

**Information System Review and Evaluation in Game industry**

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## **1. Introduction**

Since ancient times, games have been an integral part of our lives. From role-playing games, which we adored as kids, to chess or poker, which have been popular for decades. Nolan Bushnell, the godfather of gaming, built Atari, the first console company most of us are familiar with today. As The times changed, Atari's most popular game, Pong, fell into obscurity. Nintendo exploded onto the scene in 1983 and quickly dominated the global digital game market.

People gradually began to own their personal computers in 1980 as technology progressed. With the rise in popularity of computers came the rise of digital games. Then, in 2007, when mobile phones became more widespread, people began to notice mobile gaming.

Digital games have become an essential part of people's daily lives. Still, as the game has grown in popularity, all types of fraud and the theft of game company user data have made the business process, and data collection legal and moral compliance of game has become a topic of discussion.

### **Applications of information systems**

- E-commerce for games
- IoT
- Game Data Mining
- Customer Environment
- Game recording

## **2. Physical and Digital Transformations**

### **Digital Transformation - Cloud gaming**

Cloud gaming is a method of downloading games from the cloud without a physical transfer. It only responds to the user with a video, similar to streaming media such as Netflix. When the user hits the button to make the character jump, the switch only sends the order to the server, which answers with a video frame. Due to its speed, it will perform the same functions as a game downloaded on the device.

It offers numerous advantages, including the ability to download big 3D games to any device. Cloud gaming, for example, allows consumers to play games published on the PS5 on their PCs and mobile phones. It also doesn't require a lot of memory on the host. It is more cost-effective for users. To play games with high pricing on other platforms, users merely need to recharge members of the cloud platform. Furthermore, because the cloud game platform's server manages game content, piracy and phishing software may be avoided to the maximum extent possible.

Cloud gaming lowers the costs for the gaming industry, allowing users to play more games for less money. If cloud gaming technology improves, it will be similar to low-cost marketing. Furthermore, as previously said, the cloud game development mode is more secure than the original model, lowering the cost of security protection for businesses.

### Digital to Physical:

The transformation from physical to digital People are looking for operations that are quick, convenient, and high-tech. People are more in search of a slower pace as they transition from digital to physical, and they are also beginning to pay more attention to offline contact. So, for the time being, cassettes and DVDs are irreplaceable; the players can collect them as a collection, and they take up as little capacity on the console as possible, rather than the digital version. Before the game is available in our country, we can purchase cartridges from other countries.

The most appealing aspect of cassettes in today's society, in my opinion, is that they allow individuals to engage more in real life. On the Switch, for example, you may trade game cassettes with your friends to play each other's games, saving money and improving enjoyment. Such connections can extend a game's market, and a player may recruit additional players, such as the player's family or friends.

## 3. Business process

- E-Commerce Systems:
  - cross-functional: The sales department accepts orders, the game development department issues virtual goods, and the accountant creates invoices, sends them to users, and records them.
- Customer Relationship Management (CRM) Systems
  - single functional area: Improve user satisfaction and interactive services between users to attract new customers and retain existing customers
- Media Executive-Cognitive engagement
  - cross-functional: Social groups are organized and promoted by operations, while game designers and game engineers communicate directly with players in social groups.
- Data Analysis
  - single functional area: Analyze player data, such as how long the game is played and how many characters are used.
- Product planning
  - single functional area: It was planned and produced by the game development department.

### 3.1 Business Processes in Digital Games

#### Data Analysis in Digital Games:

Users' pain points in the present version of the game can be evaluated by recording the login times, duration, and cycle of each player. If users' login times in this version are longer than in prior versions, it means that this version's event planning is successful. In addition, cycle records can be used to track player losses. For example, suppose a player signs in at the same time every day. However, if a player does not log in for three days, he or she is considered lost. The player's subsequent recall can be accomplished via SMS or pop-up windows.

### Media Executive-Cognitive engagement

Tracking consumer spending — Players frequently spend a lot of time and money on games such as items, VIP services, and so on, which means it's an emotional investment in a digital game (Abbasi et al., 2020). They can gain a sense of fulfillment in the game by upgrading their equipment, levels, and collections, which will satisfy their competitive, teamwork, social, and other demands (Dessart et al., 2015, 2016).

