

# Analysis of the Economy System in Games

Yutong Wang

*Western Michigan College*

*Guizhou University of Finance and Economics*

*\*Corresponding author. Email: 1103591467@qq.com*

## ABSTRACT

In the past, people thought that games were only played by children, but now in more than ten years of operation, from computer stand-alone games to mobile multiplayer games, more and more people with consumption power have entered the game market, which has brought a lot of benefits to the game. And because of the existence of a lot of benefits, game planners have designed a unique system for the game. That is the economic system in the game. A good economic system needs accurate data and special forms of maintenance and creation. When an economic system runs well, it will bring strong satisfaction to players and make them eager to pay in the game. Balance is the most important standard in the game economic system, so the balance between pay and output makes players think that their money and time are worth it. If the time and money paid are matched with the growth of characters, this is a good economic system. This paper analyzes the economic system of games and how do game designers design games through the economic system. Through analysis, the author finds that their good transformation of the economic system will greatly promote the consumption enthusiasm of players, and increase a large number of player downloads and the company's income.

**Keywords:** *Economic System, Input and Output, Enthusiasm, User Experience*

## 1. INTRODUCTION

Currently, on a global scale, the game has become a commodity and has a large market that contains huge capital flows. With billions of money flowing every day in games, the system in games also gradually move towards the in-game economy. Because of the development of today's Internet technology, the fast pace of life and the prevalence of social culture, more and more people yearn for free mobile multiplayer games. Free mobile games are different from the One-off purchase games, because they have no direct profit, and the birth of the in-game economy system solve the problem. After the players pay, the in-game economy system will change the role of the players in the numerical and non-numerical aspects, such as roles of players to look better. And the game with the best economy will get the most enthusiastic payments. How to create a more balanced economic system in the game is the topic the author wants to study in this paper. The author will analyze how to build a stable economic system. Now, a lot of people don't understand the game there is such an economic system, and they don't know the game planners play the role of the high influence. Therefore, this paper will let more people know what

game planners do, and give people a clear understanding of the game's economic system to make them more rational when they spend their time and money in the game.

## 2. THE BASIC SETTING OF THE ECONOMIC SYSTEM

### 2.1. The process of the game

Simply put, the process of a game can be easily understood as a circular process, as the player grows through the game [1].

#### 2.1.1. Growth opportunities

(1). Improved ability stats, such as damage stats and defense stats, allow them to have a better experience interacting with players.

(2). Or the social relationships in the overall game are improved. Some game unions are established, and players become the leaders of the unions as they grow up.

(3). In addition, players will spend less time and money on the game play to get better returns after they become familiar with the game play. In such an environment, players can know whether their own growth is effective by verifying that their growth is effective.

### *2.1.2. Verification mode*

(1). Players can interact with the system through Player VS Environment(PVE). For example, they can be more relaxed through the levels set in the game and have a better ranking in the game system.

(2). Besides, players can interact with other players to verify the validity of his growth, and this way is called Player VS Player(PVP). Players can interact with players who spend less than they do, and with players who spend more than they do, to see if their growth is effective

This constant cycle of games is growth and verification.

## **2.2. Five components of the economic system in games**

The economy system in the game is represented specifically by five modules,

(1). The first is output [2], that is the player's output to the game, such as output of time and paid output. Actually, paid output refers to the output of buying time, paying for time that the player should have spent playing the game.

(2). The second one is circulation, which is mostly the resource transaction between players. Players can obtain better resources through intermediary purchase, store sale and other means.

(3). The third is accumulation, which means that the items acquired by the player through production have not yet been converted into resources or consumed as resources to promote the player's growth.

(4). The fourth is consumption [3], which means removing all resources and allowing resources to increase the character's growth.

(5). The fifth is growth, which is the result of consumption.

### **2.3. Core purpose of the economic system**

The most important part is how to ensure users' experience. The following five parts of the economic system are the basis to meet the user experience, and this part is also the most important and profitable part of the game.

