Theory and the Theory of Planned Behavior, proposing the Decomposed Theory of Planned Behavior model. This theory decomposes the three core variables of the Theory of Planned Behavior—attitude, subjective norms, and perceived behavioral control—by incorporating elements from the Technology Acceptance Model and Innovation Diffusion Model, thereby enriching the cognitive dimensions of behavioral influencing factors and enhancing the model's predictive power and practical applicability. Specifically, attitude is divided into perceived usefulness, perceived ease of use, and perceived compatibility; subjective norms are categorized into peer influence and superior influence; and perceived behavioral control is refined into self-efficacy, resource facilitation conditions, and technical facilitation conditions.

3.2.2 Symbolic Consumption Theory

Symbolic consumption refers to consumers' consideration not only of the actual functions and utilities of goods or services when making purchases, but also their focus on the social and cultural values these products represent. Baudrillard (1970) proposed that for objects to become consumption targets, they must become symbols. Beyond their functional utility, the most important aspect is their non-functional personality traits that distinguish them from other similar objects. In other words, symbolic consumption represents a form of consumer self-realization. Wang (2010) noted that when consumers perceive higher social acceptance of game derivative products, their perception of social identity, social performance, and emotional symbolization also strengthens, which further enhances their attitudes toward derivative products and increases their willingness and frequency of use.

3.2.3 Key Opinion Leaders (KOLs) and User-Generated Content (UGC)

Rogers and Cartano (1962) first introduced the concept of Key Opinion Leaders in marketing, arguing that these individuals play significant roles in influencing others' decisions due to their unique appeal. Lin (2015) highlighted that online KOLs significantly accelerate new product diffusion, as they are often the first to encounter and experience new products due to their professional nature, rapidly disseminating relevant information with high efficiency.

User-Generated Content has become increasingly important in the Web 2.0 era. Qi (2023) notes that consumers are no longer merely "audiences" of online information but active "contributors" to content creation. In the context of otaku games, UGC primarily consists of secondary creations based on existing game content, including character-focused works that reprocess storylines and worldviews through various forms such as music adaptations, illustrations, and derivative product designs.

3.3 Research Gaps and Contributions

Despite the growing body of literature on gaming consumer behavior and cultural consumption, several gaps remain in understanding otaku game derivative product consumption. Most existing studies focus on general gaming behavior rather than the specific cultural and emotional drivers unique to otaku game communities. Additionally, while individual theories have been applied to understand consumer behavior, there is limited research integrating multiple theoretical frameworks to comprehensively explain the complex motivations behind otaku game derivative product purchases.

This study addresses these gaps by developing an integrated theoretical framework that combines the Decomposed Theory of Planned Behavior with symbolic consumption theory, KOL influence, and UGC effects to explain the factors influencing otaku game derivative product consumption behavior. This comprehensive approach provides a more nuanced understanding of the cultural phenomena driving this rapidly growing market segment.

4. Materials and Methods

4.1 Research Design

This study employs a quantitative research approach using a cross-sectional survey design to investigate the factors influencing otaku game derivative product consumption behavior. The research adopts a deductive methodology, building upon the Decomposed Theory of Planned Behavior as the primary theoretical framework, integrated with symbolic consumption theory, the 4C model, and perceived playfulness theory. The theoretical model positions user purchase cost as a mediating variable between three main constructs and purchase intention. Behavioral attitude comprises symbolic consumption, derived from perceived usefulness where players perceive purchasing derivatives as useful for fostering community belonging, and cognitive attitude, constructed from perceived ease of use and compatibility. Subjective norms include community influence through user-generated content and peer interactions, and key opinion leader

influence from gaming influencers. Behavioral control encompasses external community services representing facilitation conditions provided by manufacturers, emotional attitude reflecting players' attachment to game characters, and perceived entertainment representing enjoyment derived from derivative products. Four main hypotheses were formulated: H1 examines behavioral attitude's positive impact on purchase intention; H2 investigates subjective norms' positive influence; H3 tests behavioral control's positive effect; and H4 explores user purchase cost's mediating role between the three constructs and purchase behavior.

