

The impact of perceived quality, advertising quality, and herding effect on purchase intention: Moderation effect of age



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ABSTRACT

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In recent years, with the rapid development of technology, the development trend of online game industry is good. This paper focuses on the online gaming industry and discusses the factors that affect the willingness of Chinese college students to purchase products on gaming platforms. This paper selects consumer perception quality, advertising quality, and herd effect on game platforms as the main research variables through literature review. This paper introduces age as a moderating effect, investigate the moderating mechanism of age groups on the three main research variables. This paper found that both perceived quality and herd effect have a positive impact on consumer purchase intention, while age has a positive moderating effect on herd effect and the combined variables of perceived quality and herd effect. However, advertising quality has no significant impact on consumers' purchase intention, and the moderating effect of age on the impact of advertising quality on purchase intention is not significant. The paper falls into six parts. Firstly, it introduces the background, purpose, significance, conceptual framework, and contribution. Secondly, it introduces the literature review and assumptions. Thirdly, it presents the methodology. Fourth, it introduces the discovery of the study. Fifth, it indicates the discussion and implication. Sixth, it concludes the main points. The innovation lies in the following points. Firstly, this paper focuses on the consumption behavior of Chinese college students in online games. Secondly, this paper incorporates multiple variables mentioned in existing literature into the research mode. Thirdly, this paper introduces age groups as moderating variables.

Contribution/ Originality: This study adopted a unique research method and employed multiple research survey methods during the research process. Furthermore, in terms of author allocation, this paper adopts a more equitable approach.

1. INTRODUCTION

1.1. Research Background

In recent years, online social activities have become an important mean of users' emotional and interpersonal communication, and an important media for young people to establish social relations (Xia, 2021). In the Chinese Game Industry Report in the year 2022, Chinese game market's actual sales revenue was predicted to reach \$109.20 billion in 2023 (Statista, 2023). Therefore, it is quite pivotal to study the factors that affect consumer behavior and consumer purchase intention in the game market. Meanwhile, according to the data from the Ministry of Education

of the People's Republic of China (2022) number of college students in China reached 41,626,353, making it a large group. In addition, according to the findings of *China Daily* (2017) in 2016, the total expenditure of Chinese college students was 685 billion yuan. Additionally, *Fung* (2017) also found through theoretical and empirical research that young people are more willing to use mobile games and consume them, bringing huge benefits to the gaming platform. Hence, it is indispensable to study the behavior and purchase intention of Chinese college students in online game platform consumption. In the exist literature, experts figured out various factors that may affect the purchase intention, for instance the perceived quality, advertising quality, herding effect, and age. First, perceived quality, different from the objective quality assessment, is a combination of objective and subjective cognition of the quality of a product (*Tao, Li, & Liu, 2019*). It was found that the sense of perceived quality from consumers has great impact on their purchase behavior (*He, 2022*). Second, advertising is a vital approach for companies to spread the concepts and the selling point of their products, so as to build brand awareness in the modern competitive environment (*Lin, 2011*). Consequently, the advertising quality is of great significance in the business activity. Advertising quality can be measured from two aspects, which are the contents and the form (*Song, Chen, & Zhao, 2019*). The contents can be divided into six parts, the spokesperson of advertising celebrity, game information, advertising graphics, advertising creativity, advertising music, and props acquisition. The advertising forms are theme restaurant, scene implantation, lottery system, point system, prop implantation, and access to game surroundings (*Song et al., 2019*). Third, the herding effect greatly affects consumer behavior. Since the herding effect refers to an effect in which individuals refer to others' behavior in the face of uncertainty, thereby affecting their own behavior (*Liu & Sutanto, 2012*). The willingness of consumers to purchase is influenced by the opinions of consumers who have already engaged in purchasing (*Kang, He, & Shin, 2020*). Additionally, age, as a crucial socioeconomic characteristic, influencing people's consumption behavior from self-cognition, family size, and income (*Punj, 2011*). Consequently, age has great influence on the purchase intention of the consumers to some extent (*Tiruwa, Yadav, & Suri, 2018*). Purchase intention, which is the possibility of consumers purchasing a product and their willingness to introduce it to others for purchase (*Shamdasani, Stanaland, & Tan, 2001*). Hence, it can be used to reflect the likelihood of consumer purchasing behavior. However, the current literature research lacks age as a moderating variable to investigate the different effects of perceived quality, advertising quality, and herding effect on purchasing intention among different age groups. Therefore, this study will combine the variables proposed in existing literature and use age as a moderating variable to study the specific mechanism of its impact, and provide targeted suggestions for the Chinese online gaming industry.

1.2. Research Purpose

This study has the following purposes: a) analyze the impact of perceived quality in gaming platforms on the purchase intention of Chinese college student players. b) Discuss the impact of game advertising quality on players' willingness to purchase on game platforms. c) Discuss the impact of consumer herd behavior on players' purchase intention. d) Analyze the impact of consumer perception and external influences on purchase intention e) Analyze the impact of three main variables combined on purchase intention. f) Analyze the impact of consumers' age on purchase intention. g) Study the moderating effects of age on perceived quality, advertising quality, and herd effect on purchase intention. h) Study the moderating effects of age on consumer perception and external influences on purchase intention. i) Study the moderating effect of age on the influence of three main variables on purchase intention.

1.3. Significance of Research

Nowadays, online games cause widespread discussion by numerous scholars. However, current research is mostly focused on popular online games abroad, and there is less research on Chinese online game consumers. Therefore, to some extent, the development of the domestic game industry has lagged behind. Studying online

game consumption behavior will help clarify the factors that affect online game consumption and the logical relationship between these factors. Although existing literature has studied the determinants of player purchasing power in the gaming industry, as well as the impact of determinants on game platform functionality and social attributes. However, most of the current literature focuses on variables such as herding effect, platform quality, advertising, and age at the same level, and does not conduct detailed research on their impact mechanisms. Whether consumers' willingness to buy game platform products from different age groups is affected differently by people's perceived quality, advertising quality, and herding effect on the game platform. Whether and how age plays a regulatory role in the mechanism of perceived quality, advertising quality, and herding effect on consumers' purchase intention remains to be discovered. Hence, this study will pay attention to the internal relationship of these influencing factors, adjusting and optimizing the purchasing power determinants model, and making targeted recommendations for game companies.

