The Influence of Otome Games on Psychological Factors That Affects Consumers' Behavior in Games in China

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Abstract: With the development of female game industry, there have been an abundance of story-based video games called Otome games focused at female consumers. In these games, female players can develop a close relationship with the main male characters. However, the price of both in-game materials and animation derivatives is high. In this paper, psychological factors that influence the Otome Games will be discussed. It is proved that the product attraction, the time they spend on game and their belief are positively related to their buying behaviors, while the quality of the plot and the advertisement won't influence them. By reading this paper, consumers are able to get higher quality of shopping experience and producers will get to know consumers better.

Keyword: Otome games, Psychological factors, Consumers' behavior

1. Introduction

The games market is anticipated to earn total revenues of $180,3 billion in 2021 globally [1-3]. In the same year, women accounted for 52% of total players in China (9game, 2022). As a result, a massive number of story-based video games aimed at women have been created. These games, known as Otome games, have exquisite graphics, captivating plots, and professional voice acting. In the games, players establish virtual romantic relationships with male characters for their unique and ideal traits. During the process falling in love with these characters, users must pay additional money for items. Players invest a substantial amount of money in obtaining the card of their favourite characters. Mr Love: Queen's Choice, a Chinese Otome game, is believed to have a monthly income of 300 million. In addition to in-app purchases, animation derivatives are also extremely expensive.

Since the birth of video games, women have been barred from their audiences indefinitely. Despite the fact that female players have become an integral component of the game market, video games for women still remain infrequent and immature. How to prevent the detrimental effects of video games on female players is unquestionably a crucial subject that must be researched and addressed by the academic community. This essay will be based on a literature analysis that identifies elements that influence consumer behavior, analyzing how they relate to the benefits Otome games offer players and generating hypotheses. A questionnaire will next be utilized to demonstrate the validity of the hypothesis.

2.   Literature Review

As with every other facet of human behavior, it is believed that several distinct causes impact consumer behavior. It is the process by which individuals or groups choose, acquire, utilize, or discard goods, services, concepts, or experiences in order to satiate their needs and desires [4]. Marketing is based on the requirements and happiness of the customer. When the client is at the heart of everything, the study of consumer behavior is crucial [5]. Cultural, individual, psychological, and societal aspects all have an impact on how consumers behave while making purchases [6]. This study will investigate the psychological variables of Otome games that influence consumer behavior. Perception, motivation, learning, beliefs, and attitudes are the four most influential psychological factors on consumer purchase behavior [7].

2.1. Perception

Recognizing, observing, and discriminating are all examples of the process or result of becoming aware of things, relationships, and occurrences through the senses. It is how consumers interpret the environment around them based on sensory input. Consumers examine their needs, values, and expectations in response to stimuli, which they then use to choose, arrange, and interpret the stimuli [8]. Perception plays a crucial part in information processing and consumer decision-making. The definition of "sensory marketing" is marketing that appeals to customers' senses and affects their cognition, judgment, and behavior. From a management standpoint, sensory marketing can establish subconscious cues that characterize consumers' impressions of the product's abstract qualities, such as its complexity [9]. In China, Otome games always employ sensory marketing by incorporating engaging stories between players and characters. In addition, players pay for games because they wish to get materials more easily or acquire superior materials. Visual perception is crucial to marketing theory and practice. Brasel and other researchers establish a conceptual framework with five major components of visual perception: illumination, shape, surface colour, materiality, and position [10]. Given that location cannot be quantified, it is disregarded.

According to these criteria, hypotheses 1 and 2 are posed: the more attractive consumers perceive a product to be, the higher the price they are prepared to pay; the more interested players are in the plots or stories, the higher the price they are willing to pay for in-game materials and derivatives.

2.2. Motivation

Motivation activates an internal need condition, resulting in goal-directed activity. Motives are therefore described as durable, intense, and persistent interior sensations that inspire and lead behavior toward specific objectives [11]. A customer's level of motivation influences their purchase behavior. Depending on their priority, certain requests are more urgent than others. When a person's need for fulfillment becomes more urgent, a need changes into a motive.

Maslow's hierarchy of needs (fig. 1) [12] is a psychology theory of motivation that incorporates a five-tier model of human needs that is often portrayed as pyramidal levels [13]. Based on the premise that each individual has a hierarchy of five wants, this perspective provides a conclusive explanation of what motivates people.

These are the physiological needs required for survival; Inclusion of physical, environmental, and psychological safety and protection in safety criteria; Social desires include the need for love, affection, care, a sense of belonging, and connection. There are two sorts of esteem needs: internal (self-respect, confidence, competence, accomplishment, and independence) and external (recognition, power, prestige, attention, and admiration). Self-actualization needs: Included in the desire for self-actualization is the desire to become everything that one is capable of and has the potential to become.