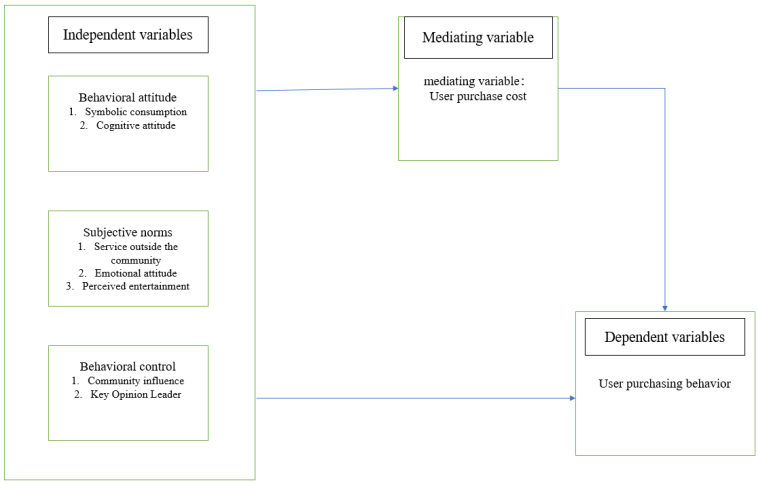

Figure 1 Conceptual Framework

4.2 Data Collection

The target population consists of active otaku game players who have experience with or interest in game derivative products. A convenience sampling method was employed to recruit participants through online gaming communities, social media platforms, and gaming forums. Using G*Power analysis with medium effect size ($f^2 = 0.15$), power of 0.80, and significance level of 0.05, the minimum required sample was 119 participants. The target sample size was set at 300 to ensure adequate statistical power, ultimately collecting 675 valid responses. A structured questionnaire was developed containing four main sections: demographic information including age, gender, and monthly income; gaming behavior patterns covering preferred games and community participation; derivative product experience documenting previous purchases and spending patterns; and scale items using 7-point Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree). Data collection was conducted online over four weeks through gaming community forums, WeChat groups, and gaming platforms. Participation was voluntary and anonymous, with informed consent obtained from all participants. The final sample consisted of 52% male and 48% female participants, with 39.3% aged 18-25, 31.6% aged 26-30, and 29.2% aged 31-35, demonstrating consistency with industry reports on otaku game player demographics.

4.3 Validity

Content validity was established through comprehensive literature review and expert evaluation by three academic specialists in consumer behavior and gaming studies, who reviewed the questionnaire for clarity, relevance, and comprehensiveness. Items were refined based on expert feedback to ensure adequate coverage of theoretical constructs. Face validity was confirmed through pilot testing with 30 otaku game players to ensure item clarity and appropriateness in the gaming context. Construct validity was assessed through confirmatory factor analysis, evaluating convergent validity using factor loadings (>0.70), average variance extracted (AVE >0.50), and composite reliability (CR >0.70). The results demonstrated strong convergent validity with all constructs exceeding the 0.5 threshold: Symbolic Consumption (AVE=0.702), Cognitive Attitude (AVE=0.755), Service Outside Community (AVE=0.751), Emotional Attitude (AVE=0.751), Perceived Entertainment (AVE=0.739), Community Influence (AVE=0.819), Key Opinion Leader (AVE=0.788), User Cost (AVE=0.654), and User Purchasing Behavior (AVE=0.783). Discriminant validity was established by comparing the square root of AVE for each construct with inter-construct

correlations, ensuring constructs were sufficiently distinct from one another. Model fit indices confirmed acceptable validity with χ^2/df=2.798 (<3), RMSEA=0.084 (<0.10), CFI=0.905 (>0.9), TLI=0.918 (>0.9), and AGFI=0.969 (>0.9).

