



Empirical Research Article

Influencing Factors of Consumption Willingness for E-Sports Products: A Case Study of “King of Glory” Game Players

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Abstract

This study examines the factors influencing e-sports product consumption among Chinese e-sports game players. We focus on the popular game “King of Glory” and use surveys to collect player data. Our findings show that e-sports product characteristics significantly impact consumption experiences, while incentive factors also influence consumption willingness. External factors have minimal impact. Additionally, souvenir products and festival events are key in driving e-sports consumption. This research explores the consumption willingness of Chinese e-sports players, the world’s largest consumer market. Understanding their needs can help companies develop targeted marketing strategies, unlocking the commercial potential of e-sports and promoting industry growth.

Keywords

e-sports; consumption willingness; influencing factors

1. Introduction

Sports tourism, an emerging industry at the intersection of tourism and sports, holds immense significance for the transformation and advancement of both sectors. The document “Statistical Classification of Sports Industry,” issued by the China National Bureau of Statistics in 2019, classifies electronic sports (e-sports) as a performance activity in professional sports competitions. The coding of e-sports is of the same type as football, basketball, volleyball, table tennis, badminton, marathon, and boxing. E-sports is an electronic game competition reaching the competitive sports level. On 16 December 2020, the Olympic Council of Asia announced e-sports as an official sport of the Asian Games.

In essence, e-sports distinguishes itself from online games through clear and uniform rules, stringent time and round limits, and a unique blend of intellectual and physical competition. Emphasizing thinking abilities, reaction capacity, volitional quality, and team cooperation, e-sports represents a distinctive form of sports entertainment.

With the development of information technology and industry penetration, the e-sports industry has entered a rapid expansion stage. E-sports products are a new form of sports tourism development. According to the 2020 Global E-sports Market Report by Newzoo Data, China accounted for the largest share of e-sports revenues, generating 35 per cent of the global revenue; in addition, the number of Chinese e-sports audience accounted for 32.93 per cent of the total audience number, these two proportions ranking number one in the world. According to

the 2021 China Game Industry Report by the China Audio-Video and Digital Publishing Association, the number of game players was 666 million, and the total revenue of mobile games market accounted for 76.06 per cent of the national game market. China’s e-sports game industry continues to expand overseas to major markets such as the United States, Japan and South Korea.

In the report “Entertainment and Media Industry Outlook in China: 2019–2023,” PricewaterhouseCoopers (PwC) asserted that China will surpass South Korea and become the second largest after the United States in the global e-sports market. According to the 2022 Asian E-sports Industry Development Report by the Asian E-Sports Federation (AESF), the global e-sports audience will increase to 532 million at the end of 2022. From the perspective of user size and revenue contribution, China is at the core of the global e-sports market, contributing about one-third of the global e-sports market revenue; it is the largest e-sports consumer market in the world.

Understanding the essence and characteristics of e-sports, the dynamics of the e-sports market. The increasing prominence of e-sports not only in entertainment but also in the broader context of sports tourism emphasizes the necessity of exploring and addressing this evolving landscape. Despite the rapid growth of the e-sports market, there is a noticeable scarcity of research on e-sports products. Investigating the willingness of e-sports game players to consume can significantly benefit enterprise operators. This research aids in more effectively managing diverse consumer groups, understanding consumer psychology, fulfilling consumer needs, mitigating risks associated with product development, and charting a new course for the future development of e-sports products. Hence, delving into the influencing factors of

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consumption willingness among e-sports game players becomes imperative.

The research target population are e-sports game players, who also participate in e-sports related activities, such as watching e-sports events, etc. "King of Glory" is a multiplayer online battle arena (MOBA) mobile game released by the Tencent TiMi Studio Group in China. In 2016, the "King of Glory" international edition was launched overseas. It has King Professional League (KPL) and Honour of Kings International Championship (KIC) matches. KIC is the highest level of honour globally. The KIC bonus pool in 2022 was 10 million US dollars; each team received at least 250,000 US dollars. "King of Glory" is a typical study case in e-sports production.

At present, academic research on e-sports is focused more on the conceptual characteristics and market development trend. Hallmann and Giel (2018) reflected on whether e-sports can be considered sports based on evaluating five characteristics of sports. Flegr and Schmidt (2022) focused on an overarching perspective on strategic management in e-sports. Yet, scholarly literature addressing the micro-perspective of e-sports game players is relatively limited up to the present. This article seeks to delve into the factors impacting the consumption willingness of e-sports game players, offering insights and recommendations for product market developers and enterprise operators. Through survey research conducted with players from the gaming community and attendees of the KPL final, the paper aims to provide an additional contribution to the realm of e-sports research.

