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Research on the Impact of Video Game Characteristics on Russian Consumers Purchase Intention

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Abstract: There are currently over 65 million people in the Russian Federation who regularly play video games of any type and on any platform. About half of them fall into the category of "paying" gamers - those who buy games or pay for in-game content, which industry analysts view as an indicator of emerging markets. As it becomes increasingly difficult for developers to compete in the video game market, it is increasingly important for publishers and video game developers to understand why consumers play and buy games. A major challenge for the gaming industry is figuring out which features of a game can grab consumers' attention and influence their intent to purchase games. The purpose of this study is to examine which characteristics of video games can affect the game participation of Russian single player gamers and consumers' willingness to purchase games, and to make suggestions for single player game developers and publishers. A survey was conducted among 492 Russian single player game players; the research results were obtained through reliability analysis, correlation analysis and linear regression analysis. The results of this study show that the game features such as control functions, reward and punishment features have a significant positive impact on flow and purchase intention, and flow has a significant positive impact on purchase intention. This research contributes to the development of a video game features theory of video games by determining the extent to which consumers' emotional responses and behaviors are directly affected by videogame structural features and game engagement. In order to expand the sales of single player video games, game developers and publishers need to focus on the interactivity and game balance.

Keywords: Video game features, Video game engagement, Purchase intent, Russian market of videogames.

1. Introduction

Over the past five years, the demand for video games has remained high, but at the same time, competition in the industry has intensified. Russian and foreign game companies are constantly developing new products. According to experts, up to a thousand projects are released every day in the mobile game market, and hundreds of projects are released every day in the PC and console markets, including both independent games and high-budget game products. This scale of production has led to oversaturation of the industry, transforming it from a creative market to a mass market, which has, to a certain extent, created a higher demand for high-quality original game solutions [1]. Similarly, MyGames believes that the PC remains the most popular platform choice for Russian gamers [2]. Single player video games have received huge attention from Russian players in the Russian market. In 2023, Russian gamers spent 161 billion rubles (12525.8 million RMB) on computer games and in-game items. Most of this amount was spent on single-player games, including: Atomic Heart, Hogwarts Legacy, and Baldur's Gate 3 [3]. The single-player game Atomic Heart was released exclusively in Russia on the Russian local game sales platform VK Play and was a success. Following this trend, the Russian Internet Development Institute has invested a total of 500 billion rubles (about 38.9 billion RMB) to sponsor the Russian single-player game Chaos since 2021 [4]. There are also countless independent single-player games that have been successful in the Russian market. Xiao Jie's research shows that single-player games have advantages over other types of games [5], and single-player games are a very noteworthy niche in the Russian game industry.

2. Literature Review and Research Model

2.1. Research on Purchase Intention and Consumer Behavior

Research on consumer purchase intention and consume behavior is an important perspective to understand the motivations of purchasing single-player videogames. In this research, Howard-Sheth model is used, providing systematic theoretical support for analyzing factor affecting consumers intention of purchase intention.

In 1963, Howard and Sheth proposed the Howard-Sheth model after six years of theoretical optimization [6]. This model was originally inspired by Kotler's stimulus-response theory. The Howard-Sheth model emphasizes that behavior originates from the influence of psychology and motivation, and divides the purchase decision process into five steps: 1) Attract attention 2) Cognitive understanding 3) Forming attitude 4) Producing purchase intention 5) Actual purchase. After receiving external stimuli, consumers begin to explore and attract their own attention, and at the same time generate intuitive tendencies to have motivation, and then make purchases after forming attitudes. The essence of this model is that the stimulation of external factors will affect consumers' psychological activities such as perception and learning structure, thereby progressively affecting consumers' purchase decisions.

2.2. Game Engagement

Game engagement can impact behavioral intentions, for instance, online purchase intent, revisit intent, and the desire to play an online game [7]. As a result, high engagement rate is thought to increase the likelihood of making a purchase. An

important aspect of game engagement is to attract players' attention. Engaged players are completely focused on the game and usually show a high degree of absorption in the virtual world created by the game. They are less likely to be disturbed by external factors and are more inclined to devote their energy to mastering game mechanisms, solving challenges and achieving goals.