1.4. Conceptual Framework

This study consists of six parts mainly. The first part briefly introduces the background, purpose, significance, framework, and contributions of this study. The second part summarizes previous literature studies on game platform perceived quality, advertising quality, herding effect, age, and purchase intention. In addition, various variables are defined and discussed in this section. The third part introduces the main research methods of this study. Additionally, the next two parts analyze and explain the collected data, and draw important findings from this study. The sixth part summarizes the research process, findings, and significance, and proposes limitations and suggestions for this study. It also elaborates on several research issues that can be further explored and improved in the future.

1.5. Contribution

The contributions of this study are mainly concentrated on research objects, research models, and research results. Firstly, most previous studies have not focused on college students in China. However, from the data presented above, it can be seen that this group has a large population, uses online game platforms more frequently, and has a strong consumption ability. Therefore, this study focuses on this particular group to conduct research on consumers' willingness to purchase products on game platforms, which can show the representative of the study. Secondly, most previous studies have proposed the impact of consumers' perceived quality of games, advertising quality of game platforms, herding effect, and consumer age on their willingness to consume. However, there is currently no research to combine them in one model and indicate whether age plays a moderating role in the impact of game perceived quality, game advertising quality, and herding effect on consumers' purchase intention. Consequently, this study first introduce age as a moderator variable to study the detailed impact mechanism of variables on consumer purchase intention. Finally, based on the results of empirical research, this study provides significant and targeted recommendations for Chinese game companies on how to grasp the college student market.

2. LITERATURE AND HYPOTHESIS

2.1. Advertising Quality of Game Platform

2.1.1. Definition of Advertising Quality of Game Platform

Advertising is a form of building consumers' positive brand awareness of a product, attracting users through signal quality's extrinsic clues (Milgrom & Roberts, 1986). Advertising provides product information to every consumer, representing a company's image and product positioning, and plays an important role in the complete marketing chain and promotional activities (Lin, 2011). The key of advertisement is advertising appeal, which can successfully drive the audience to receive important information in the advertisement (Kotler, 1997). The diversity of advertising is reflected in the varying content, format, design, and type of advertising required for different

products (Manchanda, Dubé, Goh, & Chintagunta, 2006). The uniqueness of advertising is an indispensable component of its effectiveness, as it is a great way to find a product audience (Palanisamy, 2004). The main factors that affect the quality and effectiveness of online advertising include the following three aspects: factors related to advertising websites, factors related to advertising audiences themselves, and factors related to banner advertising itself (Yu & Luo, 2006). The demands of consumers in advertising can be divided into rational demands and emotional demands (Kotler, 2003). The attractiveness of advertising to a certain extent affects consumers' attitudes and emotions towards related products or services (Lin, 2011). Additionally, the amount of advertising investment and the size of the advertisement will to some extent affect the quality and effectiveness of the advertisement (Baltas, 2003). The advertising content of mobile games has a significant impact on the quality of advertising, such as creativity, endorsements, etc. (Song et al., 2019). Consumers are attracted to advertisements that meet their advertising needs, thereby deepening their positive impression of the product. Both advertising demands and advertising spokespersons have a significant impact on the final presentation quality of advertisements (Lin, 2011). Consequently, in this study, the advertising quality is defined as the degree to which advertisements meet consumers' demands for viewing advertisements, as well as the creative quality of advertisements.

2.1.2. Impact of Advertising of Game Platform on Game Purchasing Intention

Nowadays, literature on the impact of advertising quality on purchase intention mainly analyzes cases or empirical analysis, and concludes that advertising has a certain impact on purchase intention. Through empirical research, Chang, Chen, and Tan (2012) pointed out that product type as well as the strength of the relationship between advertising and the product can both affect consumers' willingness to consume, especially when it comes to hedonic products. Therefore, the success of advertising to some extent affects consumers' purchasing intention. Xiong (2012) concluded through empirical research that the background factors of advertising, consumer factors themselves, and the design information factors of online advertising can all affect the quality of online advertising and affect consumers' willingness to consume. Some scholars believe that the power of spokespersons in advertisements have celebrity factors, so as to influence consumers' willingness to purchase products. Zhou (2009) proposed that the influence of celebrity advertising effect mainly includes product and advertising factors, audience factors and environmental factors. Spokesperson is of great significance in advertising, which can be divided into celebrities, experts, and typical consumers. Actually, compared with the experts or typical consumers, advertisements endorsed by celebrities have a more significant positive impact on consumers' purchase intention (Lian, 1990). Besides, the characteristics of the spokespersons can give rise to the increasing purchase intention of consumers. Advertising appeal and advertising spokesman affect advertising attitude, thus affecting consumers' purchase intention (Lin, 2011). Specifically, the consistency of the spokesperson's national attributes and the product's national colors (Zhang & Zhang, 2010) spokesperson professionalism (Chang et al., 2012) the matching degree of celebrity characteristics and product categories (Zhou, 2009) celebrity reliability (Zhou, 2009) and the spokesmen's attractiveness and similarity (He, 2013) will have an impact on the advertising effect, thus having a certain impact on consumers' purchase intention. The following scholars have focused on the impact of advertising on consumer willingness in game platforms. Song et al. (2019) studied that mobile game advertising has a significant impact on consumers' purchase intention, and the impact of advertising content is greater than that of advertising form. Thus, this study proposes the following hypopaper:

H₁: Advertising quality of the game platform has positive impact on the purchase intention of products in game platform among Chinese college students.

2.2. Perceived Game Quality

2.2.1. Definition of Perceived Game Quality

The concept of product perceived quality was firstly proposed to be an evaluation and judgment of products' quality by Olson (1972). Subsequently, Churchill Jr and Surprenant (1982) considered perceived quality as the

