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# **Virtual Goods Purchase, Game Satisfaction and Perceived Justice: An Empirical Study of Players of PVP Mobile Games**

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## **Abstract**

Over recent years, the freemium business model has been a major revenue source for mobile games, namely to attract virtual consumption of players through differentiated game experience. This trend may pose challenges to the idea of “fair play,” an essential precondition for players to enjoy the game, player-versus-player (PVP) mobile game in particular. To keep track of players’ behavioral reactions to the freemium business model and their assessment of in-game experiences, we conducted a survey to disclose the relationship among the virtual goods purchase, game satisfaction, and perceived justice of PVP mobile game players (N=262). The results indicate that (1.) the game satisfaction mediates the effect of virtual goods purchase on perceived justice, and (2.) the utilitarian satisfaction demonstrates a greater significant indirect effect upon perceived justice than hedonic satisfaction. This study also discusses the implications of the above findings in terms of commerce, psychology, and culture.



## 1. Introduction

“Mobile game” refers to the game software applied to handheld mobile devices such as mobile phones and tablet computers. Due to the popularization of smartphones and the rapid upgrade of network technology over recent years, the size of mobile game players in China has kept a high-rate growth. As of 2016, the size of mobile game players has risen to 528 million, which accounts for 92.3% of the total population of game users in China; in the meantime, the actual sales have reached 81.92 billion CNY, to which 75% of the mobile game players have made a contribution (GPC, CNG, & IDC, 2016).

The high revenue of the mobile game industry benefits from a successful business model. At present, common models include charging for download, freemium, in-game advertising, and byproduct revenue (Zhang & Lu, 2015). Among these, the freemium business model is a major one for mobile games. In 2013, mobile games with this model contributed respectively 86% and 94% of the revenue to game applications at Apple App Store and Google App Store (GameLook, 2013). The freemium business model combines two parts: while the game application can be downloaded and used free of charge, players may still want to purchase some virtual goods within the app. Existing studies indicate that the adoption of the freemium business model has created rapid and immediate profits (Shi, 2014) and attracted more new players for mobile game developers (Yan & Qiu, 2015).

Nevertheless, there are also studies which argue that the freemium business model is prone to an unfair game experience, in-game economic unbalance, and drain of players (Lee & Lee, 2015). While increasing the revenue, the purchased virtual items also create a gap between the players who have paid for them and those who are yet to. Li (2015) believed that the players who have never paid for props could only obtain an inferior level of experience no matter how much time they spend in the game, whereas those who have paid for virtual goods can enjoy the game at multiple levels. Other Chinese scholars claimed that within games that make profits mainly through the freemium business model, there is inequality in the virtual world constructed by players (Yu, Yu, & Wu, 2015: 227).

The unsettled theorization directs us to further explore the mobile game players’ behavioral reaction to the freemium business model and their subsequent evaluation of such games so as to see whether the scholarly criticism mentioned above echoes with the in-game experience of actual game players. To be specific, we attempt to disclose the relationship between virtual goods purchase, game-satisfaction, and perceived-justice among PVP mobile game players. As a psychological concept, “perceived justice” refers to an individual’s subjective judgment of whether he or she is treated fairly by an organization. Introducing this concept into the domain of game studies, this study examines how the real-world value of justice is held in a profit-driven virtual world. It will contribute to our understanding of the relationship between the logic of game culture and that of commerce.

## 2. Game Studies

Games are entertaining activities for human society, of which the forms have been frequently shifted and enriched from the ancient games of *go* and *cuju* to the present online games and mobile games, leaving a lot of phenomena worth exploring and issues awaiting prompt solution. Games are not the mere physiological or psychological activities for their participants, but also a mirror through

which a broader social life can be viewed (Yan, 2015: 30-35). Currently, games have received attention from an increasing number of scholars, the study of which has been extended from anthropological, behavioristic psychological, and philosophical domains to a multidiscipline area, including the studies of communication and economics. Till now, game studies have become a relatively mature scholarly community whose independent orientation of research has been realized (Zhou, 2016).

