

(TEMP) Online Video Game Monetization Schemes and Its Relationship to the Consumers*

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24 April 2022

Abstract

Advertisement and monetization schemes are essential to obtaining a stable revenue stream and ensuring the continued survival of an online video game. We obtain data through a survey distributed in several online communities for the massively multiplayer online game known as Black Desert Online and analyze it through several graphs, tables, and a model in this paper. (TODO) Sentence about findings. (TODO) Sentence about implications. (TODO) Keywords:

1 Introduction

Just a decade or two ago, singleplayer-driven content was the predominant focus in the video game industry. This was mostly a product of the time, as the infrastructures needed to support online-based video games were yet to be fully developed. More importantly, what this also meant was a lack of post-launch updates being delivered for a game, as developers also lacked means to deliver constant updates effectively into the hands of the consumers. As a result, most video games received little to no post-launch updates aside from one or two major expansions to their games that contained sufficient content to be put on the shelves as add-ons to the original purchase. Despite this, consumers back then were generally content with the amount of content they received for their purchases.

As the years went by and networking structures matured, however, more and more video game developers started focusing more on the online aspects of gaming. The number of multiplayer-focused video games in the market started to steadily increase. Now, in an era of live service online video games, developers are pressured to continuously produce and deliver new and exciting content on a consistent schedule in order to compete with other products. This need to create more content for a game means that development resources are constantly required, and online focused games can no longer afford to charge their consumers a simple upfront fee; live service video games must find an effective and profitable monetization scheme in order to fund their continued development.

The most prominent examples of live service online video games are the massively multiplayer online role-playing games (MMORPG), a genre of video games known specifically for its focus on multiplayer. Due to their focus on progression-based gameplay, developers of MMORPGs must constantly create new and refreshing content to add to their games. To subsidize the development costs that go along with it, developers have created a variety of monetization models to ensure a steady revenue stream. For example, World of Warcraft, one of the biggest MMORPGs, relies primarily on a monthly subscription from its players. Others, such as Lost Ark, adopt a mix of strategies with a monthly subscription that grants massive boosts in-game and an in-game cash shop that allows players to purchase items for a variety of purposes using real world currencies. If done properly, an analysis on the monetization schemes of MMORPGs could have meaningful

*Code and data are available at: https://github.com/zhan7818/bdo_monetization

implications for future MMORPG developers on how they should monetize their video games to maximize revenue.

This paper primarily focuses on the MMORPG known as Black Desert Online, commonly and henceforth referred to as BDO. as it is MMORPG that utilizes a of mix of upfront cost, subscription and in-game cash shop. Pearl Abyss, the developers behind Black Desert Online, never published any official statistics that touch upon the revenue of Black Desert Online. As such, the following analysis will rely on data collected by the author of this paper.

The remainder of this paper is organized as follows: Section 2 covers the survey design, sampling and preliminary analyses of the dataset used in this paper. Section 3 details the model used to find possible correlations between variables in the dataset, the results and implications of which will be covered in Section 4. Any limitations or possible extensions of this paper will be discussed in Section 5.

TODO: add in some references that support claims about general transition from singleplayer to multiplayer in video game industry.

2 Data

2.1 Survey Design

Due to the lack of APIs provided by Pearl Abyss that concerns the subject of this paper, convenience sampling is used to collect data from the general playerbase for the game. The survey is created in Google Forms and is distributed to Black Desert Online players on Steam discussion, Black Desert Online forum board, and the Black Desert Online subreddit on Reddit. The survey consists of questions mostly regarding the respondents' amount of spending in the various monetization models employed by Black Desert Online, as well as some general background information regarding each respondent and their in-game characters. The survey questions could be largely divided into the following set of topics:

- Background characteristics such as age, gender and playtime
- Upfront spending for the game such as the purchase of game packages
- Spending for in-game subscription-esque items using either in-game or real world currencies
- Opinion on in-game subscription-esque items
- Spending for other general cash shop items in-game using either in-game or real world currencies

In the post containing the survey on each of the distributed sites mentioned above, efforts were made to be as transparent as possible with the participants: respondents were informed of the intended usage for the data collected and were assured that no information that can be used to identify them will be collected nor included in the survey and final paper.