(1). The first is the paid experience, which is the process of how to satisfy players' desires and feedback after paying the cost. By adjusting daily output and resource purchase price to match players' paying ability, the time value of players' paid purchase can meet their expectations.

(2). The second is the growth experience. That is, game designers need to consider how to ensure that the consumption of resources is matched with the ability to be improved.

(3). The third is value experience, a process in which players trade output resources through circulation to realize time value and probability value. By defining the gameplay of circulating items and resources reproduction, players can exchange their daily time for circulating currency, and players can earn premium returns for rare, low-probability outcomes in random gameplay.

(4). The fourth is the gameplay verification experience. After players grow up, they need to verify their numerical attributes. By adjusting the paid experience/growth experience of players with different paying abilities, we allow all players, from free (the lower end of the number) to paid (the upper end of the number), to have the desired experience during gameplay. If some players can't participate in the gameplay due to the low value, that is, they can't get the gameplay experience. Or some players break the gameplay due to numerical overflow, i.e., the gameplay experience is mismatched; Then there's something seriously wrong with the gameplay validation experience.

## **3. DESIGNS BASED ON THE COMPONENTS OF THE ECONOMIC SYSTEM**

Usually, game planning will select three parts of output, circulation and consumption in the five parts of the economic system for activity design.

### **3.1. Game Designs based on Output**

#### *3.1.1. Three types of Designs based on Output*

As a basic model of output, the game will be designed into three types [5].

(1). The first step is welfare, which is a design that greatly satisfies players' payment experience. Generally speaking, the output and consumption of resources in the game are equal, and the formula is "output = consumption". But in welfare design, planners usually design that the output is far greater than the deserved value of the time consumed by the players. This design will greatly improve the satisfaction of the players themselves, because they will get several times more

returns for their efforts. The formula is “output × resource price > cost performance ratio of paid time × time”. So there's an incentive for them to invest more in the game when they pay or invest their time. It can be simply expressed as the formula: “output × 10 = consumption × 10”. The significance of this is to put the nominal value, which means to enlarge the output consumption shown in the history of the game, so that players think they get more output, save the real investment cost, and players get more output by investing less cost in reality

(2). The second form is the balanced type, which can also be understood as equal pay and output. The formula can be expressed as: “output × Resource price = payment time cost performance × Time”, and this form of output exists in the daily activities of the game. People can get a certain amount of resources after spending the same amount of paid time cost every day, which is the guarantee to promote players to enter the game every day. As a standard, it measures the difference between balanced and welfare output models. Only when there is a comparison can enthusiasm be generated. Players will get equal resources from the time payment cost paid in the daily balanced output model, and then they will generate a lot of enthusiasm for the welfare output activities in the activity. This is like a cycle. They will endure in the balanced output activities, and then pay their own time payment cost in the welfare activities. Then, they will enter the balanced output activity for the second time and wait for the next welfare activity. The balanced output activity is also an essential part of highlighting the welfare activities and the basic role of the economic system, which enables the players to supply and demand each other and promote the circulation cycle.

(3). Tight type, which is an output model based on players' payments. The formula is “output < consumption”. It is the players who have a lot of wealth in reality and are willing to invest in the game. They are not satisfied with the balanced output model of daily consumption, They want to further increase their role value and have a certain vanity in the social networking of the game. This is a way to plan and design to further improve the income of the game. The game is a tool for some people to show off their wealth. The shopping mall circulation currency purchase supplement can promote the circulation cycle, maintain the scarcity of rare props, and ensure the participation of playing methods.