Game studies have two major theoretical origins, the theory of surplus energy from Schiller and Spencer and the theory of relaxation from Lazarus (Zhou, 2016). The former stresses that play is a release of surplus energy. Schiller and Spencer deemed a play - a sort of exercise of idle capability, which does not necessarily serve for some utilitarian purpose. The latter holds an opposite position by arguing that play is not to release surplus energy but restore insufficient energy. According to Lazarus, who formulated the theory of relaxation, humans have to consume a large amount of energy in their daily productive activities and are prone to a feeling of fatigue, while the play can help them relax bodily and mentally, restore the lost energy and cope with life with more ease. Although the classical theories of play lack evidence at the empirical level, they have provided insights into the gaming's effects, which render games, the subcategory of play, continuously attended to by scholars.

With the rapid development of computer technology and the popularization of the Internet in the middle and late 20<sup>th</sup> Century, electronic games made its way into people's daily lives., Four approaches emerged to explain this new phenomenon: The first approach is concerned about the essence of games. Its classical works include *Homo Ludens* by Johan Huizinga and *Man, Playing and Game* by Roger Kyros, which propose a typology of games; the second one underscores the social influence of games, directing particular attention to the e-game violence and the syndrome of game addiction; the third approach concentrates on the in-game economy and game industry; the last one looks at the culture of games, focusing on issues such as the intertextuality of game scripts and the identity work of game player communities.

The above four approaches are not mutually exclusive. So far, however, most studies have been carried out along a single approach. We go beyond this limitation by adopting a socio-economic perspective that combines the third and fourth approaches. This perspective is of great value in disclosing the intricate relationship between commerce and culture, thereby realizing a comprehensive and profound representation of mobile games' current complexity.

### **3. Perceived Justice of Games**

Huizinga gave a description of the essence of a game in his book *Homo Ludens*. From his viewpoint, a game has a series of attributions, including virtuality, non-utilitarianism, and absoluteness of game rules. He stressed that game players obtain a sense of satisfaction through immersing in the virtual world, the rules of which have an absolute binding force to maintain such a sense of satisfaction, and any player's challenge to those rules could crush the fantasy (Huizinga, 1983/2007). Therefore, justice is a precondition under which the players can immerse themselves in the virtual world, while unfair game rules could lead this world to collapse.

#### **3.1. Perception of Justice**

Justice is a subjective feeling. In real life, how do individuals perceive justice? Previous studies have examined the perception of justice in three dimensions: distribution, the process of distribution, and interpersonal communication.

Adams (1963) first raised the relatively integral theory of justice, suggesting that individuals not only care about what they have obtained but are also concerned about the contrast between what they have gained and what others have received. Adams' theory of justice regards the input-output ratio as a scale for the assessment of justice. In Adams' opinion, the input includes the effort, intellect, skills, and educational degree for work whereas the output includes the pay, welfare, and job status. Such theory of justice is a manifestation of the sociologists' concern about the issue of distribution during the 1950s to 1970s; thus it is also called "distributive justice."

Thibaut and Walker (1975) conducted studies into the justice of legal procedures and put forward the concept of "procedural justice." The core of procedural justice is the distribution of control power, namely to increase the defenders' control power while diminishing adjudicators' control over procedures. In Thibaut and Walker's opinion, possessing the control power over procedures would promote individuals' sense of justice. Leventhal and his colleagues (1980) introduced the concept of procedural justice to the domain of organizational management, highlighting that the rights to option and speech in the decision-making process can enhance staffs' sense of justice.

Bies and Moag (1986) found that the mode of interpersonal interaction also affects the sense of justice in the process of informing and implementing the results of distribution. Therefore, they raised the concept of "interactional justice" and summarized the principles of interactional justice, including truth-seeking, rationality, esteem, and politeness that arose from the job seekers' evaluation of interviewers.

Most of the previous studies have discussed the perception of justice within the framework of organizational management. This study attempts to apply this concept to the situation of mobile games. Players of a game bear certain similarities to employees of an enterprise. On the one hand, none of them fully owns the power of decision-making but is subject to its result. On the other hand, there are both competitive and cooperative relationships among employees and among players. Of course, there also are some differences between these two groups. For instance, there is no such employment relationship between players and the game's developer - what players payout in the game is more about something based on personal interest and goal. But a possible consequence of these differences is a higher demand of players for justice than enterprise employees. The reason lies in the fact that game players often deem themselves as consumers, therefore are more likely to believe that they have the right to safeguard personal interests without taking any responsibility for the enterprise's profitability (Lin & Sun, 2011).

