



Spring 4-23-2010

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Recommended Citation

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Consumer Perceptions & Video Game Sales: A Meeting of the Minds

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Illinois Wesleyan University, 2010

Abstract: This paper examines the determinants of video game software sales. What literature currently exists points to an array of factors, ranging from which hardware a title is released on to the game's genre. This paper incorporates several of these variables, but adds in a new one: quality. Literature up to this point has not addressed the effect that a game's quality has on its eventual sales, yet one would logically expect this to have a strong positive impact. To account for quality, the model incorporates the average review score a game receives from professional critics. The results indicate that indeed, quality does play a major role in consumers' purchase decisions.

I. Introduction

The video game industry is truly a success against all odds. Though the medium has grown in popularity since the late 1970s, many consumers spent the next two decades decrying it as a fad (Reimer, 2005). By the 1990s, violent content in games made the industry the target of both concerned parents and the government (Walsh, 2007), and it seemed that the industry was doomed to collapse under the weight of it all. Nevertheless, recent years have seen the video game industry transform into a multi-billion dollar juggernaut that puts up sales figures that rival even the movie and music industries (Connors, 2009). With its newfound mainstream appeal, the video game marketplace has become increasingly competitive, with software publishers churning out titles designed to appeal to every taste and niche imaginable.

But as prosperous as the industry has been, many companies have found it tough to survive the last few years. Video games are driven by an ever-changing technological landscape, and development costs for new games have skyrocketed since 2005 when the most recent generation of hardware was released. As a result, commercial failure is catastrophic for most companies and firms are now forced to rethink the way they produce and market games. Because companies within the video game industry live and die by these sales figures (now more than ever), this paper's goal is to address the determinants of video game sales in order

to provide a greater understanding of the market's inner workings and discover the recipe for success in this newly-burgeoning industry.

II. Literature & Theory

In determining video game sales, consumer demand is unquestionably the most important issue that needs to be addressed. The factors that go into the demand side of the video game sales equation are both complicated and numerous, consisting of a series of different demand curve shifters. The supply side, by contrast, makes little difference – should supply run out, the publisher can simply print more copies and have them in stores within a day or two, and supply shifts do not need to be taken into consideration. Furthermore, the production cost for a unit of any given game is only a few dollars, making the supply side even more negligible (Costikyan, 1996). As such, this research will treat the supply as perfectly elastic and focus exclusively on the demand for video games.

Determining the demand for video games is difficult, and one of the primary reasons is because the video game market is actually a two-sided market composed of both hardware and software. Hardware refers to the actual video game systems like the Nintendo Wii or the Sony Playstation 3, and software – the actual games – can only be played on the system for which they are designed. Because you can only play a game designed for the Wii on the Wii

hardware, for example, software sales are limited by the install base (the number of units sold to consumers) for the hardware on which a game is released. As a result, publishers should logically want to release their games on the system with the largest install base, since that provides them with the greatest sales possibilities.

Clements & Ohashi (2005) take this idea a step further and suggest that there are also network effects present in the market for video games. The way it works is relatively simple: if you have a platform that has a large number of games that consumers want to play, more people will buy that platform instead of the other available alternatives. As the install base – the number of hardware units sold to consumers – gets larger, software publishers want to release more and more titles on that platform since the potential for sales has been increased thanks to the larger install base. This is essentially an application of the bandwagon effect (Gavious & Mizrahi, 2001) in that the popularity of a system is actually what causes people in the market for a new console to support that platform. It creates a cycle where systems with large install bases are the most lucrative for both the consumers and the producers of video game software, so this also hints that the platform on which a game is released can create a major shift in the demand curve for a newly-released title (Clements & Ohashi, 2005).

Looking forward, it is highly likely that the innate differences between platforms will strengthen the effect that platform has on sales. In the past, video game systems were almost identical – they utilized similar hardware architectures, had similar controllers, and had similar types of games. That is no longer the case with the current generation of hardware. The Playstation 3 and Xbox 360 use high-level hardware and very standard controllers while Nintendo's Wii uses dated hardware but innovates with its unique motion controller. These differences look to become more pronounced in future years with Microsoft and Sony's upcoming controller technologies, and as they do, it seems reasonable to expect that game systems will no longer be highly substitutable with one another. Thus, consumers' preferences for certain consoles should have an even more sizeable impact on sales in the coming years than they do already.

While it has not received as much attention in formal literature as the install base issue, one of the most significant considerations in releasing a new piece of software is platform exclusivity. In simple terms, an "exclusive" game is one that is released on only a single platform. By contrast, a "multiplatform" title is one that is released on two or more systems. Historically, companies have released the majority of software on a single platform rather than multiple ones, because focusing on one system allows them to tailor the game to that

hardware's advantages and the developers are not forced to deal with the significantly different hardware architectures with which other systems are equipped (Corts & Lederman, 2009). This leads to quicker turnaround times and often a more polished final product. Thanks to the skyrocketing development costs necessitated by current video game hardware, however, more and more developers are using a multiplatform strategy with their games in order to wring every last drop of income out of a new release.