As a person's psychological development progresses, new opportunities for growth continue to emerge.

According to Maslow, unsatisfied desires drive human motivation. As one of these prerequisites is substantially met, it pushes and demands the emergence of the following prerequisite. Maslow categorized the five requirements into higher-order and lower-order groups. Lower-order needs included physiological and safety requirements. Primarily, these lower-order demands are met outside. Higher-order desires were comprised of social, esteem, and self-actualization needs. Typically, these higher-order conditions are met internally, i.e., within an individual.
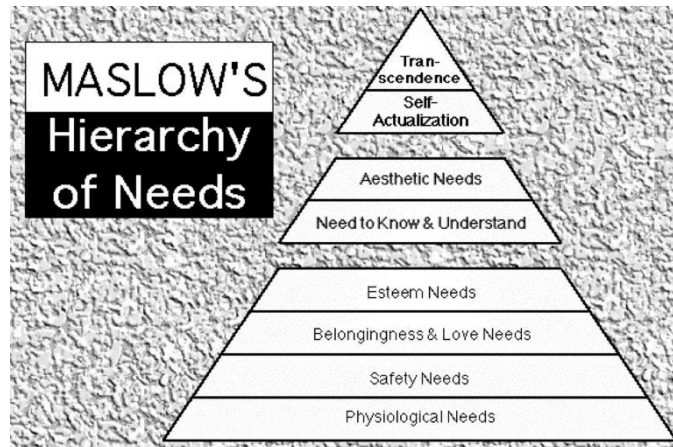

Figure 1: Maslow's hierarchy of needs

Otome games satisfy these needs in some ways. For physiological need, players are able to express their feeling and ideas when play games, such as happy, nerve and so on. For belonging need, the relationship with the perfect lover allows the player to gain love. For esteem need, the main character players play the part of usually has a heavy past and is responsible for making the world [14]. In the stories, they can gain respect; At the same time, in the real life, they can feel independence. For self-actualization need, gaining precious materials, socializing, winning the games can all make players feel satisfied [15].

Thus, hypothesis 3 can be formulated: the longer participants play games, the greater their incentive and the greater the price they are willing to pay.

2.3. Learning

Learning is described as a permanent change in behavior resulting from personal or external experience. There is a somewhat continual improvement in knowledge, skills, and capacities [16]. Consumer learning is the process by which customers acquire purchase and consumption-related information and experience, which they subsequently apply to future behavior. It can be deliberate, from seeking information, or unintentional, occurring by chance, accident, or with little effort. Learning consists of changes in behavior brought about by experience [17]. Human conduct is largely acquired via time and experience. Marketers can raise a product's demand by attaching it to powerful impulses, applying motivational cues, and to the same drives as competitors and delivering similar signals, as customers are more likely to transfer brand loyalty to similar brands than to different ones [18]. This is how individuals form their perspectives and attitudes. Consumer learning resides in the driving force, stimulus, prompt stimulation, reaction, reinforcement, and other dimensions of interaction, reciprocal effect underlying design and implementation. It is indicated that personality congruence between the consumer and the brand has a significant impact on consumer behavior [19].

The brand image has a significant positive effect on consumer purchasing behavior since it is a tacit mechanism that can alter people's purchasing habits for the better. Additionally, advertising has a positive effect on consumer purchasing behavior. If consumers are aware of a brand and have perception, loyalty, and affiliation with a food brand, then the brand's image will grow stronger in their thoughts and the brand will become a part of their purchasing behavior [20].

Thus, hypothesis 4 can be formulated: the more advertising the games invest, i.e., the more customers notice the advertisements, the greater their willingness to spend.

2.4. Belief and Attitudes

Customers have diverse views and attitudes about specific products. Marketers are interested in these ideas and attitudes because they contribute to brand image and impact client purchase behavior. Marketers can affect the views and attitudes of customers through focused advertising.

Kotler describes belief as a person's descriptive idea about something and attitude as a person's persistent positive or negative cognitive assessments, emotional reactions, and action tendencies toward a certain object or concept [21]. Individuals can hold differing opinions and attitudes regarding particular goods and services [22]. Marketers are interested with consumers' views of certain products and services because these perceptions form product and brand images and influence purchasing behavior. If erroneous perceptions inhibit consumer spending, the marketer must begin a campaign to dispel them. A buyer may assume that Sony's Cyber-shot camera captures the best HD video quality, is the most user-friendly, and is the most affordable. These views could be grounded in reality, faith, or rumors. Typically, consumers create opinions about a product's characteristics and, by extension, beliefs about a specific brand [23]. People have diverse perspectives regarding religion, politics, attire, music, and food.