The core findings of our research underscore the profound impact of e-sports product characteristics on consumption experiences. Furthermore, we identify incentive factors as influential drivers of consumption willingness. Notably, external factors demonstrate minimal impact in comparison. Additionally, our investigation reveals that souvenir products and festival events play a pivotal role in propelling e-sports consumption. This study not only explores the consumption patterns within the world's largest e-sports consumer market but also emphasizes the implications for industry stakeholders. By unraveling the intricacies of e-sports players' consumption willingness, we also offer a roadmap for companies to craft targeted marketing strategies.

2. Literature Review and Hypotheses Development

2.1. Definition and Characteristic of e-Sports

E-sports refers to organized, competitive, and multiplayer video game competitions, often in a professional setting with a specific structure and a dedicated audience. In the exploration of e-sports, scholars have converged on defining it as a legitimate sporting activity, attributing sports characteristics to this burgeoning field. Llorens (2017) argued that e-sports embodies the essence of sports, shedding light on the reasons behind its sporting attributes. Concurrently, Hamari and Sjoblom (2017) elucidated that e-sports functions as a form of sport facilitated by electronic systems, wherein the human-machine interface mediates the exchange between players or teams and the e-sports systems. This definition encapsulates the competitive nature inherent in video games.

Expanding on the managerial aspect, Heere (2018) advocated for the application of sports management philosophy to e-sports, underscoring its sports attributes. Building on this notion, Pizzo et al. (2018) highlighted the resemblance between the consumption patterns of e-sports and traditional sports. Their findings suggest that e-sports events can be effectively managed using similar frameworks employed in traditional sports.

Cunningham et al. (2018) extended the discourse by asserting

that e-sports can be linked to various achievements, encompassing physical and mental health, social well-being, and sports consumption outcomes. Rothwell and Shaffer (2019) delved into the positive effects of e-sports, contending that it can satisfy the educational aspirations of young students by fostering the acquisition of professional skills and enhancing their soft power. Furthermore, the burgeoning e-sports industry is anticipated to generate a plethora of new job opportunities.

While the existing literature has predominantly focused on defining and elucidating the characteristics of e-sports, there is a discernible shift towards investigating the economic effects and social benefits associated with e-sports products. However, a noticeable gap emerges in the realm of research, particularly concerning e-sports game players and the examination of specific case studies involving typical e-sports products. This research seeks to address this gap by delving into the consumption patterns and preferences of e-sports enthusiasts, providing a nuanced understanding of their behavior and contributing to the broader discourse on the evolving landscape of e-sports.

2.2. Consumption Experience and Willingness of e-Sports Game Players

In investigating the motivations behind viewing e-sports competitions, Hamari and Sjoblom (2017) revealed a multifaceted landscape. Their results showed that escapism, acquisition of knowledge, novelty, and athletes' performance had positive effects. Matsui et al. (2020) analysed the impact of Twitch (a live e-sports video platform) on the behaviors and performances of MOBA players. Their analysis uncovered the profound effects of the platform on both behaviors and performances within the gaming community. This underscores the transformative role that digital platforms play in shaping the experiences of e-sports participants. In a study addressing the consumption intentions of e-sports players, Xiao (2019) brought attention to critical factors that influence consumer attitudes. Notably, the examination of behavioral belief factors, including aesthetic appeal, dramatic elements, and escapism, alongside subjective norm factors, provided insights into the intricate dynamics shaping e-sports consumption.

Consumption willingness is the probability that consumers are willing to consume certain products or experience certain services (Hamari & Keronen, 2017; Mullet & Karson, 1985). Consumption experience is one of the most important factors influencing consumption willingness. Consumption experience refers to the feeling and cognition experienced by an individual when using a product or enjoying a service, emphasizing the feelings brought to consumers by product supply (Schmitt, 2011). Choi and Kim (2004) found that if players have pleasant social interactions with other players from the network system, they get the best consumption experience and will be willing to continue consuming games. Empirical analysis showed that consumption experience has a positive effect on consumption willingness. Thus, we propose the following hypothesis:

H1: Consumption experience has a positive effect on the consumption willingness of e-sports game players.