The multiplatform approach does not guarantee improved profits, however. While it would logically seem that making a game available to a larger base of consumers would automatically increase sales, there is little literature available to back up this notion. One must also consider the huge increase in resource needs and labor involved in making a game multiplatform. Furthermore, games that are exclusive to a single system tend to see an amplified marketing push from the hardware manufacturer, as hardware companies can use these increasingly rare exclusive titles to drive sales of their platform (Corts & Lederman, 2009). Because of the support that hardware manufacturers tend to put behind exclusive games, one would expect exclusivity to create some sort of positive shift in the demand curve for a given video game.

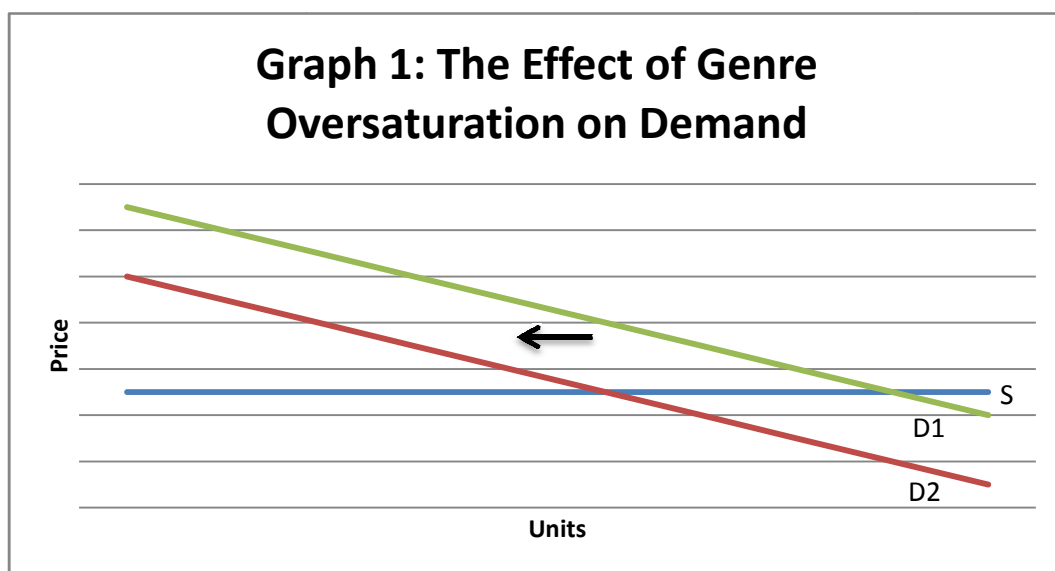
Up to this point, this study's focus has been anchored to hardware's effect on software sales. Of course, there are at least as many factors about the software itself that contribute to

demand for a video game. One of the most important elements is a very simple one: genre.

The reason genre is so vital to consider is because every consumer has different tastes for games. Some want action games, others want adventure, and yet others want to try their hand at obscurities like dating simulations. Furthermore, there is evidence supporting the importance of genre in monthly video game sales charts. Genres like first person shooters and music games have sold particularly well over the last few years, while others, like role playing games, have lagged behind (VGChartz, 2010). Unlike competing forms of entertainment like movies, tastes in video games are constantly changing which makes it particularly difficult to measure how a game being part of a given genre will affect sales.

Additionally, there is the problem of certain genres becoming oversaturated. Consumers crave variety in market offerings, especially in the video game market – rarely do they only play titles from a single genre. Offering a unique game in an underrepresented genre can result in enormous sales, as demonstrated by Guitar Hero galvanizing the then-ailing music genre in 2005. Yet, even this genre hasn't been immune to oversaturation. After the original Guitar Hero game, consumers became interested in this sparsely populated genre which contributed to the 2.17 million units that Guitar Hero II's 2007 Xbox 360 release saw over its lifetime (VGChartz, 2010). However, the success of the genre prompted a flood of imitation music