Applying the concept of justice to the situation of mobile games, this study lays a focus on the following two dimensions: distributive justice and interactional justice. The so-called distributive justice refers to players' perception of whether what they pay out is equal to what they get in return in the game. What they pay out includes the time, energy and money, and so forth, whereas what they get in return includes a victory in the competition, upgrade of game levels, skill gaining, obtainment of gears, and so on. Procedural justice refers to players' perception of their own power to express ideas and offer appraisal when the operator is making the adjustment to the game that affects players' interests. The so-called interactional justice refers to players' perception about whether they are

respected and treated in an equal and polite manner by other players and the game operator during the gaming process. It is noteworthy that, for a majority of mobile games, the developers would announce modifications within the game on the official websites and other network platforms in advance so that players can always express their attitude towards the modifications. Hence, this study leaves players' perceptions of procedural justice aside.

### 3.2. Virtual Goods Purchase and Perceived Justice

Chinese game industry has a tradition of money worship (Bo, 2014). In traditional online games with a freemium business model, the more players pay for props, the stronger the capability of role (Shi, 2013: 171). Such money worship has been absorbed by mobile games on the market, resulting in the situation that players who spend money on virtual goods can always win while players who do not are always defeated (Shi, 2014). Players who refuse to pay for virtual goods have to devote plenty of time and patience to the games in exchange for the payable resources.

Worse still, when sharing game experiences online, some players point out that players who never buy virtual goods are usually looked down upon by players who do in group-to-group mobile games; as a result, equal communication between groups can hardly be realized (Shuangmufeilin, 2017). Based on the observation that players without virtual goods purchase can hardly gain equivalent reward for their effort in the game and fail to be treated equally as they interact with other players, the authors hypothesize the following:

**H1:** Virtual goods consumption affects the player's perceived justice of the game. Compared with players who do not buy virtual goods, players who buy virtual goods are more inclined to think the game is just.

## 4. Game Satisfaction

The uses and gratifications theory stresses that the audience always uses media with specific motives. Correspondingly, users would have certain expectations for the media, which may be met or not. The satisfied motives will stimulate the recurrence of media use (Katz et al., 1974). Yee (2006) classified game players' motives into three types — accomplishment, socialization, and immersion. The motive of accomplishment refers to the obtainment of accomplishment and honor in the game, the socialization emphasizes the extension of an interpersonal circle, and the immersion centers on withdrawing from troubles in reality. According to Zhong (2010), players with the motive of accomplishment pursue to transcend other players and to gain honor, status, and confidence; players motivated by socialization value the communication with people in order to make congenial friends; players with the motive of immersion hope to enjoy the game and to divert from loneliness and anguish.

### 4.1. Satisfaction of the Game

With the online game as the object, Li and his colleagues (2015) classified satisfaction into three different types – the hedonic satisfaction, utilitarian satisfaction, and social satisfaction – which highly respond in concert to the motives for gaming proposed by Yee (2006). The hedonic satisfaction

indicates the degree of players who feel pleased in the gaming process (Ryan & Deci, 2000). The utilitarian satisfaction refers to the degree of players obtain power, make rapid progress, accumulate symbols for the status or wealth in the game, win by vying with others (Ryan & Deci, 2000; Yee, 2006), as well as what kind of self-image players display in the game (Goffman, 1959). Lastly, the social satisfaction highlights the degree of players who view the game as a social situation where they interact and communicate with other people (Ryan & Deci, 2000), as well as of players who can build contacts with other people by playing game (Biocca et al., 2000).

Previous studies of online games tended to measure satisfaction as the dependent variable. With “uses and gratifications” as the theoretical framework, most of these studies have explored the relationship between players’ motives for gaming and the obtained satisfaction (e.g., Xu, 2012; Wu et al., 2010; Ye, 2010). The behavior of gaming was scrutinized as a whole, and few studies attended to the effect of specific types of gaming (e.g., virtual goods purchase) on satisfaction. Even for the studies with satisfaction as the independent variable, the effect of satisfaction on players’ subsequent behaviors (e.g., continuance intention) has attracted more scholarly attention than its effect at the cognitive level.