external expression of product attributes and value beliefs. Besides, Parasuraman, Zeithaml, and Berry (1988) defined the consumers' perceived quality as the subjective evaluation of the superiority of product quality by consumers. Parasuraman et al. (1988) proposed that perceived quality represents the overall excellence of a product's performance in the consumer's mind and is the overall product perception based on various factors such as product value and price. Specifically, perceived quality includes four characteristics, which are the subjective evaluation of an individual, an abstract concept, an overall evaluation or attitude toward the product, and a judgment made by the consumer after product comparison Parasuraman et al. (1988). According to these characteristics, the product quality obtained from consumers' evaluations of the product is their perceived quality as opposed to completely correlated with the objective quality of the product (Maynes, 1976). From another perspective, perceived quality to some extent reflects a company's ability to meet consumer needs (Tian & Xiao, 2016). In the criteria sector of perceived quality, different scholars have provided different criteria for the classification. Meanwhile, The existing literature mainly reviews and studies the factors that affect consumer perceived quality from the following aspects. Liao and Tang (2019) believed that consumer participation would positively affect perceived quality and satisfaction. Actually, expensive products from a well-known brand will make consumers have high perceived quality of products under a strong brand clue because of the interaction between brand and price (Luan & Meng, 2022). In the game sector, perceived game quality from consumers contains their satisfaction with the art style, game narrative, game score, social interaction, skill props and difficulty challenges in the game. Moreover, Xue (2021) used Technology Acceptance Model (TAM) to draw the following conclusions: the attractiveness of promotional videos and pictures, the attractiveness of profiles, and external publicity have a positive impact on perceived game quality. Consequently, in this study, perceived quality of the game will be defined as the evaluation of platform and game quality from consumers by perceiving all kinds of services and games equipment in the gaming platform. Additionally, perceived quality of the game will be used to represent the average quality of the game in this study as a main variable.

2.2.2. Impact of Perceived Game Quality on Purchase Intention

Recently, there are many studies on the perceived quality, mainly focusing on the impact of game perceived quality on consumers' purchasing intention or behavior. In existing empirical studies that analyzing consumer perceived quality and consumer behavior, most scholars choose to use questionnaire collection and setting degree questions for data collection (He, 2022; Li & Wu, 2016). Through the empirical analysis, it was found that the perceived quality has a positive and significant impact on consumers' willingness to consume (He, 2022). Narrowed down the research object to game platform, and proposed the same results as the higher the perceived quality of game is, the higher the purchase intention of consumers is. Particularly, some scholars have focused on the impact of perceived quality on purchase intention in the online gaming industry. Considering the subjectivity of game quality, Li and Wu (2016) used user ratings to represent game quality ratings, and established a regression model to find that players' consumption expenses on game platforms are mainly affected by the perceived quality of the game provided by the game platform. Moreover, Coker, Flight, and Baima (2017) found that game narrative, art style, and game music have a positive impact on consumer engagement behavior. Using the Technology Acceptance Model, Wang, Wang, Lin, and Tang (2003) proposed that both of the perceived usefulness and perceived ease of use have significant impact on the consumption intention and behavior of online game users. Yang and Hu (2007) consider the quality of game product as the main factors affecting online game consumption behavior, mainly including game content, scenarios, and operations. By collecting questionnaire data and conducting empirical analysis, He (2022) found that perceived quality significantly improves consumer satisfaction in five aspects: tangibility, assurance, empathy, responsiveness, and reliability. It is also proposed that the perceived quality is more important than game advertising for young players to consider their choice in the purchase behavior (Chen, 2012). Hence, this study proposes the following hypopaper:

H₂: Perceived quality of the game platform has positive impact on the purchase intention of products in game platform among Chinese college students.

2.3. Herding Effect

2.3.1. Definition of Herding Effect

Herding effect refers to the herd behavior of people to reduce the risk in their choices by trusting the majority (Banerjee, 1992). Due to the existence of the herding effect, consumers will imitate the consumption behavior of the general public, resulting in the unified consumer behavior (Kang et al., 2020). The two sources of information, information gap and decisions already made by others, can to some extent affect individual decisions (Sunder, Kim, & Yorkston, 2019). Information gap refers to consumers' incomplete understanding of the product (Sunder et al., 2019). Similarly, Ding and Li (2019) proposed through empirical research that two effects can affect the potential herding effect of users, namely the private signal effect and the sequential action effect. The private signal effect refers to the imperfect information based on personal preferences, while the sequential action effect means the order of observation. The private signal effect and the sequential action effect are influenced by product characteristics and brand (Dholakia, Basuroy, & Soltysinski, 2002). Herding effect was used in behavioral research in many different fields, such as in financial markets (Cipriani & Guarino, 2009) online consumption (Liu & Sutanto, 2012; Sunder et al., 2019) etc. In the game sector, the social attributes include the progress of acquiring social relationship, cooperative and competitive social in the game (Chen & Zhu, 2022). In the internet environment, whether social relationships are friends or strangers can affect social choices (Zhang, Liu, & Chen, 2015). The social attributes of the platform stem from the four needs of consumers: interest, relationship, transaction, and fantasy, relying on the nature of the network to fulfill these four needs (Peng, 2020). Consequently, the content of this study meets the requirements of the herding effect. Firstly, consumers' consumption on gaming platforms is uncertain because they cannot know the real quality and user experience of the product. Secondly, the attitude of users who have purchased and used a certain game product has a significant impact on the behavior of other users, which means that consumers can be influenced by the opinions of others who have already made purchases (Shi & Zhu, 2022). Hence, in this study, the herding effect is defined as the behavior that consumer follow their friends or other users in the game platform, so as to influence their original choice.

2.3.2. Impact of Herding Effect on Game Purchasing Intention

Nowadays, some studies have focused on the role of herding effect in consumption or consumer purchase intention. As an irrational choice to some extent to follow most people emotionally, herding effect affects people's decision-making (Berger & Heath, 2008). Specifically, consumers' willingness to purchase is influenced by the already demonstrated behavior of others, which is influenced by the herding effect (Kang et al., 2020). Consumers' willingness to purchase is influenced by other consumer evaluations, resulting in herd behavior (Pavlović-Höck, 2022). The herd behavior of consumers affects or even changes their evaluation and purchase intention of products to a certain extent. Actually, the impact of herding effect is more significant than the reference opinions of experts (Pavlović-Höck, 2022). Furthermore, some scholars focused on the herding effect in the game sector. As Shi and Zhu (2022) proposed, the clearer the user's attitude, the more it can influence others' behavior, and the more obvious the herding effect is reflected, thereby increasing or decreasing their purchase intention. Stated by He and Liu (2022) the degree of social interaction of users in online games contributes the most to the consumption behavior of virtual products. The purchasing behavior or willingness of consumers is purposeful, not only influenced by the characteristics of the product itself, but also influenced by psychological will or others. Through the interviews and empirical analysis, it is found that the social impact of mobile games has a positive impact on the consumer willingness of mobile game players (Zhou, 2009). Consequently, in this paper, it is planned to study

whether consumers will enhance their purchase intention because of the herding effect. Thus, this study proposes the following hypopaper:

H₅: Herding Effect has positive impact on the purchase intention of products in game platform among Chinese college students.