Important concepts found in many studies related to game engagement: presence and flow are central [8]. Presence is the feeling of being in a virtual environment [9]. This psychological concept is a widely evaluated dimension of the user's experience of interacting with a computer-generated environment. Presence is often described as a three-dimensional construct: spatial presence (or physical presence), social presence, and self-presence. The term "flow" is used to describe the feeling of pleasure that results from achieving a balance between skill and challenge while performing an intrinsically rewarding activity. Having a specific goal and an immediate performance feedback structure increases the likelihood of flow [10]. Flow states also include feelings of control, a sense of integration with the activity, and a sense of experiencing a time warp.

2.3. Video Game Features

Wood's analysis of the main structural features of video games is the main research on matter that explains the reasons why games are considered interesting and playable. Wood's framework includes many features, but this article mainly refers to two game features [11]: Manipulation and control functions, reward and punishment features.

Manipulation and control functions refer to the ways in which players can interact with and control the virtual environment in the game using physical control schemes. There are the following more classic operations: Character control, camera control, menu and interface control, special power ability and combos' control, vehicle control. Character movement control is how the player navigates the game world, including walking, running, jumping, climbing, swimming, and flying. These manipulations may vary depending on the type of game and the type of device on which the game is played (such as keyboard and mouse, game controller, touch screen). It also includes how the player participates in combat, attacking, defending, dodging, and using special abilities or weapons. Combat controls range from simple button presses to complex hotlinks, requiring players to master timing, precision, and strategy to succeed in combat. Interaction controls allow players to interact with objects, characters, and elements in the game world. This includes actions such as picking up items, opening doors, solving puzzles, talking to NPCs (non-player characters), and triggering events or dialogue sequences. Camera control determines the player's perspective and viewpoint in the game world. Players can adjust the camera angle, zoom in or out, pan the camera horizontally or vertically, and lock onto specific targets or points of interest. Menu and interface controls determines how players navigate menus, manage inventories, customize settings, and access in-game options and information. Intuitive menu and interface controls help provide a smooth and user-friendly experience, allowing players to easily navigate and interact with various game features. Special abilities and powers in some games have control mechanisms that allow players to activate special abilities, powers, or spells. These controls typically require players to enter specific commands or input combinations to unleash powerful attacks, buffs, or other effects. Vehicle controls in games featuring vehicles such as cars, airplanes, or boats, vehicle controls determine how players drive or pilot these vehicles. This includes steering, accelerating, braking, and performing actions such as drifting or stunts.

Wang Ruiyi and He Yijie pointed out that interactivity is a core feature of video games, and the design of unique interactive mechanisms creates its unique game language design system [12]. This category also considers various features in video games that are directly related to the player's sense of mastery and control over the game, such as the ability to save progress in order to correct in-game errors and the ability to manage a large number of in-game resources simultaneously. Thus, saving feature is also an important feature of the manipulation and control function. When players make mistakes in video games and fail, cognitive regret may occur. However, due to the design of the video game, video games allow players many opportunities to correct their in-game mistakes. For example, games may have "lives" or "turns" that allow players to try their game challenges again (meaning that if they die, they still have one life to play again, just like in Mario games). In addition, video games allow players to save their game progress and jump back to that point in the game. The save function allows players to replay failed scenarios, thereby minimizing the cognitive regret caused by failure. For this reason, video games may provide players with a higher degree of control and freedom than any other game. In addition, player resource management features are also important game manipulation and control features. Game elements on the screen are usually presented to the player in a clear and quantifiable manner. Most games have a HUD ("heads-up display") that details all the resources available to the player. In a shooter, this is usually the player character's health and remaining ammunition. In a role-playing game, this may be a complex inventory system containing a variety of weapons, clothing, magic spells, and miscellaneous items. The player needs to decide how to manage these resources to complete the game's various goals. These features provide feedback about the player's performance in the game (for example, having a lot of resources indicates very good performance). In addition to resource and in-game equipment management, single-player games often allow players to customize their experience through character equipment adjustment, skill upgrades, equipment selection, and story decisions.