Moreover, consumer attitudes affect consumer behavior. A favourable consumer impression regarding a product will influence consumer behavior positively. If the popular perception of a product is already positive, marketers seek to maintain that perception [24]. Belief is a powerful directing, motivating, and supporting influence on people's behavior. For instance, those who believe in frugality are unlikely to acquire luxury items. Those with a favourable opinion of a company's products are exceptionally loyal to that brand. Attitude refers to an individual's evaluation and behavioral disposition toward something, which is the integration of cognition, emotion, and intent. Once a buyer develops an attitude toward a particular brand of goods, they tend to make the same purchase without comparing, analyzing, or evaluating alternatives. Therefore, a favourable consumer attitude toward a product may result in prolonged sales success, while a negative attitude may lead to failure.

This allows us to propose hypotheses 5: If customers believe that paying for games is acceptable, they will pay more for games.

3. Research Method

According to the hypothesis raised in the literature review part, questions are designed in the questionnaire. It gathers the basic information about gender, job and monthly income, the belief of whether it's reasonable to pay in time or on animation derivatives, time frequency, money investment, their opinions towards plots, marking the products with the amount of money they would like to pay on it, and the frequency of consumers seeing advertisement of Otome games.

This questionnaire survey was published through WeChat group of Otome games, WeChat moment, QQ group of Otome games animation derivatives, Sina Weibo supertopic of Otome games *Light and Night* and Chinese Tiktok with tag of Otome games during 3rd to 10th September, 2022. The reason for choosing these channels is to accurately grasp the target object and to easily spread. At the same

time, only one questionnaire can be handed in with the same user terminal or IP address, so as to ensure the reliability and authenticity of the questionnaire. The answer of people who play any Otome games is regarded available and efficient. There is not any restriction of age. However, since the language of questionnaire is Chinese, Chinese Otome game players are targeted as the participants.

In this paper, since the correlational relationships are aimed to find between factors, the following steps will be done: First, frequency and descriptive data will be showed first to show the results of participants. Next, reliability will be tested by coefficient α and validity will be examined by factor analysis method with KMO and Bartlett's test to measure that whether these series of data are suitable to do further analysis. By doing factors rotation, observed indicators can be discovered that whether it is well explained by the corresponding latent variables and determine which step we should do next. Then, the relationship between the data is analysed. The Pearson correlation coefficient will be used to evaluate the linear relationship between two factors. Cross tabulation, which is a quantitative technique, will be further applied for analyzing whether the relationships between numerous variables are significant or extremely significant. In this way, we can get the conclusion of whether there are relationships between factors and prove whether the hypothesis is consistent.

4. Results

A total of 197 valid questionnaires were collected. In view of the specificity and uniqueness of the research audiences, the majority of participants are female (97.5%). Most of them are college students (47.7%) and minors (43.1%), with a small number of people at work (7.2%), being housewife (0.5%) and others (3%). Almost half of them have no monthly income (50.8%). Among the people left, most people have a monthly income lower than five thousand yuan (40.6%). Only a small amount of people has more than five-thousand-yuan monthly salary (8.6%). Table 1 below shows the detailed results.

Table 1: Frequency table for demographic variables

Name of variable	Valid	Frequency	Present
Gender	Male	5	2.5
	Female	192	97.5
Job	Minors	85	43.1
	College students	94	47.7
	full-time employed	14	7.2
	Housewife	1	0.5
	Others	3	1.5
Monthly income	None	100	50.8
	<1000	32	16.2
	1001~5000	48	24.4
	5001~10000	10	5.1
	10001~50000	4	2.0
	>50000	3	1.5

In the questionnaire, several card appearance and animation derivatives are showed to the audiences. They are able to mark 1-10 freely according the attraction of the art design of the product them and the overall plot of the games. Besides being marked of the evaluation and conclusion, belief, investment and game frequency can also be concluded from the questionnaire. Most people think that it's reasonable to pay in games (91.4%) and spend money on animation derivatives (95.9%). Majority of people will spend an amount of money in games or on animation derivatives every month (85.8%).

Only around a quarter of people are aficionado of Otome games (26.9%). 14.2% people spend no money on games and animation derivatives per month, while 34.5% people spend below 100 yuan and from 101 to 500 yuan for each. 15.1% people spend above 1000 yuan per month on them.