## 4.2. Virtual Goods Purchase and Game Satisfaction

Generally speaking, there are four major in-game payment channels — game token, game gears, auxiliary virtual articles, and formative virtual articles (Li, 2015). Game token and auxiliary virtual articles help players reduce the time and patience required to accomplish a task and obtain immediate, realistic pleasure. Game gears will immediately promote players’ strength and boost the probability of victory. Formative virtual articles are rare and ornate, tallying with players’ flamboyant and vainglorious psychology. Hence, this study suggests that players can receive higher satisfaction by purchasing paid props. Specifically, on the one hand, players can enhance their pleasure with the game and receive additional hedonic satisfaction by purchasing the paid props; on the other hand, players can raise their sense of superiority and receive additional utilitarian satisfaction by purchasing the paid props.

Existing studies revealed that individuals show a bias of self-interested attribution when attributing victory or defeat (Liu, 2015: 109). In other words, individuals are inclined to attribute success to internal factors, whereas failure to external factors. Victory or defeat is unavoidable throughout the gaming process. Players with low satisfaction may attribute personal defeat in the game to such external factors as payment while overlooking their own disadvantages such as strength, therefore make a low evaluation of the justice of the game. Conversely, players who have received higher satisfaction are more tendentious to attribute the victory to their own strength. Correspondingly, from the perspective of the cognitive consistency theory (Festinger, 1957), players with higher satisfaction are more likely to believe the game to be just so as to maintain the equilibrium of cognition. On the above, we hypothesize the following:

**H2:** Game satisfaction mediates the effect of virtual goods purchase on player’s perceived justice.

**H2a:** Hedonic satisfaction mediates the effect of virtual goods purchase on player’s perceived justice.



H2b: Utilitarian satisfaction mediates the effect of virtual goods purchase on player's perceived justice.

## 5. Methodology

Compared with the other types of mobile games, PVP mobile games place greater emphasis on the competition between players. This renders the justice of such games saliently important. A survey was conducted in August 2018 to understand PVP mobile game players' behavioral reaction to the freemium business model and their opinions towards the justice of such games. Prior to the formal survey, we conducted a pilot study. One hundred copies of questionnaires were retrieved, and the items of the core scales have been modified in light of the result of the data analysis. Below is the measurement of all variables of the final version of the questionnaires.

### 5.1. Measurement of Variables

**Virtual goods purchase.** The measurement of virtual goods purchase includes three dimensions – whether or not payment is made, the frequency of payment, and the amount paid. Respondents are questioned, “Have you ever bought virtual goods using the real money in a mobile game,” “How often do you buy virtual goods in this mobile game,” and “How much in total have you spent on virtual goods in this mobile game.”

**Perceived justice.** Players' perception about whether what they pay out is equal to what they get in return in the game as well as whether they are esteemed and treated in an equal and polite manner in the game by other players and by the game developers. Referring to Colquitt's (2001) scale of distributive justice and interactional justice, a five-level scale (“1” represents “strongly disagree” and “5” represents “strongly agree”), including eight items, was applied for the measurement of perceived justice. The four items for the measurement of distributive justice are “What I receive in return from playing a mobile game is matched with the time and energy I have paid out;” “What I receive in return from playing a mobile game exactly reflects my gaming level;” “What I receive in return from playing a mobile game is matched with the contribution I have made to the popularity of this mobile game;” and “What I receive in return from playing a mobile game is matched with my performance in the game.” Measurement of interactional justice includes four items, which are: “I have been treated politely while playing the mobile game;” “My esteem has been allowed for while I am playing the mobile game;” “I have been respected while playing the mobile game;” and “I have been appropriately appraised while playing the mobile game.” The coefficient of internal consistency of the whole scale is .87, and that of each dimension is .84 and .89, suggesting that the scale has good credibility.