Reward and punishment features are the points at which players are either rewarded or punished for their skill in playing the game. Player motivation may also be affected by a newer feature in games called "meta-rewards". Rewards are thought to affect both extrinsic motivation (where an activity is performed in order to obtain a separable outcome) and intrinsic motivation (where the motivation to perform an activity is related to the intrinsic satisfaction of doing it). In addition to exploring the impact of in-game rewards on subjective player experience, the impact on player psychophysiology is also a focus of research content. To date, research has focused on the effects of a single type of reward, based on research that has focused on subjective responses to rewards. For example, Ravaja et al. (2006) conducted a phased event-based emotional assessment of responses in a video game (Super Monkey Ball 2) using facial expressions using electromyography (EMG), electrocardiography (ECG), and electrodermal activity (EDA). The primary events studied in the game were those that were rewarded by the researchers:

picking up a banana or a bunch of bananas, which counted directly toward points earned in the game [13]. According to the report, there was a largely linear relationship between the reward earned in the game and an immediate phased increase in physiological arousal, as revealed by a shortening of the heartbeat interval (heart rate; EKG) and skin conductance amplitude (EDA) that directly followed the reward. In addition, the researchers found that the more influential reward - a bunch of bananas, representing multiple points, rather than a single banana - elicited greater arousal (EDA). In this way, Ravaja and colleagues provide initial support for the idea that more rewards can have a greater effect. Finally, positive valence generally increases (via increases in electromyographic activity found to be associated with smiling) in-game rewards. Providing physical force feedback through vibrations in game controllers is also common in video games. For example, a racing game might use force feedback to reward players for proficient high-speed driving. But for most video games, rewards are primarily psychological in nature. In-game currency (e.g., gold) is used to reward players for their performance in certain games. This also provides a system for judging the objective value of all other items in the game. Another similar example is the experience points ("XP") that players collect in video games as they complete objectives and defeat enemies. In detail, once a player has collected a sufficient amount of XP, their character "levels up" and becomes more powerful in various ways. Players can also obtain various items and upgrades that make their character more proficient in the game. Rare and unique in-game items are rewards that require a lot of time to earn. Crucially, games often take a "kitchen sink" approach to rewarding players, meaning that players often receive multiple types of rewards at the same time while playing the game. At the same time, penalties are necessary because games need to have a structure that creates order and that shows players that progress is based on skill. Penalties often include failing a goal, losing an in-game item or resource, or having to restart a level. Game designers often refer to or directly discuss the theory of conditions when it comes to rewards and penalties in video games [14]. However, in order to establish the contextual value of rewards in games, it is necessary to show players that progress is not inevitable. Early video games were built with fairly severe failure scenarios due to technical limitations, such as having to completely restart the video game when the player's character "dies". Since the advent of built-in system memory, players have been able to save their progress in games and simply "reload" when a game error occurs. Video games have also become longer and more complex, making penalties like permanent character death an unattractive feature, especially for a less committed, casual audience. Common forms of penalties in games include having to restart a level, failing an objective, or losing a resource such as an item, XP, or points. However, a recent phenomenon in the gaming industry is that some game designers have removed important penalties in order to limit the emphasis on the game's story, rather than incorporating failure scenarios into the game's story. In summary, rewards and penalties are now widely used to balance the creation of effective tools for games. Balanced gameplay promotes dynamic and competitive interactions between players, whether in single-player challenges or multiplayer matches. When players are evenly matched in terms of skill and resources, they enjoy an exciting and unpredictable gaming experience characterized by strategic maneuvers, tense moments, and satisfying victories.

2.4. Research Hypothesis

Based on the Howard-Sheth model and video game research, this study proposes hypotheses to test the impact of videogame features on game engagement and videogame purchase intent. When a player performs an action using manipulation and control functions and influences what is happening in the virtual world, for example moving a character, it is assumed that this increases players presence, thus hypothesis H1a was proposed:

H1a: The manipulation and control functions have a positive impact on the sense of presence

With the help of manipulation and control functions, players overcome challenges and solve problems in the virtual world, which means that high-quality development of manipulation and control functions can influence flow, thus hypothesis H1b was proposed:

H1b: The manipulation and control functions have a positive impact on the flow

Various reward and punishment structures are known for increasing the presence level as one of the parts of creating a virtual world. In addition, reward and punishment are used to create meaningful challenges and problems in the virtual world that the player must solve using manipulation and control functions, thus hypothesis H1c and H1d were proposed

H1c: The reward and punishment features have a positive impact on the sense of presence

H1d: The reward and punishment features have a positive impact on the sense of flow