2.2 Dataset Cleaning and Description

A total of 212 responses were collected from the survey. The data was exported to excel (Microsoft Corporation 2022-03-30) where the columns names were shortened to be readable. Two new columns were created from the responses: * `packages_usd`: amount in USD spent on purchasing game packages * `packages_free`: binary indicator of whether the respondent received the game for free

The dataset is then cleaned using the statistical programming language R (R Core Team 2020) and the `janitor` (Firke 2021) and `dplyr` (Wickham et al. 2022) package. The `pointblank` (Iannone and Vargas 2022) package is used to set up validation tests for the class and the content of the dataset. A new variable, `age_group`, is constructed based on the ages of the respondents. The final dataset consists of the following variables:

- **age**: age of the respondent
- **age_group**: age group of the respondent
- **gender**: gender of the respondent; male, female or other
- **character_total**: respondent's total number of characters in Black Desert Online
- **character_female**: respondent's total number of female characters in Black Desert Online, excluding the character classes Tamer and Shai
- **playtime_total**: respondent's total playtime in Black Desert Online
- **playtime_main**: respondent's playtime on their primary character in Black Desert Online
- **gender_main**: gender of respondent's main character; male or female
- **packages**: the game packages purchased by the respondent
- **packages_usd**: the amount in USD spent purchasing game packages by the respondent
- **package_free**: binary indicator of whether the respondent received the game for free
- **importance_vp**: respondent's rating on the importance of Value Pack to their enjoyment of the game
- **importance_bkom**: respondent's rating on the importance of Blessing of Kamasyrve and Secret Book of Old Moon to their enjoyment of the game
- **cm_vp_count**: number of Value Packs purchased on the central market by the respondent
- **cm_bkom_count**: number of Blessing of Kamasyrve and Secret Book of Old Moon purchased on the central market by the respondent
- **ps_vp_usd**: amount in USD spent by the respondent purchasing Value Packs in the pearl shop
- **ps_bkom_usd**: amount in USD spent by the respondent purchasing Blessings of Kamasyrve and Secret Books of Old Moon in the pearl shop
- **cm_outfits**: number of outfits purchased on the central market by the respondent
- **ps_cosmetic_usd**: amount in USD spent by the respondent purchasing cosmetic items in the pearl shop
- **ps_functional_usd**: amount in USD spent by the respondent purchasing functional items in the pearl shop

Typically, players in Black Desert Online will consider one character as their primary character and spend considerably more time on that character than their other characters. As such, playtime for the main character and total playtime were surveyed separately.

There are two methods to purchase premium items in this game: through the **central market** or through the **pearl shop**. Pearl shop is BDO's cash shop, accessible to every player, where players could use **pearls**, a currency converted from real world currencies, to purchase premium items for cosmetic and functional purposes. Furthermore, players who purchased premium items in the pearl shop could list these items onto the central market for sale. Other players could then use **silver**, the primary in-game currency, to purchase the said premium items. This system serves as a way for some players to obtain more silver using real world currencies, and for other players to obtain premium items without ever spending any real world currencies to do so.

There are 3 subscription-esque items in the game: **Value Pack**, **Blesing of Kamasyrve**, and **Secret Book of Old Moon**, henceforth referred to as **VP**, **BK**, and **OM**. VP existed as an item since the launch of BDO, and BK and OM were introduced later on. Each of these 3 items offer unique bonuses and to players such as shortcuts and quality of life buffs to certain in-game systems to make them easier to use. Typically, VPs can be purchased for 30 days, 60 days, and 90 days, and BKs and OMs can be purchased for 15 days (exceptions occur in bundles and/or event sales including the said items). Because of this, these 3 items are usually bought once or twice per month so that a player can consistently maintain the buffs they provide. As such, they could be reasonably considered as a pseudo-subscription model employed by BDO.

Outside of the 3 subscription items, there are other premium items offered in the pearl shop, some of which are permanent while others are consumables. These items can be mostly categorized into two types: cosmetic (e.g., character outfits, home furnitures, dyes, etc) and functional (e.g., camping tent, energy potions, pets, etc). Most of the cosmetic items can be listed on the central market just like the subscription items, but functional items are generally only purchasable through the pearl shop.

