The Effect of Pay-For-Advantage Monetization in Video Games on Consumer Behavior

Justin Schymanski

Kennesaw State University

Coles College of Business

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Abstract

The global video game market generated $263 billion in revenue in 2025 and is projected to continue to grow through 2030. This creates importance for understanding the effects of different monetization systems in video games on consumer behavior. This study investigates the effects of pay-for-advantage (PFA) monetization systems on consumer behavior, with specific attention to examining how the degree of pay-for-advantage in a video game's monetization system relates to player-count and user positive review percentage over time. Using data from 1000 video games on the Steam platform, each video game was assigned a PFA score based on the presence of cosmetic, quality-of-life, time-saver, item, and direct power microtransactions. This data set was refined to 702 valid entries after excluding all demo, beta test, test server, and playtest entries. The correlation between the 3 variables was calculated. This analysis found a consistent moderately strong negative correlation between PFA scores and user positive review percentage over time. This correlation strengthened as the time after release increased. However, the correlation between PFA score and player-count over time differed depending on the exclusion of video games with a PFA score of 0. When including all 702 video games, there was a weak negative correlation between the two variables. When excluding the video games with a PFA score of 0, there was a weak positive correlation between the two variables. These findings suggest that consumers perceive pay-for-advantage monetization systems negatively, with the negative sentiment becoming more common over time. However, aggressively monetized video games may retain or attract players differently than video games relying on an upfront one-time purchase. This study contributes a broad, quantitative foundation for future research on the effect of monetization systems on consumer behavior in the video game industry.

The Effect of Pay-For-Advantage Monetization in Video Games on Consumer Behavior

Global gaming revenue has grown to a figure of $263 Billion in 2025 alone. That figure is expected to grow to a staggering $281 Billion in 2026 and continue with an average estimated growth rate of 6% between 2026 and 2030 (Pagano et al., 2025). The sheer volume of revenue flowing through the video game market gives research surrounding it importance as understanding it becomes important to all stakeholders of the market. This importance provides motivation for this study. This study researches the effects of monetization systems in video games, differentiated by their level of pay-for-advantage, on consumer behavior. The primary question behind this study is, “How does the level of pay-for-advantage in monetization systems affect player-count and player perception of said video game?” This study tackles this question by compiling data for 1000 video games on the Steam platform. Each video game has been assigned a pay-for-advantage (PFA) score, which is compared against its corresponding player-count and positive user review percentage over time. This analysis provides the study a conclusion on how different monetization systems affect players’ willingness to play a video game and player perception of said video game.

Definition of Terms

For this study, it is important that every term is thoroughly explained given the emerging nature of this industry. These words are defined by their operational meaning such that the reader understands how each term is used in the study as opposed to a strict dictionary definition.

Term	Definition
Video game(s)	A software that displays an image on a video screen and allows an individual to affect what the software displays.
Monetization system	The combination of methods and processes that the developer and publisher use to get consumers to spend money.
Pay-for-advantage	An adjective that describes monetization methods which give consumers who pay an advantage over consumers who do not spend money.

Literature Review

Prior literature has focused on the monetization systems themselves, the effects on consumers from a psychological perspective, and the effects of specific monetization systems on consumer behavior. Vaudour and Heinze (2020) highlight the main monetization methods that video games as a service could include, such as season passes and loot boxes. Vaudour and Heinze (2020) find that "the business model for the industry has moved from 'one price, one service' games to one where games grow and evolve incrementally." Tomic (2018) concludes that "the bulk of the gaming community has a very negative attitude towards microtransactions." In their study, Lelonek-Kuleta et al. (2021) conducted an exhaustive study on online games of adult Poles and found that "the frequency of microtransactions made to win, as a component of the behavioural pattern, can be one of the predictors of problem involvement in [pay-for-advantage] games." Lelonek-Kuleta's study was especially insightful when diving into this study. However, a consistent issue stuck throughout the numerous studies on monetization systems in video games: there was no broad, exhaustive study on monetization systems in video games. All

available studies focused on the conceptual, ethical, and psychological perspectives of different monetization systems. The studies which analyzed the effects of monetization systems on consumer behavior focused on specific monetization methods, such as loot boxes. This study fills that gap by analyzing the effects of different monetization systems in video games on consumer behavior.

Methodology

Research Design

This study takes a quantitative approach to analyzing the effects of different monetization systems. This approach was chosen given the novelty of the research and the data available. The key method chosen was to find correlation between variables. This method provides a backbone for understanding how monetization systems affect consumer behavior which would be useful for future research in the industry surrounding consumer behavior.