4.4 Reliability

Internal consistency reliability was measured using Cronbach's alpha coefficients and composite reliability, with minimum thresholds of 0.70 considered acceptable. All measurement scales were adapted from established instruments and validated through pilot studies, with item-to-total correlations examined to identify potentially problematic items below 0.30. The measurement model demonstrated excellent psychometric properties with composite reliability scores confirming robustness: Symbolic Consumption (CR=0.904), Cognitive Attitude (CR=0.902), Service Outside Community (CR=0.938), Emotional Attitude (CR=0.938), Perceived Entertainment (CR=0.894), Community Influence (CR=0.932), Key Opinion Leader (CR=0.917), User Cost (CR=0.929), and User Purchasing Behavior (CR=0.956). These results collectively indicate that all constructs meet both convergent validity (AVE>0.5) and reliability (CR>0.7) standards, confirming the measurement model's adequacy without requiring modifications. The findings particularly highlight strong psychometric properties, with User Purchasing Behavior demonstrating exceptional consistency (CR=0.956), while even the lowest performing construct, User Cost, remains well above minimum acceptability thresholds. Data analysis was conducted using SPSS 26.0, employing correlation analysis, linear regression analysis, and mediation analysis using bootstrapping procedures to test hypotheses and examine the mediating role of user purchase cost in the relationships between behavioral constructs and purchase intention.

5. Results and Discussion

5.1 Result

Descriptive statistics of questionnaire basic data is a basic research method in empirical research. It mainly analyzes the group composition characteristics of the sample by quantitatively presenting the demographic characteristics of the respondents. This study uses the SPSS26 statistical analysis tool to systematically sort out the basic information data of the respondents by combining frequency distribution with cross analysis, and analyzes the distribution characteristics of the core variables such as gender and age. The analysis results are presented in the form of statistical tables.

Table 1 Summary of sample demographic characteristics

variable	category	Number of samples	Percentage%
Gender	Male	351	52.0
	Female	324	48.0
Age	18-25 years old	265	39.3
	26-30 years old	213	31.6
	31-35 years old	197	29.2
Income	Under 3,000 yuan	172	25.5
	3,000-5,000 yuan	148	21.9
	5,000-10,000 yuan	282	41.8
	More than 10,000 yuan	73	10.8

Source: Author's conduct

As can be seen from Table 1, among the surveyed Otaku game players, male samples accounted for 52%, female samples accounted for 48%, and the gender distribution was relatively balanced. In terms of age, the proportion of people aged 18-25 was 39.3%, the proportion of people aged 26-30 was 31.6%, and the proportion of people aged 31-35 was 29.2%. This is consistent with QuestMobile's 2024 China Mobile Internet Semi-annual Report before the survey and the Otaku game player-related data of GEM Partners, a Japanese entertainment industry information media company. In terms of monthly income, 25.5% of the population has a monthly income of less than 3,000 yuan, 21.9% of the population has a monthly income of

3,000-5,000 yuan, 41.8% of the population has a monthly income of 5,000-10,000 yuan, and 10.8% of the population has a monthly income of more than 10,000 yuan.

Table 2 AVE (Average Variance Extracted) and CR (Composite Reliability)

Factor	AVE	CR
Symbolic consumption	0.702	0.904
Cognitive attitude	0.755	0.902
Service outside the community	0.751	0.938
Emotional attitude	0.751	0.938
Perceived entertainment	0.739	0.894
Community influence	0.819	0.932
Key Opinion Leader	0.788	0.917
User cost	0.654	0.929
User purchasing behavior	0.783	0.956