### *3.1.2. output model and the user's consumption experience*

How does the output model meet the user's consumption experience. The payment formula can be expressed as: “payment time ratio × Standard output

value = actual output × price level”. The payment formula can be expressed as: “payment time ratio × Standard output value = actual output × Price level”, which indicates the difference between payment and output, and where there is a price gap, there is price discrimination. It usually refers to the price difference between different sales prices or charging standards between recipients when the provider of goods or services provides goods or services of the same grade and quality to different recipients. The first type of price discrimination is to adjust the prices in the minds of players at different levels one by one. When players have a higher recharge amount in the game, such players will have a lower price to buy goods than others. The second is to discount according to the quantity purchased by players. The quantity directly affects the cost of payment time spent by players. Therefore, when players buy more products, they will have a higher discount, which promotes the desire of players to buy more goods and indirectly increases the time payment cost invested by players. The third is to carry out differentiated design according to the identity of consumers, such as the identity of players when paying, student specific discounts, or higher welfare time on weekdays. For example, it is the difference between the products purchased by players. The product is limited, has a higher configuration, and has a different color from others. For example, the time cost gap, such as the use of coupons and regular discounts.

The effect of price discrimination is to make paying players get more resources faster, but they need to pay an additional price. Ordinary players get fewer resources slowly, but the price is more affordable. Players in each payment layer find the expected payment time in the two dimensions of cycle and quantity, which is the desired effect of price discrimination.

## **3.2. Game Designs based on circulation**

### *3.2.1. currency design*

Value scale: recharge currency; Means of circulation: currency; Payment method: game currency

(1). In game design, cash in the real world will be used as the price scale in the game, and players can clearly recognize the value of items in the game by comparing cash in reality as a standard to measure value.

(2). In circulation, players price their own commodities based on changes in currency, and use currency value to evaluate the value of their circulating commodities to increase or decrease prices.

(3). A special conversion mechanism will be set up in the game. When players recharge, they will get game currency with the same value. This is the general

currency they can use in the game and can pay for the products they need.

### 3.2.2. Circulation form [4]

#### (1). Double entry circulation

The economic system provides a standard price for buying and selling, and Double entry circulation is a circulation mode in which players affect the system pricing through purchase and sale volume. This intermediary form of systematic pricing is usually used for the circulation of homogeneous goods.

#### (2). Set up a stall

It refers to the circulation mode of selling, providing goods and pricing for purchase, and selecting and purchasing. This form of selling and pricing is usually worse than the Double entry circulation.

#### (3). The circulation of heterosexual goods.

Auction refers to the circulation of goods provided by the seller and purchased by the buyer through bidding. This form of buyer priced auction is usually used for the circulation of rare goods.

### 3.2.3. Basic experience

(1). Value experience: the definition of value experience is the process in which players trade output resources through circulation to realize time value and probability value. Hypothesis of value experience process: "the randomness of resource output in the game makes the player's actual income in a range".

#### (2). Value experience application [5]

Through this equation, planning can adjust the experience related to the circulation value of the series. The balance between growth experience and value experience. Planning reserves space between the lowest cost and the expected cost when designing the growth system. Such design can enable players to produce value experience, and this space becomes a revenue deviation. However, the planning should not make the player's growth experience too poor in design. There will be no big gap between the expected and actual harvest, and sometimes the harvest will be higher than expected. The balance between selling surplus and buying surplus is also a direction of planning and design. Adjusting the cost paid by the Seller itself or the cost they expect can make the value experience of the buyer and the seller change. For different circulating goods, the market is divided into buyer's preferential market and buyer's preferential market. You can choose to prefer the seller or buyer, and make joint decisions according to the player attributes of both parties, payment ability and other factors.

(3). The motive force of circulation surplus is resource surplus. Only when resources are surplus can players have the desire to buy and sell resources. There are two forms of expression in the game. The first absolute surplus is based on the surplus of players' accumulated differential production. Because the time and payment paid by players in the game are different, the amount of resources players get in the game will be different; The resource surplus of differential production caused by time and payment accumulation is called absolute surplus. The second is called relative surplus, and it is based on the difference between players' occupations and playing methods. Due to the differences of players' occupations and main playing methods in the game, there will be differences in the amount of resources that players need to consume in the game. The excess resources produced based on the differences of occupations and playing methods are called relative surplus [6].