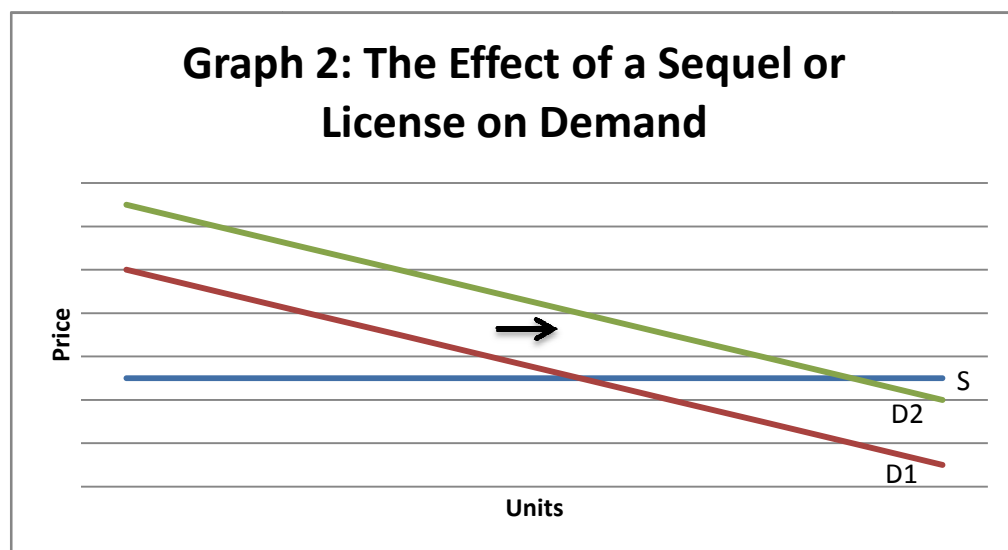
games that eventually killed consumers' interest in the genre. The latest Guitar Hero, 2009's Guitar Hero 5, sold 470,000 units on the Xbox 360 – a far cry from the success of its predecessors (VGChartz, 2010). The oversaturation problem becomes even more pronounced when you consider that games in certain genres, like first person shooters, are very highly substitutable with each other. When a publisher releases a new first person shooter, there is a strong chance that it will be buried in the avalanche of substitutes out there. Between that and ever-changing consumer tastes, publishers' decisions over what kind of game to produce are incredibly difficult to make. Overall, genre should potentially cause two shifts in consumer demand for a game. The first is an ambiguous shift that occurs due to consumer preferences for one genre over another and the second is a leftward shift of the curve if a game is in an overcrowded genre, which is shown in Graph 1.



As the industry continues to evolve, two trends that have become increasingly pronounced over the last several years are sequels and games based on licenses. The reason for both of these trends is the increased cost of game production (Usher, 2007). Publishers are less and less willing to take risks since the numerous commercial failures in recent history have made it all too clear that it is too expensive for the majority of companies to weather the cost of an unsuccessful game. Because companies need to release games that are guaranteed sellers, they turn to sequels to existing game franchises with unprecedented frequency in today's market since it is easier to predict the commercial success of a game when relevant sales figures exist. The downside for the consumer is a dearth of innovation which could possibly lead to *decreased* sales should a publisher go back to the well one too many times, but this so-called "sequelitis" is of massive importance in sustaining the industry right now.

Licensed games, which are typically based on movies and comics, have also populated more and more of the industry's release calendar. These are titles that have established fan-bases who are likely to purchase a product merely because it is based on a franchise they like. The decision to release more and more games based on licenses like movies or comic books is in the same vein as sequels – these games are near-guaranteed successes that can help keep a company stable and allow them to take risks in the future once production costs are not so

unmanageable. This all hinges on the Blockbuster Theory, which is most commonly applied to the movie industry (Vany A., 2004). It suggests that software publishers want to pour a large amount of resources into a single game in hopes of making a huge profit, and making lower budget games that are based on licenses is a means to obtain those resources. Thus, if a game is part of an existing franchise, one should expect to see a rightward shift in a game's demand curve as shown in Graph 2.



A particularly important outcome of gaming going mainstream is that marketers now have a far broader audience to appeal to in order to maximize the potential sales for any given game. The sheer quantity of advertising that goes into a game can make or break its eventual sales in some cases, and the matter has become so important that some companies like Electronic Arts (the biggest software publisher in the industry) will actually spend as much as 60-75% of a

game's budget on marketing alone (Takahashi, 2010). Research by Burrato & Viscolani (2002) illuminates that there is more to advertising than simply funding random promotions. The timing of advertising is important – companies need to promote a new title well in advance of release, but not so far in advance that people forget about a game by the time it is released. Furthermore, the *type* of advertising utilized matters. Magazine ads are easy to flip past without a second thought, but TV ads and internet ads tend to occupy a greater spot in consumers' minds (Burrato & Viscolani, 2002). Given that, it would seem that the more expensive the advertising, the more useful it should be in persuading consumers to shell out for a new game. It should come as little surprise, then, that increases in advertising expenditure are expected to cause a rightward shift of the demand curve for a game.