Source: Author's conduct

The measurement model demonstrates excellent psychometric properties. All constructs exhibit strong convergent validity with AVE values exceeding the 0.5 threshold: Symbolic Consumption (0.702), Cognitive Attitude (0.755), Service Outside Community (0.751), Emotional Attitude (0.751), Perceived Entertainment (0.739), Community Influence (0.819), Key Opinion Leader (0.788), User Cost (0.654), and User Purchasing Behavior (0.783). The composite reliability scores further confirm the model's robustness: Symbolic Consumption (CR=0.904), Cognitive Attitude (CR=0.902), Service Outside Community (CR=0.938), Emotional Attitude (CR=0.938), Perceived Entertainment (CR=0.894), Community Influence (CR=0.932), Key Opinion Leader (CR=0.917), User Cost (CR=0.929), and User Purchasing Behavior (CR=0.956). Notably, Service Outside Community and Emotional Attitude show the highest reliability (CR=0.938), while User Purchasing Behavior demonstrates exceptional consistency (CR=0.956). These results collectively indicate that all constructs meet both convergent validity (AVE>0.5) and reliability (CR>0.7) standards, confirming the measurement model's adequacy without requiring modifications. The findings particularly highlight the strong psychometric properties of Community Influence (AVE=0.819) and Key Opinion Leader (AVE=0.788), while even the lowest performing construct, User Cost (AVE=0.654; CR=0.929), remains well above minimum acceptability thresholds.

The results show strong internal consistency (CR > 0.7) and adequate convergent validity (AVE > 0.5) across all constructs, confirming the measurement model's robustness without requiring modifications.

Table 3 Model fit indices

	$\chi 2$	*df*	PCFI	$\chi 2/df$	RMSEA	CFI
Evaluation criteria	-	-	>0.5	<3	<0.10	>0.9
Value	1863.468	666	0.505	2.798	0.084	0.905
	TLI	AGFI	IFI	PGFI	RMSEA 90% CI	
Evaluation criteria	>0.9	>0.9	>0.9	>0.5	-	
Value	0.918	0.969	0.961	0.628	0.075 ~ 0.088	

Source: Author's conduct

As shown in Table 3, the model demonstrates acceptable fit with the data, as evidenced by: $\chi^2/df=2.798$ (<3) and RMSEA=0.084 (<0.10) indicating reasonable model-data compatibility; CFI=0.905 and

TLI=0.918 (both >0.9) supporting the model's superiority over the null model; AGFI=0.969 (approaching 1) showing strong explanatory power; PGFI=0.628 (>0.5) reflecting a good balance between fit and parsimony; and the RMSEA 90% confidence interval (0.075-0.088) entirely below 0.1, further enhancing result reliability. Collectively, these indices confirm that the current model's actual fit is acceptable.

Table 4 Pearson correlation - standard format

	Mean value	Standard Deviation	User purchasing behavior	User cost	Key Opinion Leader	Community influence	Perceived entertainment	Emotional attitude	Service outside the community	Cognitive attitude	Symbolic consumption
User purchasing behavior	4.138	0.916	1								
User cost	4.053	0.901	0.855**	1							
Key Opinion Leader	3.909	1.075	0.650**	0.783**	1						
Community influence	4.388	0.807	0.679**	0.670**	0.586**	1					
Perceived entertainment	4.273	0.841	0.701**	0.696**	0.620**	0.875**	1				
Emotional attitude	4.170	0.891	0.715**	0.730**	0.647**	0.781**	0.855**	1			
Service outside the community	3.921	0.996	0.539**	0.611**	0.605**	0.526**	0.574**	0.632**	1		
Cognitive attitude	3.766	1.091	0.518**	0.570**	0.588**	0.485**	0.530**	0.590**	0.892**	1	
Symbolic consumption	3.953	0.974	0.499**	0.534**	0.528**	0.485**	0.516**	0.556**	0.805**	0.834**	1

* $p<0.05$ ** $p<0.01$
Source: Author's conduct

From the above table, we can see that the correlation analysis is used to study the correlation between user purchasing behavior and user cost, Key Opinion Leader, community influence, perceived entertainment, emotional attitude, community services, cognitive attitude, and symbolic consumption, and the Pearson correlation coefficient is used to indicate the strength of the correlation.