2.4. Age

2.4.1. Definition of Age

Age, as a socio-economic and demographic characteristic, plays a crucial role in studying people's behavior (Hubona & Kennick, 1996). The variable age can represent consumers' household size, income, beliefs, cognition, etc. (Punj, 2011). As people age, they shift their concerns about the future to emotional satisfaction, which to some extent affects their decision-making (Charles & Carstensen, 1999). In existing research, some scholars have used age as one of the variables to explain consumers' online shopping. As Jackson, Stoel, and Brantley (2011) argue, because people from different eras have vastly different experiences, they may follow different behavioral patterns when facing the same thing. For young people, digital media, family, and friends all play a crucial role in their decision-making (Haji & Stock, 2021).

2.4.2. Impact of Age on Game Purchasing Intention

Nowadays, research mainly focuses on studying the impact of age on consumers' purchase intention, but different scholars have obtained different results through different studies. Some scholars have found that age is an important factor affecting purchase intention. Haver (2008) found that older consumers are less likely to consume than younger consumers. The age of consumers significantly affects their willingness to make online purchases (Bhat, Islam, & Sheikh, 2021). Some scholars also suggest that age group has no significant impact on purchase intention. Wekeza and Sibanda (2019) found that there was no statistically significant correlation between consumer age and purchase intention of Shelly Center products by studying consumers' purchase intention.

H₆: Age has positive impact on the purchase intention of products in game platform among Chinese college students.

2.5. The Moderating Effect of Age

Tiruwa et al. (2018) found through empirical research analysis that age has a significant moderating effect on consumers' perception of purchase intention and attitude in online brand communities. As the result, it is concluded that young people are more likely and inclined to accept some new technological development concepts. As people age, they are increasingly less likely to be influenced by new ideas and engage in purchasing behavior. Therefore, this study assumes that age has a negative moderating effect on perceived quality, herd effect, and advertising quality.

H₇: Age moderates the effect of perceived quality on purchase intention in game platform of the students in Chinese college.

H₈: Age moderates the effect of advertising quality on purchase intention in game platform of the students in Chinese college.

H₉: Age moderates the effect of herding effect on purchase intention in game platform of the students in Chinese college.

2.6. Chinese College Students' Purchase Intention

Consumer purchase intention refers to the likelihood of consumers purchasing products and recommending them to those around them (Shamdasani et al., 2001). Purchase intention is the process of consumer decision-making, in which consumers compare, evaluate, and purchase information (Schiffman & Kanuk, 2007). According to Hamari and Keronen (2017) research, purchasing behavior of virtual products can be measured by willingness to purchase, loyalty, and actual purchasing behavior. However, in fact, most scholars in current literature use purchase intention to measure consumer purchasing behavior. Zhang (2015) studied the impact of mobile online game

consumption intention. The purpose of this study is to analyze the impact of perceived quality, advertising quality, and herd effect on Chinese college student consumers' purchase intention in online games. At the same time, the moderating effect of age group on the main variable was also included in the model. Therefore, all research model assumptions in this study are shown in Figure 1.

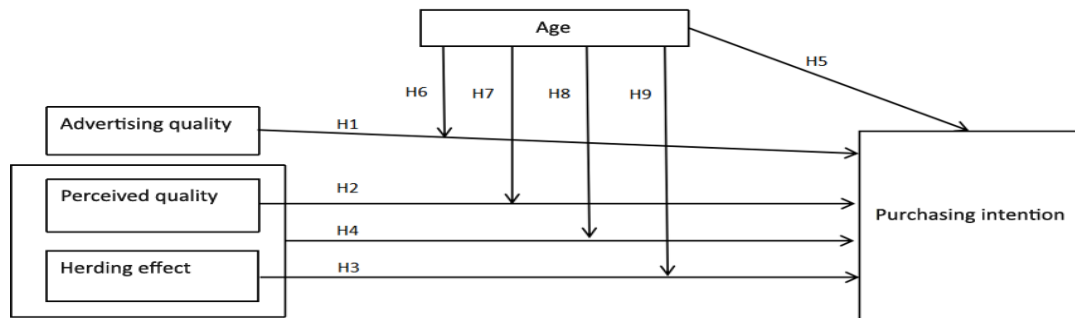


Figure 1. Research model.

3. METHODOLOGY

3.1. Research Methods

This study adopts the methods of literature survey, statistical analysis method, and survey questionnaire method to collect first-hand questionnaires. In the literature review section, this study reviewed and sorted out domestic and foreign literature related to perceived quality, game quality, herding effect, age, and purchase intention, and focused on its application in online gaming platforms. By reviewing the relevant theories and researching and discovering existing research omissions, this study proposes a research framework. This method can effectively support the theoretical significance of this study and provide a solid theoretical basis for the empirical analysis. In the statistical analysis method, this study selects a combination of qualitative and quantitative research methods according to the research needs. In qualitative analysis, this study determines the measurement dimensions of product perceived quality, advertising quality, herding effect, age, and purchase intention, which facilitates the measurement and quantification of variables in quantitative analysis. In addition, this paper also collected the qualitative data of gender as a categorical variable. This method is an excellent way to describe the characteristics that respondents possess when using online games. In quantitative research, this study uses EViews12 and SPSS 27 for data analysis. In order to ensure the validity of the research data, this paper has done the following tests: questionnaire validity and reliability monitoring, correlation test, robustness test, significance test. Quantitative research can discover the relationships between data and derive the correlation between variables, making a significant contribution to research. Descriptive research is widely used in studying the current situation, analyzing it through observation, analysis, and description (Koh & Owen, 2000). Questionnaire survey is one of the most common descriptive research methods (Koh & Owen, 2000). Therefore, this study uses a descriptive research method of questionnaire survey. The questionnaire survey aims to collect first-hand data from Chinese college students, explore the factors that affect their purchase intention, and how perceived quality, advertising quality, and herding effect affect the purchase intention of Chinese college student consumers. In addition, the role of age in the impact of these three factors on purchase intention is also one of the purposes of collecting questionnaires.

3.2. Research Design

3.2.1. Research Questions

This study aims to examine and explore the impact of perceived quality, advertising quality, and herding effect on the purchase intention, and analyze the moderate effect of age on the relationship among perceived quality, advertising quality, and herding effect on the purchase intention of Chinese college students.