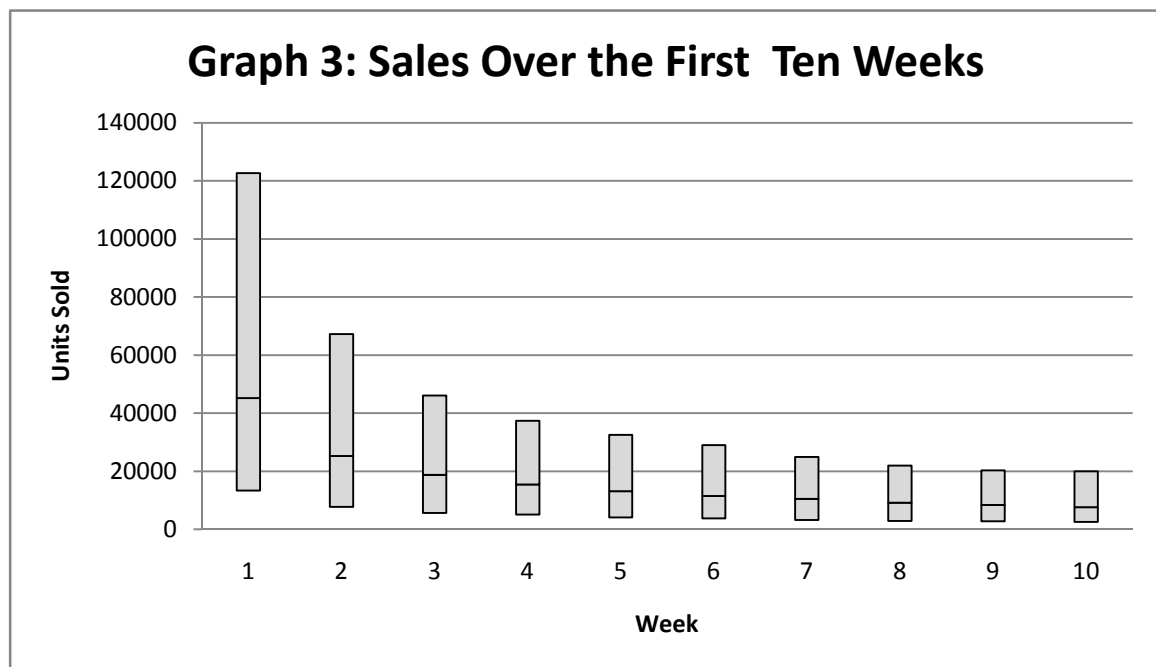
Another consideration for game publishers is exactly when they should release a new game. Traditionally, the industry has seen sparse release schedules during the summer months (quarters 2 and 3 of the year), and then a glut of new releases in quarter 4, just in time for the Christmas shopping season (Wilson, 2009). Members of the industry have pointed to slower sales in the summer months of past years, but many question whether those sales trends are still present in today's market (Wilson, 2009). Either way, it seems likely that a game's sales will be impacted to some extent by the time of year in which the game is released.

It should be quite clear by now that sales in the video game industry entail several considerations. The key factor to be addressed in this paper, though, is something that has gone neglected by formal literature up to this point: quality. As the video game industry becomes more and more mainstream, there are an increasing number of people who are understandably uninformed regarding what constitutes a good game versus a bad one. Many of the consumers who have just recently entered the market have not had much experience with the medium, and thus, do not know any better than to purchase a title based on the cover alone, ignoring the possibility of the actual game being quite poor. The strongest measure of quality in this industry is expert reviews, and the question that this research poses is whether or not these expert reviews influence consumers' buying habits. If this is not the case, then perhaps video game developers could better utilize their resources by investing in factors other than quality.

III. Data

The disparate factors that contribute to video game sales can be best accounted for by a simple demand model where video game sales are the dependent variable. The dependent variable will be sales over the first ten weeks of a game's release. The reason for the ten week time horizon is because those initial weeks are by far the most critical. As Graph 3

demonstrates using data from the sample, the first week of a game typically sees strong sales, followed by an immediate drop. The line in the middle of the boxes (which represents median) steadily falls, and the quartiles surrounding it shrink. By the ten week mark, sales have dropped considerably, and retailers are prompted to remove the game from shelves to make space for newer fare. While yes, there are long-tailed games that continue to sell well for years, the vast majority of titles see their sales dwindle to almost nothing after a couple of months. As a result, publishers are typically most concerned with those first several weeks.



The data set includes information on 200 randomly selected titles released between 2007 and 2009. The time horizon is limited to those three years because the rapid rate of change in technology and consumer tastes makes older data less useful in analyzing current trends.

It is also worth noting that these data only cover retail sales, so digitally-distributed games (which make up a very small portion of game sales in a given year) are not accounted for. All of the sales numbers come from VGChartz (VGChartz, 2010).

The variables to be used in the regression along with their expected signs are detailed in

Table I.

Table I: Variables & Expected Signs		
Variable	Description	Expected Sign
Sales (Dependent)	Number of units sold	N/A
Platform (Playstation 2 is the omitted platform)		
Playstation 3	Game was released for Playstation 3	+/-
Xbox 360	Game was released for Xbox 360	+/-
Wii	Game was released for Wii	+/-
DS	Game was released for DS	+/-
PSP	Game was released for PSP	+/-
Genre ("Other" is the omitted genre)		
Action/Adventure	Game is in the action or adventure genres	+/-
First Person Shooter	Game is in the first person shooter genre	+/-
Role Playing Game	Game is in the role playing game genre	+/-
Music	Game is in the music game genre	+/-
Sports	Game is in the sports genre	+/-
Exclusive	Game was released on only one platform	+/-
Sequel	Game is a sequel in an existing game franchise	+
License	Game is based on a non-video game property	+
Quarter (Quarter 1 is the omitted quarter)		
Quarter 2	Released between Apr. 1 st and Jun. 31 st	+/-
Quarter 3	Released between Jul. 1 st and Sep. 31 st	+/-
Quarter 4	Released between Oct. 1 st and Dec. 31 st	+
Review	Aggregate Review Score (1-100)	+

The effect that platforms and platform exclusivity have on sales is measured through dummy variables. This paper examines only the major console and portable systems and

therefore excludes the PC and iPhone. The primary reason behind this is that digitally-distributed games are much more prominent on these platforms, and sales data on digitally-distributed games cannot be tracked. The PC is also a platform that is far more prone to piracy than the others, which is another consideration that makes it prohibitively difficult to analyze sales. Admittedly, a dummy variable is an imperfect measure that does not fully account for all of the complexities that hardware introduces, but it should be adequate for getting a basic idea of hardware's effect on software sales. Similarly, genre, exclusivity, sequel and whether a game is based on a license can also be observed through dummy variables.