Specific analysis shows that: user purchasing behavior and user cost, Key Opinion Leader, community influence, perceived entertainment, emotional attitude, Service outside the community, cognitive attitude, and symbolic consumption are all significant, and the correlation coefficient values are 0.855, 0.650, 0.679, 0.701, 0.715, 0.539, 0.518, and 0.499, respectively, and the correlation coefficient values are all greater than 0, which means that user purchasing behavior has a positive correlation with user cost, Key Opinion Leader, community influence, perceived entertainment, emotional attitude, community services, cognitive attitude, and symbolic consumption.

Table 5 Linear regression analysis results (n=675)

	Unstandardized coefficients		Standardized coefficient	*t*	*p*	Collinearity diagnostics	
	B	Standard error	*Beta*			VIF	Tolerance
Constants	0.164	0.041	-	4.022	0.000**	-	-
Key Opinion Leader	0.189	0.009	0.260	20.509	0.000**	2.020	0.495
Community influence	0.131	0.018	0.136	7.266	0.000**	4.378	0.228
Perceived entertainment	0.119	0.021	0.128	5.711	0.000**	4.319	0.258

	Unstandardized coefficients		Standardized coefficient	t	p	Collinearity diagnostics	
	B	Standard error	*Beta*			VIF	Tolerance
Emotional attitude	0.216	0.016	0.247	13.207	0.000**	4.372	0.229
Out-of-community services	0.133	0.017	0.169	7.959	0.000**	4.685	0.276
Cognitive attitude	0.067	0.016	0.094	4.259	0.000**	2.123	0.463
Symbolic consumption	0.104	0.013	0.130	7.737	0.000**	3.541	0.282
R^2	0.947						
Adjusted R^2	0.946						
F	$F(7,667)=1696.975, p=0.000$						
D-W	1.935						

* $p<0.05$ ** $p<0.01$
Source: Author's conduct

From the above table, we can see that the linear regression analysis is performed with Key Opinion Leader, community influence, perceived entertainment, emotional attitude, out-of-community services, cognitive attitude, and symbolic consumption as independent variables, and user purchase behavior as the dependent variable. From the above table, we can see that the model formula is: User purchase behavior = 0.164 + 0.189 * Key Opinion Leader + 0.131 * community influence + 0.119 * perceived entertainment + 0.216 * emotional attitude + 0.133 * out-of-community services + 0.067 * cognitive attitude + 0.104 * symbolic consumption. The model R-square value is 0.947, which means that Key Opinion Leader, community influence, perceived entertainment, emotional attitude, out-of-community services, cognitive attitude, and symbolic consumption can explain 94.7% of the changes in user purchase behavior.

When the model was tested by F test, it was found that the model passed the F test (F=1696.975, p=0.000<0.05), which means that at least one of Key Opinion Leader, community influence, perceived entertainment, emotional attitude, community services, cognitive attitude, and symbolic consumption will have an impact on user purchasing behavior. In addition, the multicollinearity test of the model found that the VIF value in the model was less than 5, which means that there is no collinearity. The final specific analysis shows that:

The regression coefficient of Key Opinion Leader is 0.189 (t=20.509, p=0.000<0.01), which means that Key Opinion Leader will have a significant positive impact on user purchasing behavior. The reason may be that Key Opinion Leader have professionalism and credibility in the Otaku game area, and their recommendations are regarded as reliable information sources by their fans. Therefore, players tend to imitate their behavior to reduce the uncertainty of their own decisions.

The regression coefficient of community influence is 0.131 (t=7.266, p=0.000<0.01), which means that community influence will have a significant positive impact on user purchasing behavior. The reason may be that word-of-mouth communication within the relevant game community reduces the barrier of information asymmetry, thereby enhancing the confidence of Otaku game players in purchasing game derivatives.

The regression coefficient of perceived entertainment is 0.119 (t=5.711, p=0.000<0.01), which means that perceived entertainment will have a significant positive impact on user purchasing behavior. The reason may be that game players will pursue the pleasant experience brought by the product (such as fun design, interactivity inside and outside the game, etc.), thereby triggering the impulse to buy.