Table 2 shows that the Cronbach α values of the scoring part is 0.893, which are greater than 0.7. Therefore, it can be seen that the scale has high reliability and passed the test.

Table 2: Reliability statistics

Research variable	Cronbach's Alpha	N of items
Attraction	0.893	15

The results were tested by SPSS 20.0 software analysis. The KMO values is lower than 0.01, which rejects the spherical hypothesis and confirms the correlation between variables. Therefore, factor analysis can be conducted on the questionnaire data.

As can be seen from Table 3, the characteristic roots of the appearance of the products, the plot attraction and the time players invented are all larger than 1, while the characteristic roots of the advertisement and players' belief of spending money on games and derivatives are slightly lower than 1, but the error is small. Moreover, as they are indispensable variables in this study, the five factors should be retained. The cumulative variance explanation rate of the three factors reached 71.069%.

From the scree plot, after the fifth factor shows a relatively gentle trend. There is no close correlation between factors. Therefore, these five factors need to be retained for analysis.

Table 3: Total Variance Explained

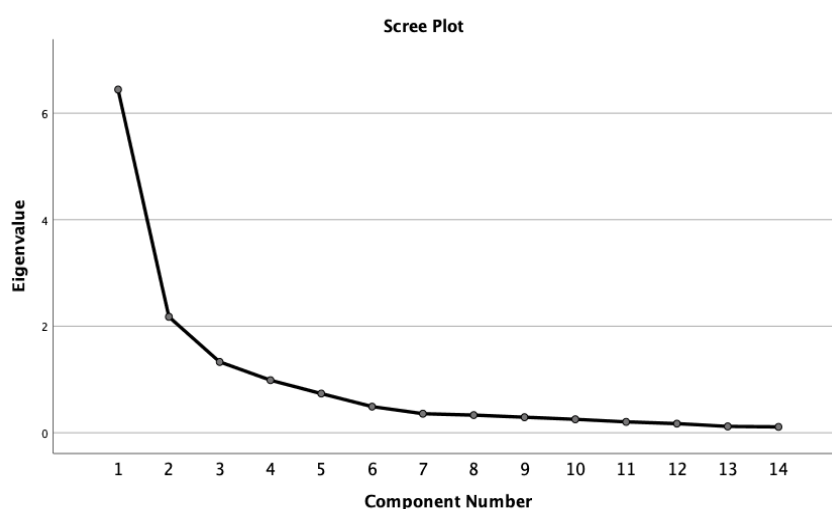| Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.444	46.026	46.026	6.444	46.026	46.026	3.891
2	2.177	15.547	61.572	2.177	15.547	61.572	3.451
3	1.329	9.496	71.069	1.329	9.496	71.069	2.608
4	.986	7.046	78.114				
5	.736	5.254	83.368				
6	.491	3.505	86.873				
7	.358	2.556	89.429				
8	.332	2.368	91.797				
9	.291	2.081	93.878				
10	.252	1.804	95.682				
11	.204	1.458	97.140				
12	.172	1.228	98.367				
13	.119	.849	99.217				
14	.110	.783	100.000				

Figure 2: Scree plot

In the process of factor rotation, their mark and their tendency to pay money in product 2, and the their tendency to pay in product 5 did not pass the validity test, and the loadings in two dimensions are higher than 0.5, so they are invalid because they are not determined and focused enough. In this way, they should be deleted. The other items only had a load higher than 0.5 in a single dimension, which are valid items and passed the validity test and are retained. In this way, each measurement item converges well with the 3 dimensions assumed to belong to.

Table 4: Rotated Component Matrixa

	Component		
	1	2	3
Their tendency to pay in product 3	0.805		
Their tendency to pay in product 1	0.803		
Their tendency to pay in product 7	0.757		
Their tendency to pay in product 4	0.755		
Their tendency to pay in product 6	0.729		
Their mark on product 6		0.825	
Their mark on product 7		0.796	
Their mark on product 4		0.761	
Their mark on product 1		0.729	
Their mark on product 3		0.586	
Their mark on product 2			0.776

All the correlation between conclusion and its corresponding evaluation is significant at the 0.01 level (2-tailed). This means that there is correlation between evaluation and its corresponding

conclusion. The range of Pearson correlation coefficient is from 0.367 to 0.641. Most of the data in the table shows the Pearson correlation coefficient to be above 0.4. It represents there is a close positive relationship between evaluation and conclusion, in other words, attraction and investment, and they are also positively related: The more the consumers think the products to be appealing, the more they are willing to pay for the products.

Thus, hypothesis 1 is proven to be consistent.