Unfortunately, advertising could not be included in the regression, as these data are not available and there is no reasonable proxy that would allow the effect of advertising to be captured accurately. It is also worth noting that price has not been included in the model because it is typically fixed at a certain point depending on which system the game is, making it of little use in determining demand.

The final independent variable, aggregate review score, is the measure of quality that will be used in this study. There are a number of sites that average the professional review scores that a game has received on a scale of 1-100. The aggregate scores used in this project come from MetaCritic (Metacritic, 2010). The rest of the variables will also be based on information

from Metacritic, as there is no database that contains the necessary array of information on the remainder of the factors.

IV. Empirical Model

$$\begin{aligned} \text{SALES} = & \beta_0 + \beta_1(\text{Review}) + \beta_2(\text{Playstation 3}) + \beta_3(\text{Playstation 2}) + \beta_4(\text{Xbox 360}) + \beta_5(\text{Wii}) + \beta_6(\text{DS}) \\ & + \beta_7(\text{PSP}) + \beta_8(\text{Exclusive}) + \beta_9(\text{Sequel}) + \beta_{10}(\text{License}) + \beta_{11}(\text{Action/Adventure}) + \beta_{12}(\text{First Person} \\ & \text{Shooter}) + \beta_{13}(\text{Role Playing Game}) + \beta_{14}(\text{Music}) + \beta_{15}(\text{Sports}) + \beta_{16}(\text{Other}) + \beta_{17}(\text{Quarter 1}) + \\ & \beta_{18}(\text{Quarter 2}) + \beta_{19}(\text{Quarter 3}) + \beta_{20}(\text{Quarter 4}) \end{aligned}$$

The first equation used is a simple linear demand model. The dependent variable, sales, is the number of units actually sold over the initial ten weeks of a game's release. Review score is the only numerical independent variable used, while the rest of the variables are dummies. If a game falls into any of these dummy categories, the expected number of units sold will increase by the corresponding coefficient. Because one of the platform variables needs to be omitted, Playstation 2 games are removed from the equation as this is the oldest, least-relevant system at this point. One of the genre variables also needs to be taken out, so the "other" genre is excised. Finally, one of the year's quarters must be cut, so quarter 1 is removed. The rationale behind excluding quarter 1 is because the "Christmas effect" that should appear in

quarter 4 is important, as is seeing how games tend to sell in the summer months when most publishers release very few new games.

V. Results

Descriptive statistics for the numerical variables, Sales and Review, are listed in Table II.

Table II: Descriptive Statistics				
Variable	Minimum	Maximum	Mean	St. Dev.
Sales	2,646	5,083,122	299,505.924	595,502.767
Review	33	98	72.869	12.997
Playstation 2	0	1	.040	.196
Playstation 3	0	1	.221	.416
Xbox 360	0	1	.261	.440
Wii	0	1	.196	.397
DS	0	1	.201	.401
PSP	0	1	.080	.272
Action/Adventure	0	1	.417	.494
First Person Shooter	0	1	.095	.294
Role Playing Game	0	1	.105	.308
Music	0	1	.035	.184
Sports	0	1	.145	.353
Other	0	1	.110	.314
Exclusive	0	1	.492	.501
Sequel	0	1	.643	.480
License	0	1	.221	.416
Quarter 1	0	1	.236	.425
Quarter 2	0	1	.251	.434
Quarter 3	0	1	.236	.425
Quarter 4	0	1	.276	.448

Table III provides descriptive statistics for sales by quarter.

Table III: Quarterly Descriptive Sales Statistics				
Quarter	Minimum	Maximum	Mean	St. Dev.
Quarter 1	3,927	1,033,348	173,458.0	238,762.1
Quarter 2	2,646	3,707,624	383,310.4	723,691.8
Quarter 3	12,698	2,637,048	213,214.1	391,561.5
Quarter 4	8,200	5,083,122	399,646.7	780,849.2

Table IV presents the results of the regression.