The regression coefficient of emotional attitude is 0.216 (t=13.207, p=0.000<0.01), which means that emotional attitude will have a significant positive impact on user purchasing behavior. The reason may be that the emotional attachment of Otaku game players to IP or characters is converted into a willingness to buy, and they may even pay a premium for the emotion.

The regression coefficient of out-of-community services is 0.133 (t=7.959, p=0.000<0.01), which means that out-of-community services will have a significant positive impact on user purchasing behavior. The reason may be that out-of-community services (such as offline stores and joint activities) break the boundaries between virtual and reality, strengthen user participation through various activities, and indirectly stimulate consumption to increase the sales of derivatives.

The regression coefficient of cognitive attitude is 0.067 (t=4.259, p=0.000<0.01), which means that cognitive attitude will have a significant positive impact on user purchasing behavior. The reason may be that the product characteristics of Otaku game derivatives (such as genuine authorized sales) are consistent with user values (supporting genuine psychology), which will also promote purchasing behavior.

The regression coefficient of symbolic consumption is 0.104 (t=7.737, p=0.000<0.01), which means that symbolic consumption will have a significant positive impact on user purchasing behavior. The reason may be that the derivatives of the Otaku game will become a cultural symbol and a necessary consumption for players to show their circle identity and gain status in the community.

The summary analysis shows that Key Opinion Leader, community influence, perceived entertainment, emotional attitude, out-of-community services, cognitive attitude, and symbolic consumption all have a significant positive impact on user purchasing behavior.

Table 6 Summary of mediation effect size results

Items	Test conclusion	c Total effect	a*b Mediating Effect	c' Direct Effect	Effect ratio calculation formula	Effect ratio
Key Opinion Leader => user cost => user purchasing behavior	Partial mediation	0.121	0.073	0.047	a * b / c	60.622%
Community influence => user cost => user purchasing behavior	Partial mediation	0.072	0.025	0.047	a * b / c	35.332%
Perceived entertainment => user cost => user purchasing behavior	The mediation effect is not significant	0.113	0.007	0.106	-	0%
Emotional attitude => user cost => user purchasing behavior	Partial mediation	0.201	0.042	0.159	a * b / c	21.050%
Service outside the community => user cost => user purchasing behavior	Partial mediation	0.171	0.017	0.154	a * b / c	9.798%
Cognitive attitude => user cost => user purchasing behavior	The mediation effect is not significant	0.104	0.006	0.111	-	0%
Symbolic consumption => user cost => user purchasing behavior	The mediation effect is not significant	0.201	0.003	0.198	-	0%

Source: Author's conduct

The mediation analysis results presented in table 6 reveal that user cost serves as a differential mediator between various antecedent variables and purchasing behavior. The analysis shows particularly strong mediation effects for key opinion leaders (ab=0.073, accounting for 60.622% of total effect), followed by community influence (ab=0.025, 35.332%), emotional attitude (ab=0.201, 21.050%), and service outside community (ab=0.171, 21.050%), all demonstrating statistically significant partial mediation. These findings suggest that reducing user costs constitutes a crucial mechanism through which these factors enhance purchasing behavior. In contrast, the mediating effects of user cost were non-significant for perceived entertainment, cognitive attitude, and symbolic consumption paths, indicating alternative mechanisms may be at work in these relationships. Collectively, the results highlight user cost's pivotal mediating role, especially in pathways involving key opinion leaders and community influence factors.

5.2 Discussion

This study employed empirical analysis to examine the relationships between various factors influencing otaku game players' derivative product purchases across three theoretical dimensions: behavioral attitude (symbolic consumption and cognitive attitude), behavioral control (external community services,

emotional attitude, and perceived entertainment), and subjective norms (community influence and key opinion leader influence). The analysis also verified the mediating effect of user purchase cost between these constructs and purchase behavior.