**Game satisfaction.** The senses of pleasure and accomplishment players receive while playing the game. Game satisfaction comprises both dimensions of hedonic satisfaction and utilitarian satisfaction. The basis for the measurement of hedonic satisfaction is Ghani and Deshpande's (1994) five-level semantic difference scale, where “1” and “5” represent “uninteresting/interesting,” “unfunny/funny,” and “tedious/exciting,” respectively. Measurement of utilitarian satisfaction adopts the five-level Likert scale (Li et al., 2015), where “1” represents “strongly disagree” and “5” represents “strongly agree.” Two items with a low degree of distinction are eliminated through the factor analysis

in the pre-survey, and five items finally remain to be “I am a high-level player in the mobile game;” “I have more privilege than others in the mobile game;” “I own virtual articles manifesting higher status in the mobile game;” “I demonstrate that I am the best player in the mobile game,” and “Other players believe I am technically adept in the mobile game.” The coefficient of internal consistency for the scale of game satisfaction is .85, and that for its two dimensions is respectively .85 and .88.

**Questions to reach the targeted sample.** Two additional questions are added to the questionnaire to select the appropriate samples. One is the question of “Have you ever played any player-versus-player mobile game.” Players who answer “No” will skip to the end of the questionnaire so that players who have never been exposed to any PVP mobile game will be eliminated. The other is a blank-filling question — “What is the mobile game you play most often that is competitive with multiplayer interaction or that is concerned with player-killing (PK),” which must be answered to eliminate players who have never been exposed to any mobile game employing the freemium business model.

## 5.2. Sampling

We adopted the method of snowball sampling for the formal survey and finally received 262 copies online in total. After the respondents who had never been exposed to any PVP mobile game or mobile game employing the freemium business model and leave half or most of the questions unanswered were eliminated from the sample, 210 effective questionnaires were finally acquired (completion rate = 80.15%).

The effective sample includes 50.5% male respondents and 49.5% female ones. There are 56.2% of the respondents range between 17 and 22 years of age, 25.7% between 23 and 25 years, and 12.4% below 17 years of age. Respondents achieved a senior high degree and below accounts for 19.6%, achieved junior college or bachelor degree accounts for 63.3%, and achieved a master’s degree and above accounts for 17.1%.

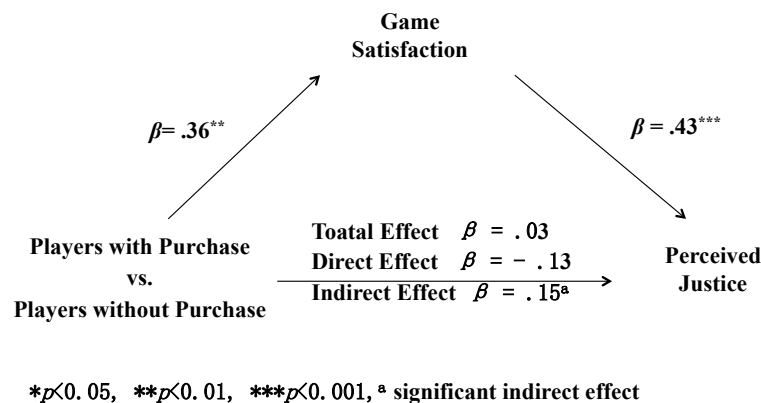
## 6. Results of Survey

### 6.1. Effects of Virtual Goods Purchase on Perceived Justice

Players are classified into two groups: players with virtual goods purchase (N=132) and players without virtual goods purchase (N=78). With players’ perceived justice as the dependent variable, a T-test is conducted to verify H1. As the results indicate, players with virtual goods purchase (M=3.34, SD=.72) have higher perceived justice than players without virtual goods purchase (M=3.31, SD=.66), but there is no significant statistical difference in perceived justice between these two groups ( $t=-.29$ ,  $df=1$ ,  $p>0.05$ ). Hence H1 is unsupported.

## 6.2. Mediating Effect of Game Satisfaction

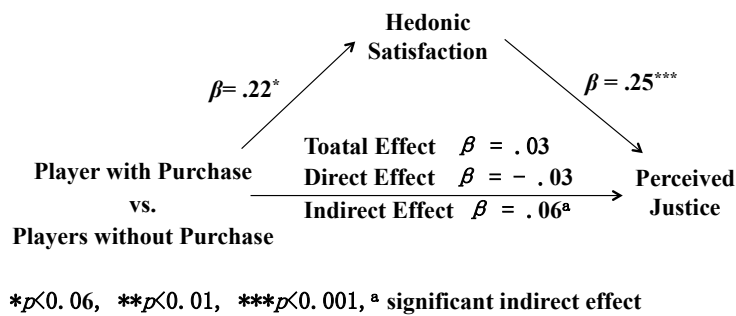
Plenty of studies reveal that the Bootstrap method can be adopted to verify the mediating effect when the direct effect is insignificant (Preacher & Hayes, 2004; Chen et al., 2013). Considering that there is no significant difference in perceived justices between two groups of players and that virtual goods purchase has no significant effect on perceived justice, this study adopts PROCESS MODEL 4 to verify the mediating effect of game satisfaction between virtual goods purchase and perceived justice.