This study analyzes video games on the Steam platform. The Steam platform is an online marketplace for buying, storing, and playing video games. The Steam platform was created by Valve corporation and is the largest distributor of video games on the personal-computer platform. The data in this study was collected through SteamDB, a website that consolidates data directly from the Steam platform. Steam allows anyone to collect data from the platform using API calls, with some restrictions for sensitive data. SteamDB is one of the many websites that consolidate data from the Steam platform. SteamDB was chosen for this study given its breadth of information and ability to export data into Excel. SteamDB is a trustworthy source of information because other websites and API calls made directly to the Steam platform match the data that SteamDB provides. SteamDB provides the name, developer, publisher, release date,

player-count over time, and user review percentage over time for each video game. This data is consolidated in an Excel file, which is exported into PSPP for data analysis and visualization purposes.

Analysis Procedures

This study relies on a novel variable: the pay-for-advantage (PFA) score. This variable measures the level of pay-for-advantage that a certain video game's monetization system possesses. This variable scales from 0 to 5 and its meaning for the respective video game's monetization system can be described using the table below:

Value	Meaning
0	This system has no microtransactions
1	This system has microtransactions, but is negligibly pay-for-advantage
2	This system is slightly pay-for-advantage
3	This system is moderately pay-for-advantage
4	This system is highly pay-for-advantage
5	This system is extremely pay-for-advantage

The PFA score is calculated by determining if the respective video game's monetization system contains cosmetic microtransactions, quality-of-life microtransactions, time-saver microtransactions, item microtransactions, and direct power microtransactions. If the respective system does have one or more of these monetization methods, then the associated category is labeled with a 1, otherwise it is labeled with a 0. These values are summed up to determine the PFA score of the respective video game's monetization system. This formula provides a basic

pay-for-advantage scale by which to categorize video game's monetization systems: the system is more pay-for-advantage the higher the score.

Through PSPP's built-in tools, the line of best fit and the coefficient correlation have been calculated for the correlation between each video game's PFA score and player-count over time. The same calculations were made between each video game's PFA score and user positive review percentage over time.

Limitations of the Methods Used

One limitation for this study is the exclusive analysis of the Steam platform. This platform accounts for a non-majority, albeit sizable, portion of all video game consumers. There is potential for the habits of console video game consumers to differ from PC video game consumers. However, data regarding consumer behavior on console video games is limited if not impossible to attain. As a result, the exclusive analysis of the Steam platform provides a good initial analysis by which future studies can be based on.

Another limitation for this study is the formula used in calculating the PFA score. Simply summing up the values may not be the correct method of calculating the PFA score for a video game's monetization system. However, calculating the optimal weights for each variable was out of scope for this study. Future studies have the opportunity to fine tune these weights to conclude a more accurate formula by which to calculate the PFA score.

Results

General Information

This study collected data for 1000 video games on the Steam platform. After cleaning the data, this study analyzes 702 video games. The number of video games in the data set dropped from 1000 to 702 due to video games that were demos, beta tests, experimental servers, or software applications. These entries were excluded from the analysis due to their abnormality compared to traditional video games. For example, consumers react differently to beta tests compared to fully released video games. This is due to numerous factors such as the fact that beta tests generally do not have purchasable microtransactions.

79.2% of the leftover data includes video games that have a PFA score of 0. This is expected as Steam, unlike other video game distributors, allows anyone to publish a video game to their platform. This creates an influx of video games made by small teams, or indie games, which are unlikely to have sophisticated microtransaction systems compared to video games made by larger teams, or AAA games. Therefore, it is common for indie games to have a simple upfront one-time payment monetization model. Removing video games with a PFA score of 0 leaves the data set with 146 video games. Although this number is a fraction of the 1000 video games this data set had started with, it is enough to provide statistically confident results.

Correlation Between PFA Score and Player-Count Over Time

This analysis found that, including all 702 video games, there was a weakly negative correlation between PFA score and player-count percentage change from the first day of a video game's release to the 30^{th} day after the video games release. This correlation had a coefficient value of -0.192 and was statistically significant at the 99.9% confidence level ($p < 0.000$) as

shown in Table 1. After excluding all video games with a PFA score of 0, the correlation between PFA score and play-count percentage change over the first 30 days after release flips to being slightly positively correlated as shown in Table 2. This correlation had a coefficient value of 0.243 at the 99.7% confidence level ($p < 0.003$). When looking at the player-count percentage change for increased time after release, the analysis found that the correlation moderately strengthened in the respective directions of each correlation calculation as shown in Tables 3 and 4.