In addition, this article focuses on the four dimensions of consumption experience: sensory experience, emotional experience, achievement experience, and value experience. Pine and Gilmore (1998) firstly proposed that consumption experience can be divided into four dimensions: entertainment experience, educational experience, aesthetic experience, and escapism experience. Sensory experience is the sense of pleasure experienced in the process of information interaction when the five senses are in contact with the outside world. Schmitt (2011) divided the types of experience into sensory experience, emotional experience, thinking experience, action experience and related experience. Emotional experience is the emotional

response and expression of feelings based on sensory experience. Zhang (2005) proposed that consumption experience has five dimensions: sensory experience, emotional experience, achievement experience, mental experience, and spiritual experience. Achievement experience is self-realization and the social recognition obtained in the process of effort. Molinari et al. (2013) focused on the comparative experience of monetary expenditure and product value. Value experience is the comparative experience of monetary expenditure and economic value.

Product characteristics are a series of elements that reflect the uniqueness of a particular product (Yang, 2018). For e-sports products, product characteristics refer to the traits that can attract consumers in addition to essential functions, such as the cultural background of the figure theme in the e-sports game. In respect of the relationship between product characteristics, consumption experience, and consumption willingness, Hauffe (2004) believed that consumers at different levels have different requirements for product design which are embodied in products, needs, and functions. He divides consumption into three levels: user level, viewer level, and owner level. The research of Li (2010) showed that product characteristics positively affect the consumption experience and consumption willingness of mobile game players. Product characteristics can reflect differences between products. Therefore, we propose the following hypotheses:

H2: Product characteristics have a positive effect on the consumption experience of e-sports game players.

H3: Product characteristics have a positive effect on the consumption willingness of e-sports game players.

Incentive factors refer to the marketing methods adopted by e-sports product suppliers to motivate players to consume e-sports products, such as professional players' sales promotion and live broadcast activities (Ahmeti & Spahiu, 2020; Hamari, 2015). Where the relationship between incentive factors, consumption experience and consumption willingness are concerned, Holbrook and Hirschman (1982) studied the experience perspective of consumption, the experience-oriented consumption perspective has become more prominent. Hao (2008) found that consumers'

perception of promotional activities and three stages: promotion affects the consumer's perception, the consumer's perception affects the consumer's attitude towards promotion, and the consumer's attitude towards promotion affects the consumer's behaviour. Zhao (2017) showed that intelligent marketing can bring consumers a better consumption experience. e-sports product suppliers should improve game players' consumption experience and consumption willingness through certain incentives. Thus, we propose the following hypotheses:

H4: Incentive factors have a positive effect on the consumption willingness of e-sports game players.

H5: Incentive factors have a positive effect on the consumption experience of e-sports game players.

The external environment refers to external factors that have no relation to the properties of the product itself, including the social environment (such as public opinion), reference groups, consumption scene, and other factors (Matsui et al., 2020). Regarding the relationship between the external environment and consumption willingness, Kotler et al. (2017) pointed out that the main social factors that affect consumer purchasing behavior include reference group, family, and social role status. Wang (2016) indicated that the external environment of e-sports is divided into a "hard" environment and a "soft" environment. The "hard" environment refers to e-sports' requirement of electronic equipment and networks, while the "soft" environment refers to the opinions of the public, relatives, and friends on e-sports. Liu and Liu (2017) pointed out that online public opinions have a significant effect on consumption willingness, the study believes that the external environment has a positive effect on e-sports players' willingness to consume. Based on the above research, the following hypothesis is put forward:

H6: The external environment has a positive effect on the consumption willingness of e-sports game players.

Based on the above hypotheses, this research constructs a conceptual model involving product characteristics, incentive factors, external environment, consumption experience, and consumption willingness, as shown in Figure 1.

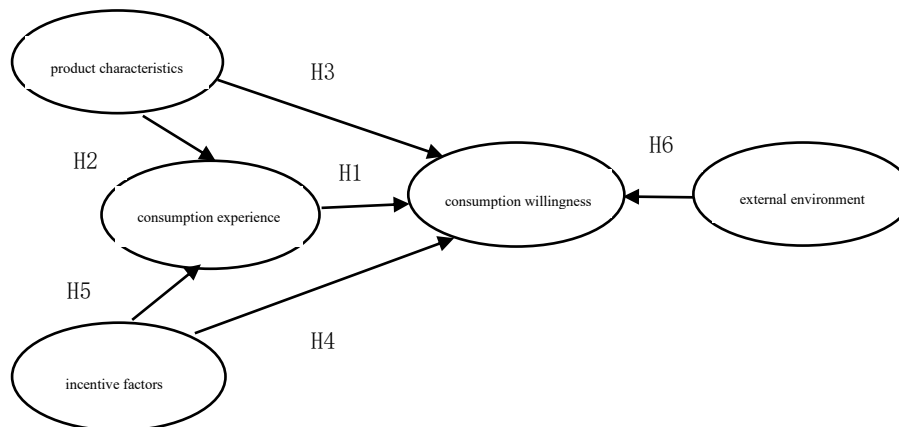


Fig. 1. Analysis model

3. Research Method

This research employed a quantitative approach to empirically test the hypothesized model. The article takes players of the mobile e-sports game "King of Glory" as the target population. According to the research needs, a survey on the consumption willingness of e-sports products was compiled. The analysis was performed using structural equation modelling.