**Figure 1: Mediating effect of Game Satisfaction**

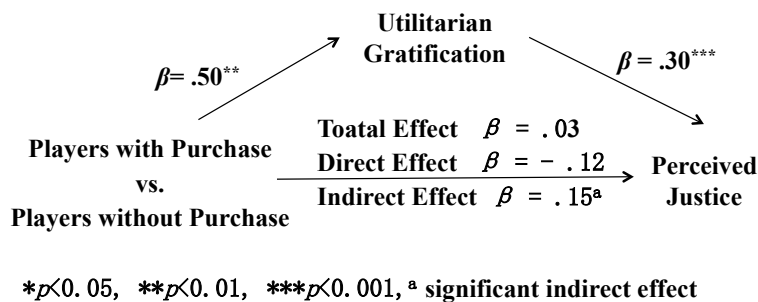
With virtual goods purchase as the independent variable, game satisfaction as the mediator variable, perceived justice as the dependent variable, and sample size selected as 5000, under the confidence interval of 95%, the result of the mediating effect analysis is as follows: the interval does not include 0 (LLCI= .07, ULCI= .27), suggesting that the mediating effect of game satisfaction is significant; the size of its effect is .15 thus H2 is supported. Besides, after controlling the mediator variable, the virtual goods' purchase has an insignificant effect on perceived justice (the interval is inclusive of 0 (LLCI= - .31, ULCI= .06), suggesting that game satisfaction is a mediator in the effect of virtual goods purchase on perceived justice and is the sole mediator. The result is detailed in Figure 1.

After the mediator variable is subdivided into hedonic satisfaction and utilitarian satisfaction, the Bootstrap method is employed to verify the mediating effect in two dimensions. The result indicates that the mediating effect of hedonic satisfaction is marginally significant as the estimation interval does not include 0 (LLCI= .01, ULCI=.13), and the size of the mediating effect is .06. H2a is thus supported (see Figure 2). The mediating effect of utilitarian satisfaction is significant as the interval is exclusive of 0 (LLCI= .07, ULCI= .27), and the magnitude of the mediating effect is .15 thus, H2b is supported (see Figure 3). Utilitarian satisfaction has a greater mediating effect between virtual goods purchase and perceived justice than hedonic satisfaction.



**Figure 2: Mediating effect of Hedonic Satisfaction**

In order to further verify the stability of mediating effect and disclose the influence of the disparity inside virtual goods purchase on the size of the effect, this study further examines the mediating effects of game satisfaction between the frequency of purchase and perceived justice, and between the amount of purchase and perceived justice.



**Figure 3: Mediating effect of Utilitarian Satisfaction**

With the type of “never purchase” as the control group, the frequency of purchase is encoded into two dummy variables. The sample size is selected as 5000. Under the confidence interval of 95%, the effect of “never purchase” (versus “occasionally purchase”) on perceived justice is subject to the mediating effect of game satisfaction (LLCI= .05, ULCI= .25), the interval is exclusive of 0, and the size of the mediating effect is .13; the effect of “never purchase” (versus “often purchase”) on perceived justice is also subject to the mediating effect of game satisfaction (LLCI= .18, ULCI= .64), the interval is exclusive of 0, and the size of mediating effect is .37. The above findings reveal that game satisfaction is indeed the mediator variable via which virtual goods’ purchase acts upon perceived justice and that the higher the frequency of purchase is, the greater the mediating effect of game satisfaction will be.