3.2.2. Questionnaire Design

The questionnaire is designed in both Chinese because the research objectives are Chinese college students. It adopts a seven point scoring system (Dodds, Monroe, & Grewal, 1991) with scores ranging from small to large indicating a low to high level of agreement with the question. The questionnaire contains five parts. The first part is for the demographic questions including gender, monthly disposable income, academic degree, and age. The reason why this part is set is to get the basic information of respondents, so as to better distinguish the social identity of respondents. Hence, the data from college students can be collected to support the analysis. The second part is to explore the perceived quality's influence on the purchase intention. There are five questions in this part based on the perceived quality questionnaire developed by Dodds et al. (1991). The questions are designed from the different aspects that can reflect the perceived quality of online games, such as "the quality of props/services in online games". The perceived quality of virtual goods in online games is represented by the average score of all items, and the higher the score, the higher the perceived quality. The third part analyzes the relationship between advertising quality and purchase intention. The questionnaire collected consumers' attitudes towards advertising quality from three aspects: advertising creativity, spokesperson effect, and advertising placement. The average value of the three represents the advertising quality. The higher the value, the higher the advertising quality. The fourth part is to find out the relationship between age and purchase intention. The fifth part aims to find out the relationship between herding effect and purchase intention. This study uses the purchase intention questionnaire compiled by Dodds et al. (1991) to reflect the purchase intention. The questionnaire questions collect consumers' willingness to purchase from the perspectives of willingness to purchase, willingness to purchase, and willingness to purchase under certain conditions. The average score of all willingness levels represents consumers' willingness to consume online games. The higher the score, the stronger the intention to purchase online games.

3.3. Measurement of Variables

3.3.1. Control Variables

In the control variables part, characters that may have great influence on purchase intention are focused. Among online game participants, there are certain differences in interpersonal relationships between different genders (Xia, 2021). Zhou (2009) found that 'Fan economy' is a good way for game companies to catch female users, and use the star effect to attract more consumption. As been stated by Tiruwa et al. (2018) monthly income has a certain impact on consumers' willingness to purchase online. Consequently, gender and monthly disposable income can have an impact on purchase intention. Hence, these factors are introduced as control variables into the model of the study in order to ensure the effectiveness of the model as well as the result.

3.3.2. Independent and Moderating Variable

In the independent variables, three aspects are taken into consideration, which are perceived quality, advertising quality, and herding effect. Actually, perceived quality and herding effect are from the aspects of the consumers themselves, while advertising quality is the quality and strategy of platform marketing. Consequently, this study combines perceived quality and herding effect into a new variable as consumer perception, in order to analyze the relationship between consumer perception and purchase intention. For the moderating variable, age is introduced to moderate the relationship from the independent variables and the variable combinations.

3.3.3. Dependent Variables

In the dependent variable section, this study reflects the purchasing intention of Chinese college students by the average of consumer attitudes in the following three questions. The three questions are "willingness to purchase products in online games", "willingness to purchase products in specific situations", and "feasibility of purchasing

products in online games". These three questions gradually reflect the degree of consumer willingness to purchase in online games, which is credible.

3.4. Data Collection and Analysis Methods

The research objects of this study are Chinese college students. The academic qualifications of the study population include bachelor's, master's, and doctoral degrees, which are more comprehensive for current college students. Additionally, this study adopts online questionnaire, which can collect the data from different cities all over China in order to reflect the universality of the questionnaire. After collection, EViews and SPSS are introduced to do the reliability test, factor analysis, correlation analysis, and regression analysis in order to process, examine, and analyze data. 383 questionnaires were recycled and 47 invalid of them were invalid questionnaires, which include: 1) The interviewee is not a university student. 2) The duration of filling out the questionnaire is less than three minutes. After previous experiments, the duration of filling out this questionnaire should be within 4-8 minutes, so if the filling time is too short, it may mean that the answer is thoughtless. 3) The answers in the questionnaire's degree section are completely consistent, which means that the respondents were randomly filled out. 4) The answer to the honesty question set at the end of the questionnaire is incorrect: "Where does the sun rise?" This means that the respondents did not have good observation options and thought to answer, and the results do not have reference value.

4. FINDINGS

4.1. Descriptive Statistics

In the sample of respondents, there are 163 women, accounting for 51.5%, and 173 men, accounting for 48.5%. Therefore, the proportion of women and men participating in the survey is basically the same. The main research object of this study is college students, of which 47.32% are undergraduate students, 13.69% are master students, 3.57% are doctoral students, and 35.42% are junior college students (See Figure 2). Therefore, the age range of participants is mainly between 18 and 26 years old, accounting for 67.9% of all respondents. There are 106 respondents aged 26-40, accounting for 31.5% of the total population. There are two respondents aged 40 and above, accounting for 0.6%. In terms of monthly disposable income, the respondents' monthly disposable income mainly ranges from 2000 to 5000 yuan, accounting for 56.9%. In addition, 14.20% of respondents have a monthly income between 0-2000 yuan, and 27.85% have a monthly income of 5000 yuan or more.

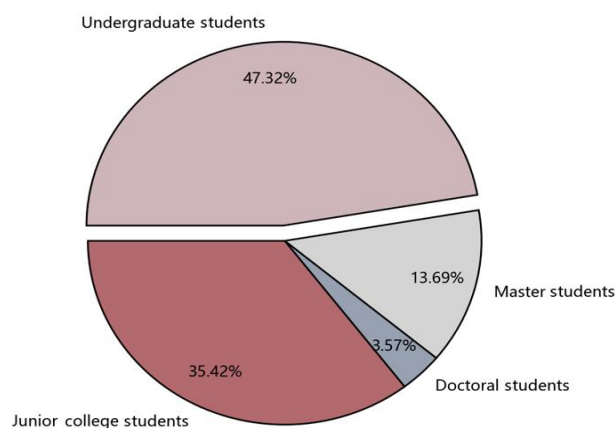


Figure 2. Education distribution of the sample respondents.

This study uses a seven point scoring system, so the total score for consumer agreement is 7 points. The average score of perceived quality for gaming platforms is 4.50, which means that respondents believe that perceived quality is an important aspect when using gaming platforms. Specifically, the average perceived quality

score of female respondents is 5.20, while the average perceived quality score of male respondents is 3.84. From this, it can be seen that female respondents believe that the quality of the gaming platform they experience is more important than male respondents. The average score for advertising quality on game platforms is 4.55, which means that respondents on average believe that the quality of game advertising is an important part of using the game platform. The average advertising quality score for female respondents is 5.25, while the average advertising quality score for male respondents is 3.88. From this, it can be seen that male respondents do not place higher importance on the quality of advertising in games than female respondents. The average score of the herding effect is 4.47, which means that respondents generally believe that in gaming platform consumption, the behavior of others will affect their own behavior. Specifically, female consumers scored 5.25 points, which is 1.54 points higher than male consumers. Overall, female consumers score higher than male consumers in all three aspects.