Manipulation and control features directly affect the gameplay of a particular game, which is visible in the game's marketing materials, which means these features can affect purchase intent, thus hypothesis H2a was proposed:

H2a: The manipulation and control functions have a significant positive impact on purchase intention

Reward and punishment features are used to create a certain difficulty in the game, some players like games that have high difficulty and there is a challenge, and there are casual players who play only very easy games or only those games that have a choice of difficulty thus hypothesis H2b was proposed:

H2b: Reward and punishment features have a significant positive impact on purchase intention

As some studies show, players want to immerse themselves in a virtual world and the more tangible this world is, the better this goal is achieved, therefore hypothesis H3a was proposed:

H3a: The sense of presence has a significant positive impact on purchase intention

Other videogame research suggests that one of the motivations and goals of players to play games is to achieve a state of flow thus hypothesis H3b was proposed

H3b: Flow has a significant positive impact on purchase intention

3. Research Methods

Questionnaire is chosen as the tool of empirical research in this study because it is a data collection method that can quantify individual attitudes, facilitate research data processing, and is an important method to obtain first-hand empirical research data. In order to ensure the validity and accuracy of the measurement items, the questionnaire was

compiled using scales in research literature that was published previously. Prior to the formal survey, a preliminary survey was conducted in this study with 70 valid and truthful responses. According to the feedback of the preliminary sample and the content of the questionnaire, some items in the preliminary questionnaire were refined. This was done to ensure clarity and eliminate uncertainty in the final questionnaire used by the research. In this study, online survey method was used to distribute questionnaires and collect data. The questionnaire in this study was divided into two parts. The first part covers the respondents' basic personal information, including gender, age, educational background, occupation, income and the experience with single-player games. The second part is the measurement of the study variables and develops the measurement items for the five study variables.

4. Results and Discussion

After a long period of collection, the questionnaire sample results are as follows: 547 questionnaires were collected, of which 492 were valid questionnaires. SPSS 26.0 software was used to process 492 valid questionnaires. Considering the need to exclude data input errors caused by incorrect input content or missing response items, all variables will be cleaned and tested using frequency tables. After proofreading, it has been verified that the valid questionnaires have no error detection, no defective values, and the variables have complete valid information. In other words, the 492 valid questionnaires will serve as all the data of this study and provide an analytical data source for the study.

The results show that hypothesis H1b, manipulation and control functions have a positive effect on flow is supported (the standardized path coefficient is 0.464 and the p-value coefficient = 0.000, less than 0.01). Hypothesis H1c, reward and punishment characteristics have a positive impact on the sense of presence is supported (standardized path coefficient is 0.786 and p-value = 0.000, less than 0.01). Hypothesis H1d reward and punishment characteristics have a positive impact on flow is supported (standardized path coefficient is 0.06 and p-value = 0.004, less than 0.01). This means that the more and deeper the manipulation and control methods in the game, the clearer the game balance and challenge (the game balance is achieved through the reward and punishment characteristics in the game), and the higher the player's game engagement. However, relation between manipulation and control functions and presence is weak. Hypothesis H2a, manipulation and control functions have a positive impact on purchase intention is supported (standardized path coefficient is 0.145 and p-value coefficient = 0.000, less than 0.01). Hypothesis H2b, reward and punishment characteristics have a positive impact on purchase intention is supported (standardized path coefficient is 0.047 and p-value = 0.012, less than 0.05). This means single-player games strongly consider controls of the game and difficulty of the game while purchasing. The results show that, based on hypothesis H3b, flow has a positive impact on purchase intention (standardized path coefficient is 0.303 and p-value coefficient = 0.000, less than 0.01). In other words, a positive impact means that the higher the game engagement, the higher the game purchase intention. However, relation between presence and purchase intent is remain low.

5. Conclusion

Based on the Steith-Howard framework, a theoretical description of videogame features, game engagement theory, the article established the relationship between videogame feature, videogame engagement and videogame purchase intent in players purchasing single-player games. Results shows that generally single-player game buyers consider control and manipulation features, reward and punishment features, the extent to which game provides state of flow to players. It implies that balance and difficulty are one of the most important things that create purchase intent of single-player game. Study shows that relation between game features and presence, presence and purchase intent are yet to be discovered.

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