This study constructs a survey through a thorough review of

pertinent research literature. The survey includes two main parts: the first part targets demographic information, including occupation, age, income, etc.; the second part is composed of one latent variable and four observed variables, which include 31 items. Among them, the items of consumption experience and product characteristics come from the research results of Molinari et al. (2013) and Yang (2018). The items of the external environment are mainly based on the social factors of Kotler et al. (2017) and Trail and James (2001). The incentivizing factors for the purchase decision derive from Ahmeti and Spahiu (2020) and

Schmitt (2011). The measurement items are illustrated in the Table 1.

Table 1. Study constructs and questionnaire items

| Consumption experience | | |
|-----------------------------|-----|--|
| Sensory experience (SE) | SE1 | The cool visual effect in e-sports make me feel excited |
| | SE2 | The scene designs of e-sports bring me auditory enjoyment |
| | SE3 | I am fascinated by the game operation process of e-sports |
| Emotional experience (EE) | EE1 | E-Sports can bring me a sense of self-satisfaction |
| | EE2 | E-Sports can make me forget the troubles of life temporarily |
| | EE3 | E-Sports can bring me psychological pleasure |
| | EE4 | The participation of familiar players in e-sports makes me feel happy |
| Achievement experience (AE) | AE1 | Winning in e-sports can bring me a sense of achievement |
| | AE2 | My efforts are easily recognized by the people around me in e-sports |
| | AE3 | The growth of game roles in e-sports can bring me achievement |
| | AE4 | I can achieve self-worth by completing various game goals in e-sports |
| | AE5 | I can regard e-sports as a resource to give full play to my advantages |
| Value experience (VE) | VE1 | I can get economic returns in e-sports |
| | VE2 | I can obtain relevant cultural knowledge in e-sports |
| | VE3 | I can improve my social communication ability in e-sports |
| | VE4 | I can improve my ability to analyse problems in e-sports |
| Product characteristics | | |
| (PC) | PC1 | I am willing to increase consumption because of favourite game themes |
| | PC2 | I like e-sports products with strong interactivity and sociality |
| | PC3 | I am willing to increase consumption when network security is improved |
| | PC4 | I prefer to participate in e-sports products with less game cheating |
| | PC5 | Interesting commentators will attract me to increase consumption |
| Incentive factors | | |
| (IF) | IF1 | I will increase consumption because of favourite star's endorsement |
| | IF2 | I am willing to consume cost-effective products |
| | IF3 | I will increase consumption in promotional activities |
| | IF4 | I will increase consumption when points can offset expenses |
| External environment | | |
| (OE) | OE1 | I will increase consumption because my friends around me spend more |
| | OE2 | More participation time will increase my consumption |
| | OE3 | The surrounding environment of the location affects my consumption |
| Consumption willingness | | |
| (CW) | CW1 | I am willing to participate in e-sports activities |
| | CW2 | I am willing to spend money on e-sports products |
| | CW3 | I am willing to buy e-sports souvenir products |

Source: Authors' own creation

The whole survey was divided into a pilot test and the formal survey. A total of 68 valid questionnaires were recovered from the pilot test distribution. The pilot test samples were tested by independent t-test, Cronbach's index analysis, correlation analysis, and other methods to obtain the standard questionnaire after correction. The test results showed that the Cronbach's alpha index was 0.927, indicating that the internal consistency of the survey items was good. In the process of independent t-test and correlation analysis, it was found that observed variables deviated significantly from normal indicators and the Pearson correlation was not high. After correcting the items, the Cronbach's index showed good results and the formal survey was finally generated. The study conducted a descriptive statistical analysis of the demographic characteristics and responses in the collected samples.

The survey distribution targeted online "King of Glory" player groups and offline player groups. In the end, 310 questionnaires were distributed and 224 valid questionnaires were returned. The data from the two different sources were analysed; one-way analysis of variance (one-way ANOVA) was performed on the data with two sources as group variables, and the results showed that there was no significant difference between the two groups of sample data ($p > 0.05$). It was therefore determined that the two

sources of data could be used as the final data. To estimate the measurement models and the structural model, and to test the research hypotheses, the structural equation modelling (SEM) approach was undertaken using AMOS software.