Table IV: Regression Results			
Variable	Coefficient	Standard Error	Sig.
(Constant)	-1,217,199.972	320,259.000	.000
Playstation 3	49,969.102	229,862.388	.828
Xbox 360	227,637.680	221,877.976	.306
Wii	277,130.090	228,428.950	.227
DS	15,773.622	224,054,311	.944
PSP	20,075.750	249,388.925	.936
Action/Adventure	151,978.459	114,723.672	.187
First Person Shooter	169,328.536	177,808.801	.342
Role Playing Game	50,423.916	157,755.372	.750
Music	-3,623.734	243,242.860	.988
Sports	42,617.596	147,392.684	.773
Exclusive	117,374.557	101,550.240	.249
Sequel	108,060.739	89,427.358	.228
License	-37,313.042	113,200.396	.226
Quarter 2	122,866.716	120,818.462	.310
Quarter 3	-3,895.558	118,924.306	.974
Quarter 4	111,485.323	118,576.685	.348
Review	15,318.892	3,439.641	.000
N	200		
R ²	.197		
Adjusted R ²	.122		
Sig.	.001		

Unfortunately, very few of the coefficients are significant. This is surprising, but it would seem that using a bigger sample might alleviate this issue for certain variables like exclusive and

sequel. In most cases, the signs attached to the coefficients are as expected, with the exception of licensed games, which has a negative coefficient. One would logically expect games based on popular franchises to see a boost in sales. However, one facet of licensed games is that they are typically released on all platforms. Perhaps the reason that these games continue to be produced is because they sell just enough units on each of these platforms to make producing them profitable. Overall, the regression had an R^2 of .197 and an adjusted R^2 , suggesting that this model is a moderately capable predictor of sales.

In an attempt to find more significant results, an F-test was used to determine whether platform, genre, or quarter were significant as groups. The results of the test are listed in Table V.

Table V: Wald Test		
Variable Group	F-Stat	Significant at .10 Level?
Platform	.198537	No
Genre	-.24386	No
Quarter	.175608	No

At the .10 level, none of the groups are even close to being significant. It is somewhat unexpected that even as a group, platform does not impact sales significantly. What this could possibly mean is that many consumers own multiple platforms, and purchase the games that they do for reasons independent of system. This may also mean that as of right now, game

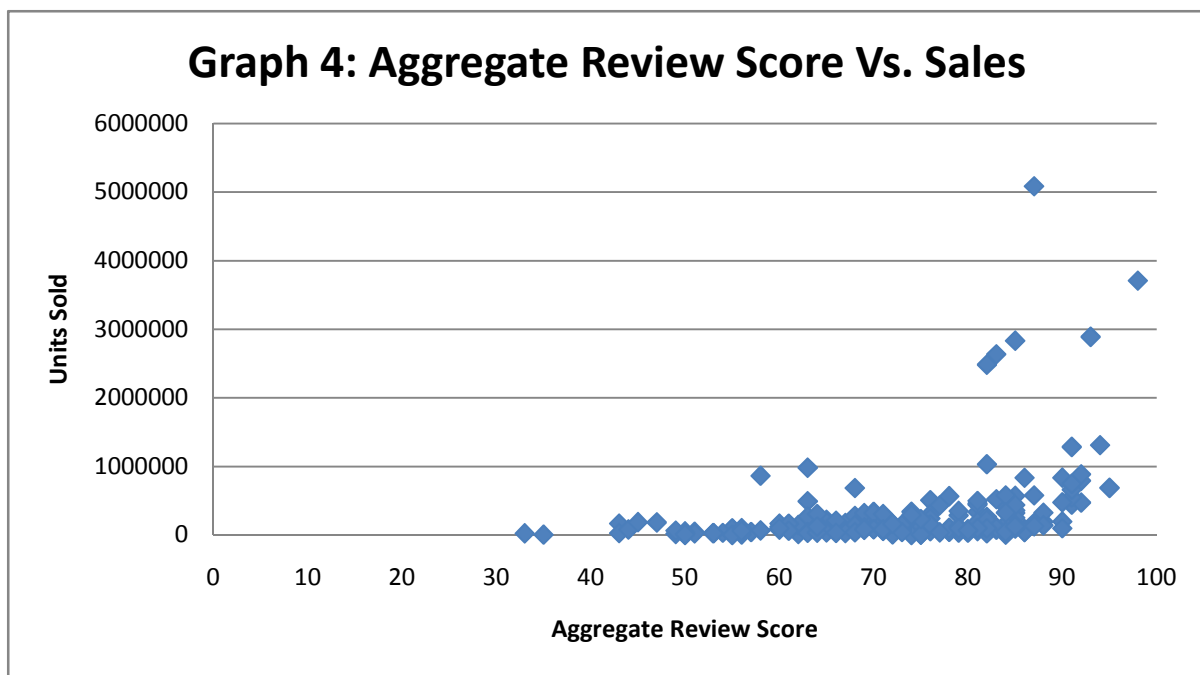
systems are still homogenous enough that consumers need not make purchase decisions based on hardware-related reasons.

The genre group does not have a significant impact on sales, either. One possible explanation is that consumer tastes are varied enough that one genre as a whole does not sell particularly better than the others. The success of blockbuster first person shooters like Call of Duty: Modern Warfare 2 and Halo 3: ODST might *suggest* that first person shooters perform better than competing genres, but it is possible that other releases in the genre lag behind enough in sales to effectively even out the sales performance differences between game types.