Table 1: Summary of Average Playtime and Spending in Upfront and Cash Shop Categories in Black Desert Online

Age Group	Gender	Avg PS Spending (USD)	Avg Package Spending (USD)	Avg Playtime (hrs)
13-22	Female	408.9	30.0	3136.2
13-22	Male	670.0	49.4	4234.6
23-32	Female	1453.8	80.0	8851.6
23-32	Male	1731.1	77.7	9489.5
33-42	Female	1230.0	118.0	8016.4
33-42	Male	1834.5	66.4	18198.3
43-52	Female	1750.0	160.0	1250.0
53-62	Female	100.0	0.0	1500.0
53-62	Male	278.5	30.0	8500.0
63+	Male	430.0	0.0	19990.0

2.3 Preliminary Analysis

Table 1 showcases a summary of the average spending of the respondents, categorized into age groups and gender, in USD. Already, we observe that there is a noticeably higher average for spending in the pearl shop compared to upfront package purchases. Note that this difference could be potentially misleading; The large majority of players do not spend much money in the pearl shop, and the exceedingly high average pearl shop spending is inflated by a select few players who have invested massive amounts of real world currency into the game. This issue is further elaborated upon in Section 5.

Due to having a variety of ways for consumers to spend real world currencies in BDO, a considerable variation of money spent on the game is expected for respondents of the survey. This is demonstrated in Figure ??, where we can see that the majority of respondents spend less than \$1000 USD in the pearl shop, but there are also quite a few respondents that fall outside of that range by a substantial amount. Note that it is unwise to simply categorize these responses as simple outliers and exclude them from the dataset, as we must consider the phenomenon of “whales.” This idea is also further explored in Section 5.