4.2. Reliability and Validity Test

In order to test the reliability and validity of the measurements, the reliability analysis and factor analysis is used for scale type questionnaire questions in SPSS(27.0). As shown in Table 1, the Cronbach’s α for the whole questionnaire is 0.912, which is demonstrated to be quite reliable. In addition, the Cronbach’s α for three coefficients are above the required value of 0.70 with the value of respectively 0.923, 0.874, and 0.927. Consequently, the study has passed the reliability test with the valid results since all the factors are chosen based on the reliable literature reviews. Besides, if the factor loading of the quantitative analysis questions in the questionnaire is higher than 0.4, the questionnaire is valid. The KMO(Kaiser-Meyer-Olkin) values can measure whether the questionnaire is proper to do the factor analysis. Specifically, the factor analysis can be conducted when the KMO value has to reach 0.6 and $\text{sig.} \leq 0.05$. It is generally believed that a factor load value greater than 0.7 indicates that the variable is well expressed by a common factor. In this study, the KMO value of the whole questionnaire is 0.893 with the $\text{sig.} = 0.000$, which lays the foundation for the factor analysis. Therefore, variables can be well expressed by common factors, and the questionnaire has strong effectiveness.

Table 1. Reliability test and factor analysis results.

Factor	Item	Factor loading			Cronbach’s α	
Perceived quality	PQ1	0.885			0.923	0.912
	PQ2	0.742				
	PQ3	0.752				
	PQ4	0.748				
	PQ5	0.724				
Advertising quality	AQ1		0.851		0.874	
	AQ2		0.772			
	AQ3		0.794			
Herding effect	HE1			0.807	0.882	
	HE2			0.766		
	HE3			0.759		
Purchase intention	PI1			0.891	0.898	
	PI2			0.816		
	PI3			0.794		

4.3. Correlation Analysis

In order to analyze the correlation relationship between the variables in the method, the study tests the Pearson correlation coefficient value using Eviews 12. Table 2 presents the correlation coefficient values of the study. In the test, the closer the correlation coefficient is to 1, the stronger the correlation between variables. Nevertheless, the closer the correlation coefficient is to 0, the weaker the correlation between variables. We generally believe that when the absolute value of the correlation coefficient is less than 0.6, the results are better, and the possibility of the multi-Collinearity may be lower.

Table 2. Correlation coefficients analysis 1.

Variable	G	MDI	PQ	AQ	HE	A	PQ*A	AQ*A	HE*A	PI
G	1.000									
MDI	0.464***	1.000								
PQ	0.430***	0.335***	1.000							
AQ	0.409***	0.400***	0.354***	1.000						
HE	0.431***	0.473***	0.331***	0.397***	1.000					
A	0.565***	0.529***	0.409***	0.411***	0.478***	1.000				
PQ*A	0.121**	0.159***	-0.096*	0.040	0.102*	0.376***	1.000			
AQ*A	0.170**	0.115**	0.042	-0.030	0.141***	0.372***	0.406***	1.000		
HE*A	0.237***	0.216***	0.111**	0.145**	-0.011	0.469***	0.437***	0.488***	1.000	
PI	0.426***	0.443***	0.359	0.314***	0.459***	0.471***	0.051	0.138**	0.081	1.000
N	336	336	336	336	336	336	336	336	336	336

Note: G, Gender; MDI, Monthly disposable income; AQ, Advertising quality; PQ, Perceived quality; HE, Herding effect; N, Number of the sample.
 *, **, and *** indicate that the regression coefficients are significant at confidence levels of 10%, 5%, and 1% respectively.

According to the Table 3, all the values are under 0.5. The highest value in the table is the correlation coefficients value between gender and herding effect. However, the value (0.469) is still under 0.5. Therefore, this study has passed the correlation test, and the interaction between variable factors is weak, laying a foundation for the credibility of the hypopaper test results in the following study.

Table 3. Correlation coefficients analysis 2.

Variable	G	MDI	AQ	CP	A	AQ*A	CP*A	PI
G	1.000							
MDI	0.464***	1.000						
AQ	0.409***	0.400***	1.000					
CP	0.527***	0.507***	0.465***	1.000				
A	0.565***	0.529***	0.411***	0.555***	1.000			
AQ*A	0.170***	0.115**	-0.030	0.122**	0.372***	1.000		
CP*A	0.119**	0.146**	0.052	0.015	0.357***	0.395***	1.000	
PI	0.426***	0.443***	0.314	0.495***	0.471***	0.138**	0.026	1.000
N	336	336	336	336	336	336	336	336

Note: G, Gender; MDI, Monthly disposable income; AQ, Advertising quality; CP, Consumer perception; N, Number of the sample. *, **, and *** indicate that the regression coefficients are significant at confidence levels of 10%, 5%, and 1% respectively.

4.4. Hypothesis Testing

Table 4 describes the regression analysis for the model. The Durbin-Watson values are from 1.9 to 2.0, which is included in the significant interval from 1.5-2.0. Therefore, the random error term of the regression followed a normal distribution. Meanwhile, the random error term passed the auto-correlation test with the proper VIF (variance inflation factor) value under 10. In the analysis of control variables, both of the monthly disposable income of and gender show a great significance under 1% with the respectively value of monthly disposable income($\beta=0.135, p<0.001$) and gender ($\beta=0.911, p<0.001$). Consequently, respondents' monthly disposable income and their gender have indispensable positive effect on the purchase intention of consumers. In model 1 (M1), the regression coefficient value for monthly disposable income ($\beta=0.86, p<0.001$) and herding effect ($\beta=0.217, p<0.001$) are significant, meaning that both of the two factors have great positive impact on the purchase intention of the respondents. Whether the consumer is a male or female has a great influence on the purchase intention under the significance of 0.05. Respondents' perceived quality positively influence the willingness of purchase behavior because of the regression coefficient value for perceived quality ($\beta=0.136, p=0.01<0.05$). However, the advertising quality ($\beta=0.024, p=0.636 > 0.1$) has little impact on people's buying intentions. In model 2 (M2), it can be seen that age ($\beta=0.047, p<0.001$) greatly influences the purchase intention of the respondents, which shows that among respondents, the older they are, the greater their willingness to buy may be. The impact of advertising quality ($\beta=0.010, p=0.851>0.1$) on purchase intention is still not significant. In model 3 (M3), the cross product item of age and herding effect ($\beta=-0.019, p=0.070<0.1$) has a significant impact on purchase intention, which also means that this regulatory effect is significant. However, the moderating effect of age on perceived quality ($\beta=-0.125, p=0.202>0.1$) and advertising quality ($\beta=0.011, p=0.256>0.1$) are not significant.