Release date's failure to impact sales significantly is somewhat unexpected. One would certainly anticipate a significant result for at least quarter 4 releases, as games released during that period should intuitively see sales increases from the holiday shopping season. A possible explanation is that quarter 4 plays host to a few particularly large releases that sell several million units over the first ten weeks as opposed to the 300,000 units the average game sells. Because so many people have bought these big-name games, they ignore the smaller releases and this causes sales for other software released during quarter 4 to suffer. Meanwhile, other parts of the year see far fewer big releases, so smaller-name titles sell better. Ultimately, the sales figures for the quarters may end up averaging out due to the way releases are currently

spread across the calendar, which may explain why release date did not return significant results.

In a further attempt to find significant results, a check for outliers was conducted. Based on the information contained in Graph 4, there is reason to suspect that the results may have been adversely affected by the presence of outliers.



The scatter reveals that there are some clear deviations from the pattern laid out by the majority of the data. Because the results might be adversely affected by these data points, the six points that saw sales dramatically above the rest of the data were removed from the sample. Even running the regression in the absence of these data, however, the results

remained unchanged. Coefficient signs remain the same and no variables other than review are significant.

Fortunately, the one variable that has significant results is review. The review variable has a very strong sig. value of .000 and a relatively large coefficient of 15,318.892. This indicates that an increase in review score by one point (out of 100) will increase sales on average by approximately 15,319 units. When interpreting this result, however, it is important to note that the average review score is 72.86935 out of 100, with most games' review scores clustering around that area. If a game scores far lower than that, chances are that sales will not be as highly affected by a one point increase in review score.

Because of the nature of video game sales where games below a certain review score range tend to sell far worse than better titles, a non-linear regression is also estimated. The review variable is squared and then incorporated into the regression. The relevant results are listed in Table VI.

Table VI: Non-Linear Regression Results			
Variable	Coefficient	Standard Error	Sig.
Review (Unsquared)	-92,657.793	27,562.377	.001
Review (Squared)	785.268	197.958	.000
N	200		
R ²	.260		
Adjusted R ²	.186		
Sig.	.000		

Because of the very high significance of the squared review variable, it appears that there is indeed a non-linear relationship between review and sales. In this model, the R^2 and adjusted R^2 increased to .260 and .186, respectively, indicating that the data are better explained. The following model tests the impact of a non-linear relationship, where R refers to review score:

$$\text{Sales} = \beta_0 + \beta_1(R) + \beta_2(R)^2$$

Solving for the minimum of R yields a result of $R = 58.998$. Since most review scores are above 60, this means that there is a positive and increasing relationship between aggregate review score and video game sales. The higher the review score received, the greater the effect on sales. Table VII provides some examples of this:

Table VII: Review Curve Slopes		
Review Type	Review Score	Slope
Poor Review	60.000	1,574.367
Average Review	72.869	21,768.070
Good Review	98.000	61,254.740

What these results imply is that sales increase at an increasing rate as the review score for a game improves. The average game's demand should have a slope of 21,768.07 with respect to review score. This is a mere third of what a very highly rated game will have. Thus, the importance of creating a standout game that scores far above the average seems to be even more critical than it was under the linear demand model.

VI. Conclusion

The most important finding to this paper is that indeed, quality is still a major driver of video game sales. The results suggest that consumers still try to spend their money rationally by purchasing the titles that critics consider qualitatively superior. However, it is important to note that this does not necessarily mean that people read reviews. While there is certainly a chance that many consumers do, it is also possible that people buy games based on positive word of mouth from people they know or some other source. In either case, the effect that quality has on a video game's eventual sales is a dramatic one, which suggests that for developers, the key to a commercial success is not to invest in a popular license or developing a middling game in a popular genre – it is to make the best product possible.

One of the more surprising outcomes from the regression was that the platform on which a game is released does not appear to have a significant effect on sales. Theory suggested that the opposite would be true since putting a game on a popular system should increase sales, yet the results indicate that platform cannot drive sales on its own. This could change in the future if video game systems begin to differentiate themselves, but this is not yet the case.

The lack of significance for genre suggests that merely developing a game in a popular genre is not enough to generate sales. While it is true that some releases in the first person shooter

genre, for example, have enjoyed massive success, there is no guarantee that making a certain type of game will generate consumer interest. A glance at the titles that have been most successful in this genre reveals that the highest sales coincide with the highest aggregate review score, reemphasizing the importance of product quality in selling games. This does not necessarily mean that genre is a complete non-factor, however. As Guitar Hero demonstrated, releasing a high-quality game in the right genre can generate massive success for the producer.

Despite the increased emphasis on license-based games and sequels over the past few years, these results were also insignificant. A possible explanation is that license-based games do not sell huge numbers, but these games are cheap enough to produce that the number of units sold is adequate for the producer to secure a profit. As for sequels, companies may focus on sequels simply because there is a lower risk involved and a better chance of at least breaking even – not because they expect every sequel to be met with massive sales.