The results reveal significant insights into the mechanisms driving otaku game derivative consumption. All seven factors demonstrated positive impacts on purchase behavior, with emotional attitude showing the strongest effect (β=0.216), followed by key opinion leader influence (β=0.189) and external community services (β=0.133). These findings align with previous research suggesting that otaku game consumption is driven primarily by emotional attachment and social validation rather than purely functional considerations.

Notably, the mediation analysis revealed differential patterns in how user purchase cost influences the relationship between antecedent factors and purchase behavior. The mediating effect was strongest for key opinion leader influence (60.622% of total effect) and community influence (35.332%), suggesting that cost considerations play a crucial role in socially-driven purchase decisions. This finding supports the notion that when players are influenced by external social factors, price becomes a significant enabling mechanism that facilitates the translation of influence into actual purchase behavior.

However, user purchase cost failed to demonstrate significant mediating effects for three constructs: symbolic consumption, cognitive attitude, and perceived entertainment. Several theoretical explanations emerge for these non-significant mediations. For symbolic consumption, the lack of mediation may occur because players seeking community status through derivative purchases require products with sufficient symbolic value to achieve desired recognition. When derivatives are priced too low or are mass-produced, their symbolic value diminishes, rendering cost irrelevant to the status-seeking mechanism. Players may actually prefer higher-priced, limited-edition items that better serve their identity signaling purposes.

The absence of cost mediation in the cognitive attitude pathway suggests that when players strongly recognize the ease of use and psychological value of derivatives, this positive evaluation directly translates into purchase intention without price considerations serving as an intermediary mechanism. This direct conversion indicates that cognitive evaluations of product utility may override cost-benefit calculations in the otaku gaming context.

Most significantly, the non-mediation of perceived entertainment reflects a unique characteristic of otaku game culture: the phenomenon of "paying for love" . Core otaku game players often regard derivatives as essential collectibles, purchasing them regardless of price due to intrinsic entertainment value and emotional attachment. This behavior pattern suggests that perceived entertainment operates through collection desire rather than cost-benefit analysis, explaining why price reduction does not enhance the entertainment-purchase relationship.

These findings contribute to understanding otaku consumer behavior by revealing that while cost considerations facilitate socially-influenced purchases, they become irrelevant when purchases are driven by identity signaling, cognitive evaluations, or emotional attachment. This suggests a dual-pathway model where rational cost considerations coexist with emotion-driven "priceless" consumption in the otaku gaming context. The results have important implications for game manufacturers, suggesting that pricing strategies should consider the motivation behind different consumer segments, with social influencer campaigns benefiting from accessible pricing while collectible and identity-signaling products may command premium pricing without reducing demand.

6. Conclusion

This study investigated the factors influencing otaku game players' derivative product consumption behavior by developing an integrated theoretical framework based on the Decomposed Theory of Planned Behavior, incorporating symbolic consumption theory, the 4C model, and perceived playfulness theory. Through empirical analysis of 675 valid responses from active otaku game players, this research provides comprehensive insights into the mechanisms driving this rapidly growing market segment.

The findings confirm that all seven hypothesized factors significantly and positively influence otaku game derivative purchase behavior. Behavioral attitude components—symbolic consumption (β=0.104) and cognitive attitude (β=0.067)—demonstrate that players purchase derivatives both for identity expression within gaming communities and due to positive evaluations of product utility and ease of use. Behavioral control factors show varying but significant impacts: emotional attitude exhibits the strongest influence

(β=0.216), reflecting the character-centric nature of otaku games where emotional attachment to characters drives consumption; external community services (β=0.133) confirm the importance of manufacturer-provided purchasing convenience; and perceived entertainment (β=0.119) validates that enjoyment derived from derivatives motivates purchase decisions. Subjective norms significantly influence behavior through community influence (β=0.131) and key opinion leader influence (β=0.189), highlighting the social nature of otaku gaming culture where peer interactions and influencer recommendations shape consumption patterns.