Table 4. Regression analysis 1.

Analyse	β	t	p	VIF	R ²	F	DW(Durbin-Watson)
Control variables							
MDI	0.135***	5.869	<0.001	1.275	0.254	57.939	1.992
Gender	0.911***	5.285	<0.001	1.275			
M1 (H1, H2, H3)							
MDI	0.086***	3.581	<0.001	1.506	0.313	10.633	1.919
Gender	0.526**	2.888	0.004	1.546			
PQ	0.136**	2.577	0.010	1.319			
AQ	0.024	0.474	0.636	1.375			

Analyse	β	t	p	VIF	R^2	F	DW(Durbin-Watson)
HE	0.217***	4.405	<0.001	1.461			
M2 (H1,H2,H3,H5)							
MDI	0.068**	2.765	0.006	1.612	0.328	8.158	1.921
Gender	0.359*	1.896	0.059	1.708			
PQ	0.116**	2.192	0.029	1.343			
AQ	0.010	0.188	0.851	1.389			
HE	0.191***	3.864	<0.001	1.511			
Age	0.047**	2.861	0.004	1.840			
M3 (H1,H2,H3,H5,H6,H7,H9)							
MDI	0.073**	2.960	0.003	1.628	0.334	2.086	1.932
Gender	0.359*	1.898	0.059	1.714			
PQ	0.095*	1.744	0.082	1.441			
AQ	0.019	0.361	0.718	1.454			
HE	0.156**	2.983	0.003	1.700			
Age	0.067***	3.422	<0.001	2.599			
Age×PQ	-0.013	-1.277	0.203	1.469			
Age×AQ	0.011	1.136	0.257	1.517			
Age×HE	-0.019*	-1.815	0.070	1.781			
N	336						

Note: R^2 , adjusted R^2 ; MDI, Monthly disposable income; PQ, Perceived quality; AQ, Advertising quality; HE, Herding effect; N, Number of sample. *, **, and *** indicate that the regression coefficients are significant at confidence levels of 10%, 5%, and 1% respectively.

Table 5 describe the regression analysis of consumer psychology and advertising quality models. In the model, the value of Durbin-Watson is within the effective range of 1.5 to 2.0. Therefore, the random Error term of regression follows normal distribution. At the same time, the VIF value is lower than 10, which means that the random Error term has passed the self-correlation test. Monthly disposable income ($\beta = 0.135$, $p < 0.001$) and gender ($\beta = 0.911$, $p < 0.001$) were significant under the condition of 1%. In Model 4 (M4), for the main variable, consumer psychology ($\beta = 0.331$, $p < 0.001$) is significant under 1% conditions, but advertising quality is not significant ($\beta = 0.028$, $p = 0.594$). In Model 5 (M5), age ($\beta = 0.048$) is significant under 5% significance. In Model 6 (M6), the interaction term between age and consumer psychology ($\beta = -0.029$, $p = 0.022$) is significant under 5% significance, however, the interaction terms of age and advertising quality ($\beta = 0.911$, $p = 0.273$) is not significant.

Table 5. Regression analysis 2.

	β	t	p	VIF	R^2	F	DW
Control variables							
MDI	0.135***	5.860	<0.001	1.275	0.254	57.939	1.992
Gender	0.911***	5.277	<0.001	1.275			
M4 (H1,H4)							
MDI	0.090***	3.738	<0.001	1.493	0.313	39.162	1.956
Gender	0.537***	2.938	0.004	1.536			
CP	0.331***	4.898	<0.001	1.686			
AQ	0.028	0.028	0.594	1.378			
M5 (H1,H4,H5)							
MDI	0.072***	2.916	0.004	1.597	0.328	33.679	1.955
Gender	0.369*	1.943	0.053	1.695			
CP	0.282***	4.096	<0.001	1.793			
AQ	0.013	0.255	0.799	1.391			
Age	0.048***	2.890	0.004	1.850			
M6 (H1,H4,H5,H6,H8)							
MDI	0.077***	3.108	0.002	1.611	0.336	29.206	1.943
Gender	0.361*	1.909	0.057	1.696			
CP	0.234***	3.259	0.001	1.965			
AQ	-0.250	-1.034	0.302	31.011			
Age	0.066***	3.361	<0.001	2.575			
Age×CP	-0.029**	-2.308	0.022	1.836			
Age×AQ	0.011	1.099	0.273	33.222			
N	336						

Note: R^2 , Adjusted R^2 ; MDI, Monthly disposable income; CP, Consumer perception; AQ, Advertising quality; N, Number of sample. *, **, and *** indicate that the regression coefficients are significant at confidence levels of 10%, 5%, and 1% respectively.

5. DISCUSSION AND IMPLICATIONS

5.1. Discussion of Findings

Through the empirical and the theoretical research, this study finds the influencing factors on consumers' purchase intention, which contributes to the existing study. Firstly, the perceived quality has a positive impact on the purchase intention under all the three model. In other words, the higher the quality of the gaming platform is perceived by consumers, the higher their willingness to spend. The higher the quality of the gaming platform. This result is consistent with the empirical test results of He (2022). From the study, it could be found that advertising quality of the platform does not have significant impact on the purchase intention through the analytical progress. However, this result is on the opposite side of the one proposed by Song et al. (2019). This different result may be due to the following reasons. Firstly, due to the strong influence of other variables in the model on the dependent variable, the impact of advertising as a variable is not significant to some extent. Secondly, the results may not be significant in a limited sample size due to the insufficient sample size. Thirdly, as this study focuses on the Chinese college student population, the impact of advertising quality on purchase intention may not be significant for this group. In the regression analysis, herding effect has a great significance on the purchase intention, which means the purchase behavior of consumers can be impacted by other people. The results of this study corroborate the findings of Zhou (2009) empirical analysis. Consequently, Chinese college students will be affected by other consumers when they make their decisions in the game platform. The combination variable of perceived quality and herding effect, namely consumer perception has a significant impact on the purchase intention. Additionally, age, as a moderator in the model, has the negative moderating effect on the effect of herding effect and consumer perception on consumers' purchase intention. For people of different ages, their social needs are different, so their willingness to buy because of their social needs will also be different. As people age, their willingness to make purchases on gaming platforms becomes weaker due to the herding effect. The explanation for this result may be as follows. Firstly, as people age, they become more experienced in understanding things and are more willing to trust their intuition or choices. Secondly, as people age, their income increases, and they hesitate less to consult others' opinions when making purchases. As the control variable, gender has a significant impact on people's purchase intention in gaming platforms. When men and women are influenced by perceived quality, game advertising quality, and herding effect, their presentation of purchase intention is completely different. The monthly disposable income also has great impact on the purchase intention, because the amount of money determines respondents' consumption attitudes and affordability.