As a result, such cognition, emotion, and conduct are conducive to co-production, such as players offering useful suggestions to the game developer or producing related game upgrades and bug patches. Participation in the esports community is increased by player-to-player or player-to-company talks. Highly invested players will be more inclined to publish suggestions and playthroughs on social applications (such as Instagram or Facebook) or YouTube, attracting new users to these social media channels (Abbasi et al., 2020; 2018). Make a virtuous loop out of it. Developers can also use user feedback to be more creative and obtain a better understanding of what players desire.

## 3.2 Detailed Process - Cognitive engagement

### Resources:

- Players
- Producer
- Electronic Community
- Game
- Social Applications (MicroBlog, Instagram, Facebook)

### Inputs:

A trailer for the game will be posted to the official company or developer's social media account, along with an introductory video. After the game is released, the game's community and rating board will be available. Before a new season or version of a game, game companies may introduce co-production platforms.

### Process:

First, players will discuss their impressions of the trailer. When players first enter into a new game, they will encounter issues such as bugs and areas in need of improvement, which they will give feedback to the company by social networks. For instance, players in League of Legends have differing viewpoints on a hero's abilities and new skins, which they can express on forums or Facebook. Furthermore, some professional players may post their reviews on YouTube to attract additional players. Players submit their ideas to the co-projection platform, and the rest of the community votes on them.

The gaming firm compiles these reviews and feedback into statistics, then splits by degree. Also, the most popular ideas on the co-projection platform adopted are used in items or skins of the game.

### Output:

Player:

- Get rewards
- Get honor in the game
- Become a more experienced player.

**Company:**

Companies will gain a better understanding of gamers' motives and experiences more quickly. On the other hand, various games have different requirements, which can splice into the two categories below:

**Online Games:**

Online games necessitate seamless player-to-player coordination and a greater emphasis on player skill and equipment. Online game firms and developers will need to modify some computer and mobile online games quickly, necessitating the use of co-creation platforms and player feedback in greater numbers. Respond quickly to user feedback, such as bug patches or content upgrades, by absorbing player pain points. To get more player recognition and boost the game's popularity.

**Console Game:**

However, it's difficult to update content in console games, and it's even more challenging to change content based on player feedback in a console game that starts with a complete game architecture.

**Efficiency:**

Because player reviews are flexible, when a game firm uses an open forum to seek player feedback, the process is free and can be enhanced with the game's release.

**Effectiveness:**

The player's satisfaction will enhance because these comments will be improved or added based on the player's thoughts.

## 4. Ethicality, Legality, and Privacy

Data makes our life easier, and it allows developers to understand more about the industry and what people want, but it also has a downside. Data has the potential to compromise our privacy and even our security.

Game makers record every action players take to gauge market demand within the game. When the player is just getting started, or the game's flow is too simple, such behavior is difficult to identify. It's easy to identify when the worldview is broad and the player has a lot of options which is similar to a psychometric test. Drilling is a form of in-depth data analysis frequently utilized in fighting games. For example, it can tally a level's overall completion time, determine which level has the shortest completion time, and then drill down to evaluate all players in that level's information (Drachen et al., 2013). The information gathered via these approaches can be used in-game to alter the game's complexity and the personalities of NPCs. At the same time, these techniques can be utilized to backward reason player dynamics and behavior patterns, and the player's information can be turned into a personality profile and sold to any third-party program or even criminal organizations. For instance, third-party platforms, such as McDonald's or eBay, can use these personality data to track gamers and offer adverts in real-time.

In addition to privacy concerns, games might manage human physiology and the content of the dopamine response, which can lead to addiction (Stafford, 2019). Such data mining is immoral, especially for kids. Children are incapable of having good values, and they are readily addicted to games, which even impacts their personalities under the psychological analysis of games.