4. Results

This paper creates a structural equation model that can reflect consumption willingness, consumption experience, product characteristics, incentive factors and the external environment. The results of the demographic characteristics indicate that the samples are representative of the target population. For all variables, the inter-correlations, means, and standard deviations show that these results generally support the research model. The means and standard deviations show that the sample data are centralized and standardized. The maximum absolute deviation of skewness and kurtosis of the study variable is less than 1. The survey data of each measurement item meet the requirements of the critical value. The mean value of the descriptive statistics of the observed variables indicates that the survey items reasonably reflect research requirements. The statistical results are illustrated in the Table 2.

Table 2. Descriptive statistical results of observed variables

| Latent variables | Observation variables | Mean value | Standard deviation | Skewness | Kurtosis |
|---------------------------|-----------------------|------------|--------------------|----------|----------|
| Consumption experience | | | | | |
| Sensory experience (SE) | SE1 | 3.75 | 1.077 | -0.805 | 0.105 |
| | SE2 | 3.80 | 1.023 | -0.866 | 0.504 |
| | SE3 | 3.73 | 1.024 | -0.858 | 0.484 |
| Emotional experience (EE) | EE1 | 3.52 | 1.179 | -0.565 | -0.487 |

| | | | | | |
|------------------------------|-----|------|-------|--------|--------|
| | EE2 | 3.59 | 1.101 | -0.718 | -0.052 |
| | EE3 | 3.69 | 1.063 | 0.839 | 0.382 |
| | EE4 | 3.73 | 1.084 | -0.985 | 0.602 |
| Achievement experience (AE) | AE1 | 3.97 | 1.000 | -0.933 | 1.272 |
| | AE2 | 3.50 | 1.080 | -0.551 | -0.360 |
| | AE3 | 3.79 | 1.045 | -0.844 | 0.398 |
| | AE4 | 3.52 | 1.104 | -0.550 | -0.175 |
| | AE5 | 3.44 | 1.181 | -0.403 | -0.625 |
| Value experience (VE) | VE1 | 3.49 | 1.152 | -0.617 | -0.263 |
| | VE2 | 3.32 | 1.169 | -0.429 | -0.597 |
| | VE3 | 3.59 | 1.109 | -0.569 | 0.039 |
| | VE4 | 3.52 | 1.054 | -0.569 | 0.100 |
| Product characteristics (PC) | PC1 | 3.69 | 1.092 | -0.832 | 0.175 |
| | PC2 | 3.59 | 1.094 | -0.590 | -0.224 |
| | PC3 | 3.71 | 1.121 | -0.719 | -0.191 |
| | PC4 | 3.52 | 1.171 | -0.508 | -0.507 |
| | PC5 | 3.57 | 1.118 | -0.550 | -0.384 |
| Incentive factors (IF) | IF1 | 3.52 | 1.253 | -0.504 | -0.714 |
| | IF2 | 3.62 | 1.090 | -0.699 | -0.015 |
| | IF3 | 3.69 | 1.096 | -0.829 | -0.236 |
| | IF4 | 3.51 | 1.136 | -0.448 | -0.458 |
| External environment (OE) | OE1 | 3.53 | 1.163 | -0.591 | -0.381 |
| | OE2 | 3.58 | 1.090 | -0.711 | -0.009 |
| | OE3 | 3.53 | 1.148 | -0.607 | -0.279 |
| Consumption willingness (CW) | CW1 | 3.67 | 1.136 | -0.677 | -0.216 |
| | CW2 | 3.68 | 1.138 | -0.798 | 0.057 |
| | CW3 | 3.48 | 1.227 | -0.428 | 0.792 |

Source: Authors own creation

Difference in the proportions of male and female players among the surveyed groups is not obvious, indicating that there is no significant gender difference in acceptance of “King of Glory.” The 18–30 age group accounts for the largest proportion. At present, the student group still constitutes the main participant group for e-sports games, accounting for 41.1 per cent of the total, followed by personnel from enterprises and institutions, accounting for 34.7 per cent of the total. By summarizing the characteristics of the group, the common point is that the group is relatively young, has strong cognitive and learning abilities, and has a strong ability to accept new things. The statistical results are illustrated in the Table 3.