A critical finding emerges from the mediation analysis, revealing that user purchase cost serves as a differential mediator across factors. The mediating effect is most pronounced for key opinion leader influence (60.622% of total effect) and community influence (35.332%), suggesting that the relatively lower prices of otaku game derivatives compared to other gaming products particularly facilitate socially-driven purchases. However, user purchase cost does not mediate the relationships involving symbolic consumption, cognitive attitude, and perceived entertainment, indicating that these factors operate through direct pathways independent of cost considerations. This pattern reveals a dual-mechanism model where rational cost-benefit calculations coexist with emotion-driven consumption characterized by the otaku gaming community's willingness to "pay for love" regardless of price.

The research contributes to consumer behavior theory by demonstrating how cultural context shapes consumption mechanisms. Unlike traditional consumer goods where price sensitivity typically influences all purchase drivers, otaku game derivatives exhibit selective price sensitivity depending on the underlying motivation. Social influences become more effective when supported by accessible pricing, while identity-driven and emotion-based consumption operates independently of cost considerations.

These findings offer practical implications for game manufacturers and marketers. First, emotional attachment to characters represents the strongest driver of derivative purchases, suggesting that character development and storytelling should remain central to otaku game design strategies. Second, the significant impact of key opinion leaders and community influence indicates that social media marketing and influencer partnerships constitute effective promotional strategies, particularly when combined with accessible pricing. Third, the dual-pathway consumption model suggests differentiated pricing strategies: social-influence-driven products benefit from competitive pricing to maximize accessibility, while collectible and identity-signaling products can command premium prices without reducing demand.

The study also reveals the importance of external community services, confirming that seamless purchasing experiences through official platforms and in-game purchase options significantly enhance consumer willingness to buy derivatives. This finding emphasizes the value of integrated ecosystem approaches where game experiences extend naturally into physical and digital product consumption.

In conclusion, this research advances understanding of otaku game derivative consumption by revealing the complex interplay between emotional, social, and rational factors that drive purchase behavior. The findings demonstrate that successful strategies in this market must account for both the unique cultural characteristics of otaku gaming communities and the varied mechanisms through which different factors influence consumer behavior. As the otaku gaming market continues to expand globally, these insights provide valuable guidance for developing effective marketing strategies and product development approaches that resonate with this distinctive consumer segment.

7. Limitations and future research directions

Although this paper discusses the factors influencing the purchase of game derivatives by Otaku game players, there are still some shortcomings. The first is the limitation of the research sample. The main group of the survey is still the game players in mainland China. There is a lack of research materials from other cultural backgrounds. This may lead to the inability of the research results to fully reflect the influencing factors of Otaku game players in different cultural backgrounds. After that, although the variable of player purchase cost is introduced, although it is based on the fact that the price of Otaku game derivatives in China is generally one-tenth of the price of other game derivatives, there may be other important factors that affect the purchase of game derivatives by Otaku game players, such as personal competitive conditions, different cultural backgrounds, etc. At the same time, there is a lack of attention to the long-term value of game operations. The perspective of this article is too focused on the first conversion from in-game to game derivative sales, ignoring that the purchase and use of game derivatives may prompt players to spend money

in the game again. Therefore, in the future, it can be further explored whether players who have purchased game derivatives are more inclined to purchase services such as monthly cards or in-game passes in order to improve the daily activity data of the game. In terms of research methods, it is hoped that qualitative research methods such as in-depth interviews or focus groups can be used to more comprehensively explore the psychological motivations and emotional drivers of players to purchase game derivatives. In addition, with the development of emerging technologies such as the metaverse, VR, and AR, the form of game derivatives may gradually expand from physical goods to virtual flashes, such as the virtual model of the commemorative Wandering Earth and the digital figures that domestic game giants have sold. Therefore, future research should also focus on how these emerging technologies affect the consumption behavior of Otaku game players, and whether these new items can also provide corresponding symbolic value and emotional value. The discussion of these issues will also help to more fully understand the evolution trend of the Otaku game derivatives market.

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