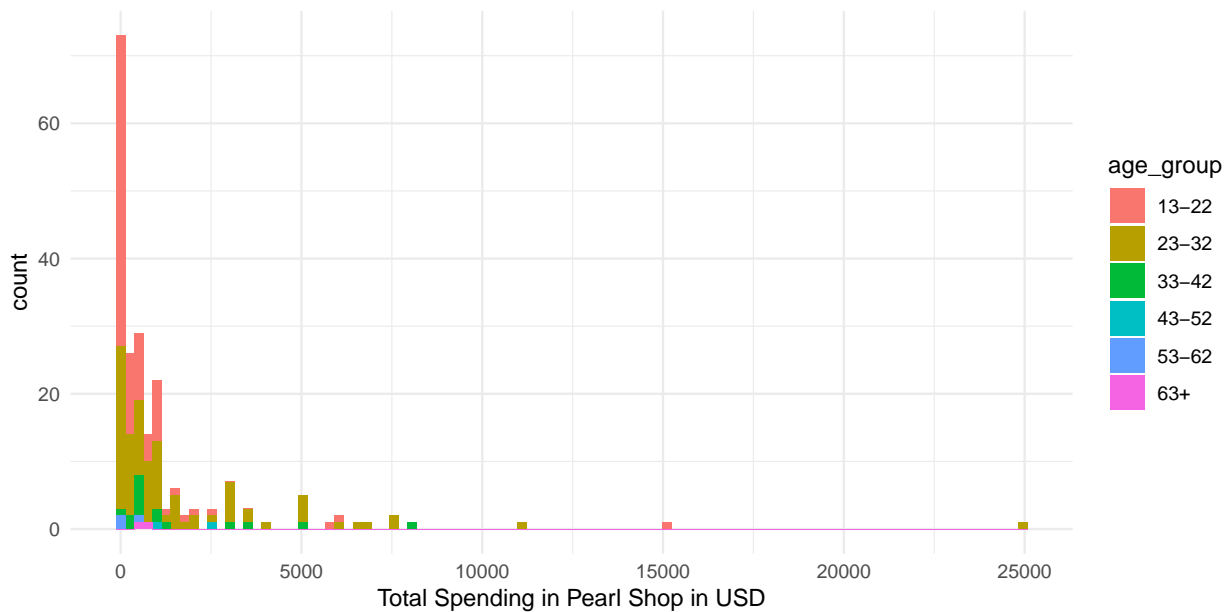


Figure 1: Spending in Pearl Shop in USD

2.3.1 Supply and Demand

An important aspect of the central market in BDO is the issue of supply and demand: Despite being able to list most cosmetic items onto the central market, there is generally always more demand for these cosmetic items than the supply. To combat the issue of price inflation, most items that can be listed on the central market in BDO—including value packs—have a price ceiling as dictated by the developers of the game. When that price ceiling is reached (i.e., the highest pre-order price placed for the item is the maximum price point), any further listings of the item will instead **randomly** choose a player with a max-priced pre-order placed and sell the item to the said player.

Because of the mechanic described above, an item pre-ordered at its price ceiling does not follow a first-come first-serve basis and the central market instead relies on randomness to decide which player to sell the item to. This means for items with drastically higher demand than supply (such as a value pack), players are never guaranteed to obtain the item, regardless of how long they have placed the pre-order for the said item already. This often leads to cases where a player could place a pre-order for an item for an extensive period of time (months or years) yet never successfully purchases the item from the central market.

Figure 1 showcases this issue: For respondents who claimed that having a VP active is crucial to their enjoyment of the game, only a few reported having consistent success purchasing VPs from the central market.

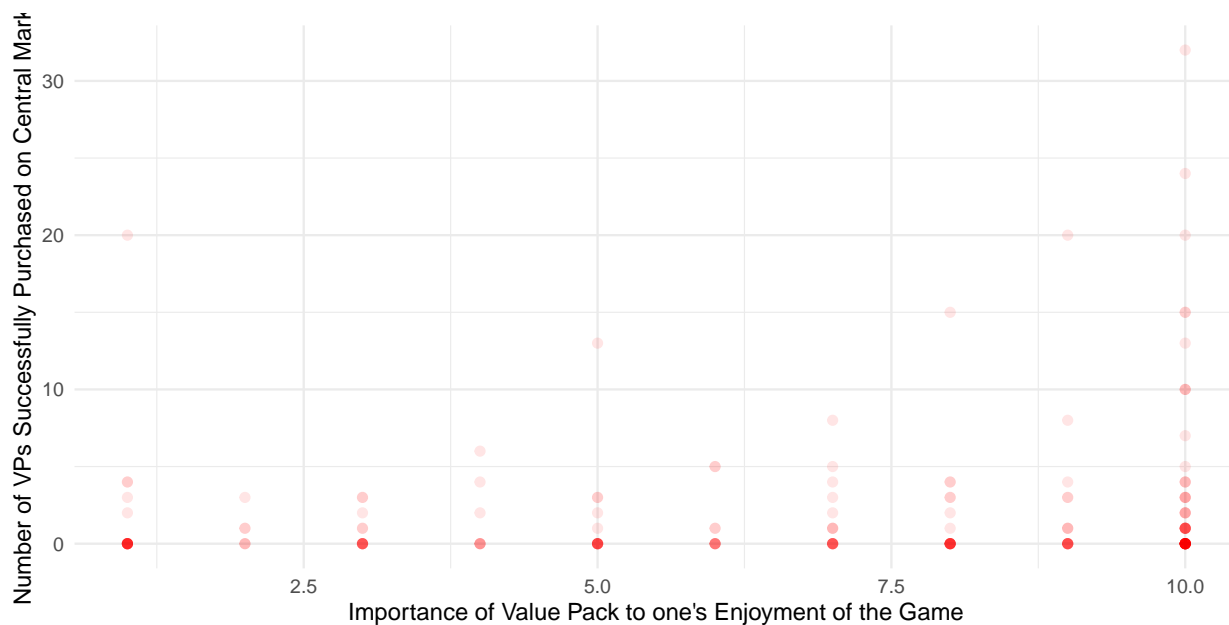


Figure 2: Rated Importance of Value Pack Versus Number of Value Packs Purchased on Central Market

3 Model

TODO

4 Results

TODO

5 Discussion

TODO

Appendix

References

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