Table 3. Characteristics of the interviewed group

| | Category | Percentage |
|---------------------------------|----------------------|------------|
| Average game time per day | Under 1 hour | 19.2% |
| | 1–2 hours | 36.6% |
| | 2–3 hours | 25.0% |
| | 3 hours or more | 19.2% |
| Watching e-sports videos | Yes | 76.8% |
| | No | 23.2% |
| | Sports | 50.5% |
| | Series/Films | 75.4% |
| Activities except playing games | Reading | 49.1% |
| | Travelling | 45.1% |
| | Community activities | 17.4% |
| | Others | 8.90% |
| | Home | 63.8% |
| Game playing location | Internet bar | 29.5% |
| | Dormitory | 43.3% |
| | e-Sports game scene | 24.1% |
| | No specific place | 20.5% |
| | Others | 4.50% |

Source: Authors own creation

It can be seen that most players of “King of Glory” spend between one and two hours a day on the game. At the same time, players will choose to watch videos related to e-sports. These activities are mostly done at home or in the dormitory. In addition to games, e-sports players have other hobbies. Most game players choose to watch series or films in their free time, and some will also choose to read or travel, indicating that playing games is just

a part of their daily leisure for most respondents.

According to the research hypotheses of this article, variables are set as consumption experience, external environment, product characteristics, incentive factors, and consumption willingness, with a total of 31 items.

To investigate the measurement models, several criteria were used, including Kaiser-Meyer-Olkin (KMO), Cronbach’s alpha, average variance extracted (AVE), and factor loadings. Cronbach’s alpha was used to verify the reliability of the measurement models. Since all of the coefficients are above 0.8, good reliability is revealed. The KMO values are all above 0.7, which means good structural validity and the requirements of factor analysis. Confirmatory factor analysis (CFA) was conducted to show the construct validity. AVE was computed to consider convergent validity. All AVEs are acceptable, exceeding 0.5. Factor loadings are higher than 0.5 and significant. The analysis results are illustrated in the Table 4 and Table 5.

Table 4. Reliability and validity analysis

| Latent variables | Observation variables | Cronbach’s alpha | KMO | | |
|-------------------------|-----------------------|------------------|-------|-------|-------|
| Consumption experience | VE1 | 0.884 | 0.785 | | |
| | VE2 | | | | |
| | VE3 | | | | |
| | VE4 | | | | |
| | AE1 | | | | |
| External environment | AE2 | 0.916 | 0.890 | | |
| | AE3 | | | | |
| | AE4 | | | | |
| | AE5 | | | | |
| | SE1 | | | | |
| Product characteristics | SE2 | 0.887 | 0.741 | | |
| | SE3 | | | | |
| | EE1 | | | 0.908 | 0.845 |
| | EE2 | | | | |
| | EE3 | | | | |
| EE4 | | | | | |
| OE1 | 0.914 | 0.758 | | | |
| OE2 | | | | | |
| OE3 | | | | | |
| PC1 | | | 0.934 | 0.900 | |
| PC2 | | | | | |
| PC3 | | | | | |
| PC4 | | | | | |
| PC5 | | | | | |

| | | | |
|-------------------|-----|-------|-------|
| Incentive factors | IF1 | 0.907 | 0.828 |
| | IF2 | | |
| | IF3 | | |
| | IF4 | | |
| Consumption | CW1 | 0.906 | |

| | | |
|-------------|-----|-------|
| willingness | CW2 | 0.737 |
| | CW3 | |

Source: Authors own creation

Table 5. Correlation matrix of the latent constructs

| | Consumption willingness | Incentive factors | Consumption experience | Product characteristics | External environment |
|-------------------------|-------------------------|-------------------|------------------------|-------------------------|----------------------|
| Consumption willingness | 0.890 | | | | |
| Incentive factors | 0.913 | 0.856 | | | |
| Consumption experience | 0.865 | 0.905 | 0.892 | | |
| Product characteristics | 0.935 | 0.970 | 0.918 | 0.864 | |
| External environment | 0.844 | 0.912 | 0.891 | 0.921 | 0.897 |

Source: Authors own creation

Further tests of the relationship between consumption experience, consumption willingness, product characteristics, external environment, and motivational factors by AMOS24.0 yields the fit index, and obtains the path coefficient with the maximum likelihood estimation method.

The data from the initial model showed that the fit index of the model was not very good. The model was modified according

to the suggestions given by the maximum value of the correction index. According to the suggestion of modification indices, the observation variables (product characteristics and incentive factors) are set as a covariant relationship, and they are changed to free parameter from fixed parameter (Hair et al., 2011). Finally, the modified model was obtained. The fit index of the modified model reaches the standard level, a better fit than the initial model. The fit index results are illustrated in the Table 6.