## 5. Threats to IS

### 5.1 Threats in Digital Games

Unintentional Threats in Game Company:

- Theft
- Online gaming malware
- Phishing

Deliberate Threats in Game Company:

- Company employees sell player information
- Online gaming malware
- Camera and microphone access

### 5.2 Describe for Threats

Theft:

Stealing occurs in a variety of fields. Information theft by hackers is the easiest thing to occur in the information era. The theft of game accounts and user information is the most common incident in the game industry.

You have an economy in the game, much like in real life, and you must gather, win, and trade with other players to gain in-game currency, which is usually earned through conventional in-game channels. Some players will want to complete the game quickly. Or, as previously stated, for an investment in the game or for the pleasure of socializing while playing. Obtaining some rare items in the game is too difficult, or the virtual currency exchange rate via conventional channels is too excessive. As a result, some players will exchange real money for virtual money using online auction sites such as chat rooms, forums, or e-bay, with sums ranging from hundreds to thousands of dollars (*Data Privacy and Online Gaming*, n.d.). Criminals and hackers are rapidly becoming more aware of this method of earning money using virtual goods. Because it is a virtual currency, people would easily overlook those ways of theft and the possibility of losing a vast sum of money simultaneously.

Hackers commonly use external and internal ways of stealing players' accounts and virtual items. Create phishing software, a phishing webpage, or even send an email to steal a player's account from the outside. Inside games, hackers frequently target game defects and in-game theft due to poorly designed in-game transactions. As well as more dangerously breaking is hackers into game companies' databases, such as the large data theft in Sony by hackers known as Guardians of Peace.

Online gaming malware:

Malware is divided into two categories: inside and outside the game. This malware seems like a real game or gaming website. And it is always installed on the top of the browser when the player wants to find a game. Malware is merely advertising; on the other hand, it is Trojans that steal personal information and even cause a computer to collapse. Inside the game, malware is more common in open games where the user must download seeds and expansion packs from the internet. Minecraft, for example, offers a wide range of gameplay options by installing digital Mods on top of the original game. Nonetheless, because these Mods are user-made and unauthorized, it is easier for them to break into players' computers and download dangerous files or software (*Analytical Report on Gaming-Related Cyberthreats in 2020-2021*, n.d.).

Measures:

Two-Factor Authentication (2FA):

Many game companies now offer 2FA to protect players from having their credentials stolen because player-created passwords are simple and easy to steal. In the beginning, 2FA will generate a new password every 30 seconds, but this strategy will be expensive overall. Recently, the most prevalent 2FA method has been sending a short message to a cell phone for verification or downloading 2FA software (*What Is Two-Factor Authentication (2FA)?*, n.d.).

Game Data:

Players' data is often classified, backed up, and encrypted for authentication by game companies. In recent years, game developers have embraced "NoSQL," a more flexible, quick, and efficient storage mechanism that runs on cloud computing frameworks with up to 100 servers and is ideally suited for multiplatform games. (Drachen et al., 2013)

If hackers uncover and break in-game issues using low-quality data, it's critical to clear up low-quality data frequently. Furthermore, perfect data backup helps compensate players on time once hackers have stolen their data.

## 6. Conclusion

### Research Reflection

Before beginning my report, I had a basic understanding of digital game firms, game types, and general planning, including Nintendo, Sony, and Blizzard, architecture planning within the game itself, 3D modelers, game planning software engineers, and so on. However, I lacked a thorough understanding of how the game is market-oriented, the business process of how to attract customers, and how digital game enhancement and mode change have occurred over time. The data privacy concerns and moral transgressions of the game industry are nevertheless worth considering. While some transformations can avoid some risks to the game industry, there are others that users and corporations must jointly prevent.

### Skills and Capabilities



During my study for my reports, I came across several new fields and phrases in the game industry. Cloud gaming, for example, developed from the advancement of game electronic technology. Its output mode is similar to streaming media, saving memory and avoiding forcing users to buy high-end devices when they want to play games smoothly. Furthermore, it can avoid some threats in the gaming industry, such as phishing software and piracy. In addition, the business process gives birth to cognitive engagement, a relatively new type of interaction and collaboration between users and game companies. Additionally, while drilling technology might improve user experience by better analyzing user behavior, hidden risks of privacy and morals violations lurking behind the accurate data are still not to be ignored.

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