With the same method, we can also find correlation between other different factors. As we can see from table 5, correlation between plot attraction and money investment is not significant at the 0.01 level (2-tailed), which means that there is no correlation between plot attraction and investment. No matter how people like the stories' plot, they won't invest money in game or on the animation derivatives because of that.

Thus, hypothesis 2 is proven to be inconsistent. There is no current relationship between plot attraction and the money paid in games and on animation derivatives

Table 5: Correlation between plot attraction and investment

	Plot attraction	Investment
Plot attraction	1	
Investment	0.038	1

In the same way, correlation between time and money investment is significant at the 0.01 level (2-tailed), which means that there is relationship between time and money investment. However, the Pearson correlation coefficient is only 0.211, which represents that there is only a little relationship between time and money investment, and they are positively related: The more time the players spend on the games, the more they will pay for the products about this game.

Thus, hypothesis 3 is proven to be consistent.

Table 6: Correlation between time and money investment

	Time	Investment
Time	1	
Investment	.211**	1
** Correlation is significant at the 0.01 level (2-tailed).		

Table 7: Chi-Square Tests of advertisement frequency and investment

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	27.094a	14	0.019
Likelihood Ratio	29.252	14	0.01
Linear-by-Linear Association	18.551	1	0
N of Valid Cases	197		
a 16 cells (66.7%) have expected count less than 5. The minimum expected count is .04.			

The cross tabulation table between the frequency consumers see the advertisement and their money investment can be made. From table 7, the significant difference of the result is 0.019, which smaller than 0.05. A p-value less than 0.05 indicates statistical significance. It suggests that there is substantial evidence against the null hypothesis. It means that the two factors are independent from others, representing there is no relationship between the frequency of consumers seeing advertisement and the money they pay.

Thus, hypothesis 4 is proven to be inconsistent.

With the same method, the relationship between belief and money investment can also be discovered. The significant difference between belief 1-whether the participants consider it's reasonable to spend money on games-and money investment is 0.662, and that between belief 2-whether the participants consider it's reasonable to spend money on animation derivatives- and money investment is 0.268, which are both larger than 0.05. A p-value greater than 0.05 means that deviation from the null hypothesis is not statistically significant, and the null hypothesis is not rejected. It represents that these factors are dependent. There is correlation between both beliefs and money investment.

Thus, hypothesis 5 is proven to be consistent.

5. Discussion

With the increase of female game players, Otome games have proliferated in a high speed. The purpose of this paper is to explore the behavior of Otome game players when they pay in-game or buy animation derivatives. In this paper, it is proved that the more attractive consumers perceive a product to be, the higher the price they are prepared to pay; the longer participants play games, the greater their incentive and the greater the price they are willing to pay; if customers believe that paying for games is acceptable, they will pay more for games are confirmed by research findings. On the other hand, the more interested players are in the plots or stories, the higher the price they are willing to pay for in-game materials and derivatives; and if customers believe that paying for games is acceptable, they will pay more for games are unproven hypothesis. It can be clearly concluded that three of the five hypothesis raised in the paper are proven to be true, and the other two are proven to be false. This means that this paper can confirm some of the research hypotheses through empirical research. This research result can be used to help both consumers and game producers. For consumers, if they want to avoid overspend on game derivative products, they can choose to ignore the advertisement on different apps and decrease the time they spend in playing the games; For producers, in order to increase the sales of their products, they can choose to invest more on the art design of the products and the advertisement. They can also find ways to improve customer stickiness, so as to increase the time they spend on games.

The research still has a number of flaws at this time. Firstly, in the stage of questionnaires distribution, only one supertopic of Otome games in Sina Weibo was determined, which may have player bias. What's more, due to the number of various kinds of Otome games and so many different kinds of players mixing together, it is challenging to get specific sample of consumers on only one game. Secondly, the questionnaire is not based on existed scale measurement, so it may not be perfectly accurate with several other factors not considered into. Thirdly, since the target population of the questionnaire is Otome game players, the proportion of male is inevitably small. Because questionnaires are filled out online, it's also difficult to ensure the quality of the data collected. Moreover, the player's research on virtual consumer behavior currently lacks thorough data because to the restricted availability of pertinent official reports. The examination of virtual consuming behavior lacks the support of objective, reliable statistics because the consumption data in the paper are mostly drawn from a small number of questionnaires.

In the future research, more in-depth research can be done: classifying online game and players in more details, improving the sample size of the questionnaire, enhancing the representative data, and making the classification of players clearer. In addition, other research on different consequence brought by Otome games to players can also be discussed, such as view of marriage and love, the analysis of different characters and stereotype in the games on female.

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