Table 6. Fit index

| | χ^2/df | RMR | RMSEA | GFI | AGFI | NFI | RFI | IFI | CFI | PNFI | PCFI | PGFI |
|----------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ideal value | <5 | <0.05 | <0.08 | >0.9 | >0.9 | >0.9 | >0.9 | >0.9 | >0.9 | >0.5 | >0.5 | >0.5 |
| Initial model | 7.744 | 0.603 | 0.174 | 0.698 | 0.607 | 0.783 | 0.746 | 0.806 | 0.805 | 0.669 | 0.687 | 0.537 |
| Modified model | 1.421 | 0.022 | 0.043 | 0.932 | 0.914 | 0.970 | 0.958 | 0.991 | 0.991 | 0.706 | 0.721 | 0.603 |

Source: Authors own creation

Results are estimated by the coefficient of the influencing factor model of e-sports product consumption willingness. According to the results in Table 7, most path coefficients are

statistically significant, and the hypotheses of the study are supported at a significance level ($p < 0.05$). The p-value shows the significance of the influence relationship of each path. Hypothesis 1, hypothesis 3 and hypothesis 6 are rejected.

Table 7. The coefficient estimation results of the model

| | | Estimate | S.E. | C.R. | P | Std. | |
|-------------------------|------|-------------------------|--------|-------|--------|-------|--------|
| Consumption experience | <--- | Product characteristics | 0.438 | 0.154 | 2.844 | 0.004 | 0.489 |
| Consumption experience | <--- | Incentive factors | 0.421 | 0.158 | 2.662 | 0.003 | 0.458 |
| Consumption willingness | <--- | Product characteristics | 0.465 | 0.293 | 1.584 | 0.113 | 0.445 |
| Consumption willingness | <--- | Consumption experience | 0.136 | 0.167 | 0.816 | 0.415 | 0.117 |
| Consumption willingness | <--- | Incentive factors | 1.067 | 0.373 | 2.864 | 0.004 | 0.996 |
| Consumption willingness | <--- | External environment | -0.379 | 0.306 | -1.241 | 0.215 | -0.385 |

Source: Authors own creation

5. Discussion and Conclusion

Through the analysis of survey data from players of the mobile e-sports game "King of Glory," the consumption willingness model results showed important factors influencing consumption willingness and the internal driving force of e-sports consumption behavior.

Firstly, the research results indicate that e-sports product characteristics have a significant positive effect on the consumption experience. The conclusion verifies the research conclusions drawn in previous literature (Hallmann and Giel, 2018). In the field of sports, game products obviously have lifecycle characteristics. To extend the life cycle of e-sports games, it is essential to improve players' experience continually, which needs developer to pay attention to the characteristics of the product itself. The first thing when purchasing products and

services is the intrinsic properties. Both virtual products in games and derivative activities of e-sports, such as e-sports events and e-sports souvenir, should be developed starting with the quality and design of the products, including the fun and beauty of the game scene design, the artistic and creative appreciation of the e-sports activities.

Secondly, Hypothesis 1 is rejected because e-sports is different from ordinary online games: it emphasizes technology and teamwork ability more. E-sports games are a competitive sport. The difficulty of the task must be within a certain range of capabilities, and players will benefit from the effect of flow experience (Csikszentmihalyi, 1997). Meanwhile, the consumption experience is greatly affected by other factors, such as culture and social cognition. Research by Csikszentmihalyi and Asakawa (2016) has also shown that in different cultures, the experience itself might be different. Due to cultural and subcultural differences, it is difficult for Chinese consumers to conform fully to the experience of traditional consumption experience theory (Pan, 2012). The willingness to consume will be changed under the combined action of internal culture and external conditions. The reason for rejecting Hypothesis 3 can be explained as follows. The consumption persistence of e-sports game players will be affected by factors of personal competitive ability and status (Choi & Kim, 2004). At the same time, "King of Glory," as a Chinese MOBA product, is comparable to "League of Legends" (developed by Riot Games in the United States) and "DOTA 2" (developed in cooperation with Valve Corporation of the United States and Ice Frog). There are no significant differences, so product characteristics may not directly affect consumption willingness (Park & Lee, 2011). Hypothesis 6 is rejected because e-sports players are more concentrated in young groups, especially those belonging to generation Z, who have more independent self-awareness and personal thoughts (Barkhi & Wallace, 2007), and there is no direct significant relationship with surrounding public opinion. At the same time, consumption places and time pressure factors are not obvious in mobile games e-sports products (Qian et al., 2019). It is worth mentioning that "King of Glory" has begun to make timely adjustments to market goals and game improvements, optimize product functions, and meet the needs of players' fragmented entertainment and socialization.