With the type of “0 CNY” as the control group, the amount of purchase is encoded into three dummy variables. The sample size is selected as 5000. Under the confidence interval of 95%, the effect of “0 CNY” (versus “1-499 CNY”) on perceived justice is subject to the mediating effect of game satisfaction (LLCI= .04, ULCI= .22), the interval is exclusive of 0, and the size of the mediating effect is .11; the effect of “0 CNY” (versus “500-2999 CNY”) on perceived justice is also subject to the mediating effect of game satisfaction (LLCI= .19, ULCI= .63), this interval is exclusive of 0, and the size of mediating effect is .36; the effect of “0 CNY” (versus “3000 CNY and above”) on perceived justice is equally subject to the mediating effect of game satisfaction (LLCI= .18, ULCI= .66), this

interval is exclusive of 0, and the size of mediating effect is .37. The above findings reveal that game satisfaction is indeed the mediator variable via which virtual goods purchase acts upon perceived justice, and that the higher the amount of purchase is, the greater the mediating effect of game satisfaction will be.

## 7. Discussion

The survey results suggest that virtual goods purchase affects players' perception of justice within the game through game satisfaction and that the higher the frequency and amount of purchase are, the greater the mediating effect of game satisfaction will be. These findings confirm the implicit tendency within the freemium business model, namely, players who pay for virtual goods have a better game experience and, therefore, are more likely to recognize the justice of the game.

The game world was once reputed to be egalitarian and free from the restraint of social structure and the influence of power structure (Shi, 2012). The freemium business model definitely breaks the barrier between the real world and the virtual world. Under this dominant revenue model, the differentiated experience is a major means by which the game developers attract players of purchase. By far, the effectiveness of this model awaits further promotion. A recent report reveals that 47.4% of Chinese game players spend less than 1500 CNY on virtual goods, while those who spend over 3000 CNY only account for 16.6% of the total number of players of purchase (GPC, CNG, & IDC, 2016). In other words, the freemium business model fails to motivate continuous, heavy virtual goods purchases of most Chinese game players.

This circumstance partly stems from an internal paradox of the freemium business model: unsatisfied motives, or namely less satisfaction, is a precondition for motivating game players to purchase the virtual goods; meanwhile, less satisfaction could also impair game players' willingness to continue to play the games, thereby reducing the probability of purchase within the game (Hamari, 2015; Hamari & Keronen, 2016). Besides, the purchase of the virtual goods per se could distort the competition among players and reduce players' involvement and sense of immersion in the game (Alha et al., 2014; Lin & Sun, 2011). Therefore, reconstructing the justice of the game is becoming a new direction for the growth of mobile games. Recently, quite a few game developers have started to attach vital importance to the equilibrium of games, even publicizing the slogans of "Fair play" and "Remove numeric props" (An Introduction to King of Glory, 2017; NERO, 2017). Further observation and analysis are expected to whether such measures would bring about transformation in the revenue model for the mobile game industry and precipitate substantial changes in game-experience and order reconstruction of the virtual world.

Moreover, this study also discovers that the mediating effect of utilitarian satisfaction is more significant than that of hedonic satisfaction, which suggests that the difference in judgment on justice between two groups of players stems more from the accomplishment gained from the game rather than from pleasure. On the one hand, this verifies the reference dependence inclination of individuals' sense of justice (Zheng et al., 2016: 111-112), namely, the evaluation of justice is more likely dependent on how much interest the person has received as compared with others; on the other hand, it also reflects the effect of Chinese people's "face" culture on game players' perception. The Chinese society attaches particular importance to "face," namely individuals' positive image in others' eyes, which is constructed through the accomplishments individuals have attained in their life experience (Huang,



2004). Compared with the pleasure known only to oneself, other game players' recognition can better endow individuals with a relative sense of fulfillment and decency. Therefore, the players are more inclined to affirm the justice of the game. Future research can concentrate on the effect of individual differences over reference dependence inclination on the perceived justice or include the perspective of cross-culture comparison into the discussion of group differences in perceived justice.

The shortcomings of this study lie on the one hand in the non-random sampling method on which the survey relied. Future research can make certain improvements in the sampling method to promote the representativeness of samples and generalizability of conclusion; on the other hand, with objective variables such as whether a purchase is made, the frequency of purchase and the amount of purchase as independent variables, this paper gives insufficient consideration to the mechanism of the subjective evaluation of input-output acting upon perceived justice. The latter awaits further empiric studies. Besides, the moderating factors affecting the relationship among core variables are also a potential issue of future research.

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