Correlation Between PFA Score and User Positive Review Percentage Over Time

This analysis found that, including all 702 video games, there was a moderately strong negative correlation between PFA score and user positive review percentage over the first 30 days after a video game's release. This correlation had a coefficient value of -0.524 at the 99.9% confidence level ($p < 0.000$) Table 5. As the time after release increased, the correlation strengthened slightly as shown in Table 6. After excluding all video games with a PFA score of 0, the correlation between PFA score and user positive review percentage over the first 30 days after a video game's release kept a moderately strong negative correlation. The correlation had a coefficient value of -0.477 at the 99.9% confidence level ($p < 0.000$) as shown in Table 7. As the time after release increased, the correlation strengthened moderately as shown in Table 8.

Discussion

This study found that there was a weak negative correlation between the level of pay-for-advantage in a video game's monetization system and the corresponding video game's player-count change over time. However, there was a weak positive correlation between the same two variables once all video games with a PFA score of 0 were excluded. Since there is a high

confidence level in these calculations, there may be confounding variables that lead to this discrepancy. A potential explanation is that developers and publishers which use more aggressive monetization strategies can reinvest more money into their video game, attracting more customers over time. However, video games with no monetization strategy beyond the initial one-time purchase are vast in quantity and bring down the correlation due to the natural tendency for video games to lose players over time as new and better video games release.

This study also found that there was a moderately strong negative correlation between the level of pay-for-advantage in a video game's monetization system and the corresponding video game's positive review percentage over time. This correlation strengthened as the time after release was increased and remained negative after excluding all video games with a PFA score of 0.

Given the high confidence level for all these calculations, this study can conclude that consumers view video games more negatively as the more pay-for-advantage their monetization systems are. This negative perception becomes more prevalent among consumers as time after release of the corresponding video game increases. On the other hand, video games which employ a monetization system beyond the initial one-time purchase appear to gain more players over time the more aggressive their monetization strategy is. However, video games that do not employe a monetization system beyond the initial one-time purchase distort this conclusion. Once looking at both groups of video games, it is found that the more aggressive monetization strategies lead to stronger declines in player-count over time. This difference may be indicative of a rift in how different players perceive video games with aggressive monetization systems and video games with simple monetization systems. Further research on this topic will find it useful to delve further into this rift.

Works Cited

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Appendix

Table 1

Correlations			
		PFA Score	Player Count Change 30 Days
PFA Score	Pearson Correlation	1.000	-0.192
	Sig. (2-Tailed)		0.000
	N	702	702
Player Count Change 30 Days	Pearson Correlation	-0.192	1.000
	Sig. (2-Tailed)	0.000	
	N	702	702

Table 2

Correlations			
		PFA Score	Player Count Change 30 Days
PFA Score	Pearson Correlation	1.000	0.243
	Sig. (2-Tailed)		0.003
	N	146	146
Player Count Change 30 Days	Pearson Correlation	0.243	1.000
	Sig. (2-Tailed)	0.003	
	N	146	146

Table 3

Correlations			
		PFA Score	Player Count Change 730 Days
PFA Score	Pearson Correlation	1.000	-0.220
	Sig. (2-Tailed)		0.000
	N	702	702
Player Count Change 730 Days	Pearson Correlation	-0.220	1.000
	Sig. (2-Tailed)	0.000	
	N	702	702

Table 4

Correlations			
		PFA Score	Player Count Change 730 Days
PFA Score	Pearson Correlation	1.000	0.254
	Sig. (2-Tailed)		0.002
	N	146	146
Player Count Change 730 Days	Pearson Correlation	0.254	1.000
	Sig. (2-Tailed)	0.002	
	N	146	146

Table 5

Correlations			
		PFA Score	Positive Review Percent 30 Days
PFA Score	Pearson Correlation	1.000	-0.524
	Sig. (2-Tailed)		0.000
	N	702	702
Positive Review Percent 30 Days	Pearson Correlation	-0.524	1.000
	Sig. (2-Tailed)	0.000	
	N	702	702

Table 6

Correlations			
		PFA Score	Positive Review Percent 730 Days
PFA Score	Pearson Correlation	1.000	-0.597
	Sig. (2-Tailed)		0.000
	N	702	702
Positive Review Percent 730 Days	Pearson Correlation	-0.597	1.000
	Sig. (2-Tailed)	0.000	
	N	702	702

Table 7

Correlations			
		PFA Score	Positive Review Percent 30 Days
PFA Score	Pearson Correlation	1.000	-0.477
	Sig. (2-Tailed)		0.000
	N	146	146
Positive Review Percent 30 Days	Pearson Correlation	-0.477	1.000
	Sig. (2-Tailed)	0.000	
	N	146	146

Table 8

Correlations			
		PFA Score	Positive Review Percent 730 Days
PFA Score	Pearson Correlation	1.000	-0.608
	Sig. (2-Tailed)		0.000
	N	146	146
Positive Review Percent 730 Days	Pearson Correlation	-0.608	1.000
	Sig. (2-Tailed)	0.000	
	N	146	146