Thirdly, incentive factors have a significant positive effect on consumption experience and on consumption willingness of e-sports game players. The motivating factors of e-sports game are different from ordinary online games, which tend to be more technical and professional. Therefore, for e-sports game operators, it is necessary to improve online community technical operations and organize various forms of e-sports events and commercial activities. Cooperating with live broadcast platforms to promote interactive e-sports commentary activities, developing character settings in e-sports games and related souvenirs products for participating teams, etc., they are all motivating marketing methods worthy of attention. Effective incentives can give e-sports players the motivation to continue to participate, so that players can generate consumption willingness on a certain basis and ultimately transform it into consumer behavior (Flegr & Schmidt, 2022).

Hence, e-sports game developers should employ marketing methods to encourage consumption and enrich the overall experience. This may involve strategies such as leveraging celebrity endorsements and organizing cultural and creative activities. The economic value attributed to e-sports products encompasses both the e-sports games themselves and the associated e-sports activities. From the perspective of products, game players consume virtual products, while e-sports souvenirs and e-sports events designed around virtual game are physical products. For example, limited commodities, commemorative products, and blind box cultural creative products are important means to enhance the incentive factors for e-sports products.

Moreover, e-sports, characterized as recent sports competitions and professional performance activities in China,

possesses distinct features setting it apart from ordinary online games. Unlike conventional gaming experiences, e-sports entail organized and competitive gameplay, often in a professional setting. The engagement of e-sports enthusiasts extends beyond gameplay, encompassing activities like watching e-sports events. This competitive and spectator-driven dimension forms the foundation for the exploration of consumption willingness in the e-sports landscape.

6. Implications and Limitations

Based on the above research, the theoretical significance of this paper is to integrate a consumption willingness model of e-sports game players, explore the influencing factors of consumption willingness, and clarify the internal consumption driving force of e-sports game players, making a supplementary contribution to e-sports research on the micro-perspective. We further try to provide corresponding theoretical support for the e-sports platform to improve the product design experience and enhance players consumption willingness. The article also tries to propose suggestions for product market developers and enterprise operators. The practical significance is to help relevant companies to formulate targeted marketing strategies by understanding the real needs of players; to guide more new players' consumption choice and old players' consumption stickiness; and to tap the potential e-sports commercial value and promote the development of the e-sports industry.

The theoretical insights thus contribute to the existing literature in several areas. Firstly, the findings highlight the significant impact of e-sports product characteristics on the consumption experience. This suggests that the design and features of e-sports products play a crucial role in enhancing the user's enjoyment and engagement with the activity. This insight is particularly valuable for industry practitioners, as it emphasizes the importance of product design in attracting and retaining consumers. Secondly, the study also underscores the positive influence of incentive factors on both consumption experience and consumption willingness. This finding highlights the role of rewards, bonuses, or other incentives in enhancing consumers' willingness to engage with e-sports products. It emphasizes the need for companies to develop effective incentive systems to encourage user engagement and loyalty. Furthermore, the paper's application research demonstrates that souvenir products and festival events have a significant impact on e-sports consumption. This finding suggests that organizations can leverage such ancillary products and events to enhance the overall e-sports experience and promote increased engagement among consumers.

In terms of research implications, "King of Glory" currently enjoys significant popularity in the market, and there is a need to further extend its mature development phase. The details of the product must continue to be updated and the development direction of product updates should be captured by investigating the actual preferences of game players. It is suggested to learn from the development experience of global e-sports game competitors. For example, "League of Legends" (LOL) and "DOTA" hosted international events, dramatically increasing consumption enthusiasm for e-sports games. Almost every international game event can trigger a new round of players increasing. At the same time, there is an industrial opportunity to incorporate e-sports products into the Asian Games, which has promoted the renewal and development of the products themselves and created a development path for international competitions.

The originality and value of this paper also lie in its focus on the Chinese e-sports market, which is currently the largest consumer market in the world. By studying the consumption willingness of Chinese e-sports game players, this research enriches our understanding of consumer behavior in this rapidly growing industry. The practical significance of this work lies in its ability to inform companies about the real needs and preferences of game players, allowing them to develop targeted marketing

strategies. Such strategies can help companies unlock the potential commercial value of the e-sports industry, thereby promoting its sustainable development.

Similar to other studies, this research has its limitations. This article has made a preliminary study of the factors affecting consumption willingness of e-sports game players. Subsequent investigation should expand the research sample and consider game players' economic status, values, cognitive status, and other influencing factors to deepen and improve the research results. The paper will make additional efforts to study the consumption intention of global e-sports game players to enrich e-sports microcosmic research in the future. We believe that a variety of new wave for e-sports products emerging with entertainment value and economic value, will continue to drive e-sports game players' consumption growth.


Declaration of competing interests

None

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