5.2. Theory Implications

In the theoretical aspect, this study has the following four implications, which contribute to the existing literature.

- 1) This study found that consumer perception has a significant impact on purchase intention, which is consistent with previous literature.
- 2) This study divided consumer perception into perception of platform quality and herd effect influenced by other consumer behaviors. Besides, this study demonstrated that the perceived quality and herd effect proposed in previous literature have a significant positive impact on consumers' purchase intention.
- 3) In this study, advertising quality has no significant impact on purchase intention. This phenomenon may occur because other influencing factors are too significant, affecting the effect of advertising quality on purchase intention, or it may be due to the lack of data in this study. However, this supplements existing research on advertising quality in consumer purchasing intentions.
- 4) Age significantly affects consumers' purchase intention. Additionally, age has a significant moderating effect on consumer perception. Specifically, age has a significant moderating effect on the herd effect in consumer perception.

5.3. Practical Implications

In addition to theoretical applications, this study also makes some contributions to practical applications. Firstly, online game platforms can improve the perceived quality of games through game environments, devices, skills, and other aspects, in order to enhance consumers' perceived quality and promote consumption. Secondly, it is important for online game platforms to maintain user relationships and reduce user losses. Thirdly, due to the significant moderating effect of age on consumer psychology and herd behavior, game platforms should set different targeted activities based on the age range divided by research. Fourthly, game platforms should pay attention to setting different promotion plans for different gender groups.

6. CONCLUSION

6.1. Conclusion

The aim of this study is to understand the effects of perceived quality, advertising quality, and herding effect on college students' purchase intention, as well as the moderating effect of respondents' age on the impact of three factors on college students' purchase intention. Therefore, this study found that perceived quality has a positive impact on consumer purchasing behavior. This means that game platforms can improve the perceived quality of consumers from the perspectives of platform settings, gaming experience, etc., thereby enhancing their perceived quality. However, this study also found that advertising quality has no significant impact on the purchase intention of Chinese college students. This result is contrary to existing literature, which may be because this study focuses on the Chinese college student population, so due to the uniqueness of this group, advertising quality did not have a strong impact on purchase intention. It may also be due to the limited sample size of this study. In addition, the herding effect has a positive impact on the willingness to purchase products on gaming platforms. This also means that Chinese college student consumers are largely influenced by the decision-making opinions of others when making purchasing decisions. Therefore, game platforms need to strengthen post purchase feedback to enhance consumers' willingness to purchase. For the variable combines perceived quality and herding effect, consumer perception has great impact on consumers' purchase intention. In the analysis of moderating effects, age has no significant moderating effect on perceived quality or advertising quality on college consumers' purchase intention. This can indicate that people's perception of the quality of gaming platforms and their requirements for advertising quality do not change with age. Nevertheless, this study confirms that age has a positive and significant impact on the herding effect and the consumer perception on college students' purchase intention. Under the control of other variables, consumers of different age groups have different reactions to the impact of herding effect on the purchase intention of online game products. In addition, this study also found that the control variables (monthly disposable income, gender) have a significant positive impact on purchase intention. The higher the monthly income, the stronger the willingness to purchase; There are significant differences in the willingness of different gender groups to purchase online products on gaming platforms.

6.2. Limitations

This study may have the following limitations, which may give rise to the bias and inaccuracy in the study. Firstly, although extreme data has been excluded during data processing, due to the online collection of questionnaires, it is not possible to monitor the true accuracy of each piece of data, which may lead to distortion and error in the data to a certain extent. Secondly, the research object of this study is Chinese college students, so it has certain limitations. For example, it cannot represent students from the United Kingdom, South Korea, France, and other countries, nor does it represent people of other groups. Consequently, the result may not be suitable in other countries or other groups. Thirdly, since the study focuses on the online game industry, the impact relationships discussed within the study are not universally applicable in other industries. Fourth, only 336 valid questionnaires have been collected, which may be relatively small in number and may lead to insignificant measurement results. It

is necessary to test the significance of model variables in future research by increasing the number of valid questionnaires.

6.3. Suggestions

As for the suggestions, related online game platforms could improve their services so as to increase revenue from the following points. Firstly, online game platforms should improve game perceived quality through game environment settings, game equipment settings, game skill settings, and other aspects (Robson, Plangger, Kietzmann, McCarthy, & Pitt, 2015) so as to improve the perceived quality of consumers and promoting consumption. Secondly, online game platforms should fully utilize the herding effect of consumers to generate revenue for the platform since is also an important method to maintain user relations, reduce user loss and improve the game payment rate (Zhou, 2009). Platforms can attract consumers by adding more socially interactive activities. Additionally, due to the need of forming a herding effect, game platforms should pay attention to maintaining relationships with old customers. At the same time, in order to ensure that the feedback of old customers on the platform's products can be seen, the platform needs to ensure the visibility of feedback before shopping, thereby forming a herding effect. Thirdly, due to the different degrees of purchase intention reflected by the herding effect on college students at different ages, game platforms can set different targeted activities based on the age range divided by the research. For instance, enhancing the competitive social experience of younger people as well as the social feelings of older people with favorable social needs. Fourthly, as shown above, there is a significant gap between male and female college student consumers in China in their willingness to purchase in game platforms. It can be seen that gender is a factor that affects consumers' willingness to purchase on game platforms. Therefore, game platforms should collect gender data from consumers and selectively promote activities that can meet the special needs of both female and male group respectively, so as to increase the purchase willingness of each group.

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