### 3.2.4. Circulation experience design

The probability value is based on the resource circulation behavior caused by the difference in risk cognition. In the gambling method, risk averse players prefer to sell gambling materials and obtain circulating currency stably. When the risk is relatively small, players tend to collect materials for gambling, and then sell the finished products to risk averse players to return the circulating currency. In this way, the transaction cycle of materials and finished products between the risk averse players and the risk averse players is completed, and the circulation of money is also completed. When the risk is relatively high, the probability of players in the game will realize value in circulation. Players can obtain low probability results through random play, and can obtain additional returns to other players through trading in the circulation system to realize the probability value [7].

### 3.3. Game designs based on consumption

The third part is consumption, which is the part that reflects the growth and change of the player's role to the greatest extent, so the design here is essential.

(1). Designed consumption types: the first is the welfare type. Players can spend a small amount of resources to achieve greater growth. The formula can be expressed as "consumption  $\times$  resource price  $<$  attribute value  $\times$  attribute cost performance". For example, in terms of character skills, players can obtain higher-level skills after spending fewer resources [8]. The second type is the balanced type, which is a consumption form that exists when players improve their character's ability every day. The formula is "consumption  $\times$  Resource price = attribute value  $\times$  Attribute cost performance". The third type is recycling,

which uses the players' cognitive differences in the value of the items themselves to recycle the items, recycle different resources in the hands of the players in the same way, or recycle the same type of resources at a discount, which is the guarantee to maintain the balance of output and consumption in the game [9].

(2). Randomness designed to serve the consumption model.

The advantage of growing randomness increases the gameplay. The uncertainty of the result allows players to have a good game psychological experience, and creates probability value: players win low probability in random play, and trade the probability result to other players through the circulation system to obtain premium income. Narrow the gap between the rich and the poor, because there is a big gap in the actual income between players. The value consumed by getting the same attribute value will be different.

This part of the difference can narrow the gap between the rich and the poor. Increase the consumption space: when the player has a direct difference in transportation, the actual consumption will be greater than the total consumption, that is, increase the consumption space [10].

#### 4. CONCLUSION

This paper mainly analyzes the economic system hidden in the game, discusses how the economic system acts on the players, connects the rational economic system with the perceptual player experience, and then introduces a small amount of game design. The limitation of this article is the lack of some data as the supporting point of the article, and then there is no introduction of some examples, which is the limitation of this article. In the future, the author will use specific games and data to analyze how economic systems in games are designed.

#### REFERENCES

- [1] Xue Hui, Research and implementation of game planning theory and method, *Science and technology information*, (05), 2012, p. 220. DOI:10.16661/j.cnki.1672-3791.2012.05.183
- [2] Li Lu, Game value planner, online game revenue gatekeeper, *Humen Capital*, (05), 2010, p. 9. DOI: CNKI:SUN:RLZB.0.2010-05-008
- [3] Zhuang Li, Research on online game economic system [D] Beijing Jiaotong University, 2012
- [4] Minister Lai, Uncover the real financial system in virtual online games, *Beijing modern business daily*, (005), 2005. DOI:10.28036/n.cnki.nbjxd.2005.000380
- [5] Chen Guangnan, Planning and design of web game "true king", Sun Yat sen University, 2011.
- [6] Xia Wei, Research on the circulation of virtual currency in MMORPG, *Jilin University of Finance and economics*, 2016.
- [7] Zhang Boyang Economic system analysis of high simulation in online games, *Western finance*, (06), 2010, pp. 75-76. DOI:10.16395/j.cnki.61-1462/f.2010.06.013
- [8] Han baixu, Game development based on Android platform, *Jilin University, Jinlin*, 2015.
- [9] Pan Yuanbin, Disadvantages diagnosis and Countermeasures Analysis of the current online game economic system, Graduate School of Chinese Academy of Social Sciences, 2012.
- [10] Sun Hongwei, Design and implementation of numerical simulation system for mobile combat games, University of Chinese Academy of Sciences (School of engineering management and information technology), 2015.