If quality is the most important factor in determining sales, this raises the question of why companies do not simply produce great games all the time. One possible explanation is cost. Not every company has the financial resources to make a stellar game that dazzles audiences, and making a great game takes a considerable amount of development time. In the future then, it might be worthwhile to weigh the amount of money a game makes against the

production cost of that game – to analyze actual profits rather than mere sales. Perhaps another method would be to look at the amount of development time a game receives and examine the effect that it has on the game's sales. Unfortunately, this sort of data is not current available, so it will not be possible to address this in the immediate future. Additionally, a future study would ideally incorporate advertising into the equation, as this was another component of video game sales that was impossible to examine due to data limitations. Finally, future research would likely benefit from expanding the data set further so that hopefully, it will possible to obtain more significant results.

Clearly, there is a lot left to be learned about the video game industry and economics involved in software sales, but what this study has revealed is that quality is a necessity for any software company with a desire to succeed.

Works Cited

Buratto, A., & Viscolani, B. (2002). New product introduction: Goodwill, time and advertising cost. *Mathematical Methods of Operations Research*, 55(1), 55-68. Retrieved from

<http://www.springerlink.com/link.asp?id=102510>

Clements, M. T., & Ohashi, H. (2005). Indirect network effects and the product cycle: Video games in the U.S., 1994-2002. *Journal of Industrial Economics*, 53(4), 515-542. Retrieved from

<http://www.blackwellpublishing.com/journal.asp?ref=0022-1821>

Connors, Devin. "Video Games Outsell Movies in 2008." *Tom's Guide: Your High-Tech Source of Information*. 26 Jan. 2009. Web. 07 Feb. 2010. <<http://www.tomsguide.com/us/Games-DVD-Blu-ray-Economy,news-3364.html>>.

Corts, K. S., & Lederman, M. (2009). Software exclusivity and the scope of indirect network effects in the U.S. home video game market. *International Journal of Industrial Organization*, 27(2), 121-136. doi:10.1016/j.ijindorg.2008.08.002

Costikyan, Greg. "Why Games Cost What They Do." 1996. Web. 26 Mar. 2010.

Cox, J. (2006). Is there a first-mover advantage in the market for Japanese video game systems?

Asia Pacific Journal of Economics and Business, 10(1), 18-33. Retrieved from

<http://www.cbs.curtin.edu.au/index.cfm?objectId=507F057D-D0CA-3156-D33346CCE241C4F7>

Evans, D. S., Hagiu, A., & Schmalensee, R. (2006). *Invisible engines: How software platforms*

drive innovation and transform industries. Cambridge and London: MIT Press. Retrieved from

EconLit

Gavious, Arie, and Shlomo Mizrahi. "A continuous time model of the bandwagon effect in collective

action." *Social Choice & Welfare* 18.1 (2001): 91. *Academic Search Premier*. EBSCO. Web. 15 Apr. 2010.

Gurtler, O. (2005). On strategic enabling of product piracy in the market for video games. (URL)

Retrieved from EconLit database.

Harada, N. (2007). Video game demand in Japan: A household data analysis. *Applied Economics*,

39(13-15), 1705-1710. Retrieved from

<http://www.tandf.co.uk/journals/routledge/00036846.html>

MetaCritic. Web. 11 Oct. 2009. <<http://www.metacritic.com>>.

Nair, H. (2007). Intertemporal price discrimination with forward-looking consumers: Application to the US market for console video-games. *Quantitative Marketing and Economics*, 5(3), 239-292. doi:10.1007/s11129-007-9026-4

Reimer, Jeremy. "The Evolution of Gaming: Computers, Consoles, and Arcade." *Ars Technica*. 10 Oct. 2005. Web. 15 Apr. 2010. <<http://arstechnica.com/old/content/2005/10/gaming-evolution.ars>>.

Rysman, M. (2009). The economics of two-sided markets. *Journal of Economic Perspectives*, 23(3), 125-143. doi:10.1257/jep.23.3.125

Takahashi, Dean. "EA's Chief Creative Officer Describes Game Industry's Re-engineering." *Gamebeat*. 26 Aug. 2009. Web. 15 Oct. 2009.

Usher, William. "Xbox 360 And PS3 Feud May Be Decided With Sequels." *Cinema Blend - Reviews, News, and Opinions on Entertainment*. 14 May 2007. Web. 12 Feb. 2010. <<http://www.cinemablend.com/games/Xbox-360-And-PS3-Feud-May-Be-Decided-With-Sequels-4220.html>>.

Vany, A. (2004). Big budgets, big openings and legs: Analysis of the blockbuster strategy. In A. De Vany (Ed.), *Hollywood economics: How extreme uncertainty shapes the film industry* (pp.

122-138). Contemporary Political Economy Series. London and New York: Routledge. Retrieved from EconLit

VGChartz. Web. 11 Oct. 2009. <<http://www.vgchartz.com>>.

Walsh, David. [Http://www.soc.iastate.edu/sapp/videogames2.pdf](http://www.soc.iastate.edu/sapp/videogames2.pdf). *Video Game Violence & Public Policy*.

National Institute on Media and the Family, 7 Jan. 2007. Web. 15 Apr. 2010.

Wilson, Jason. "Why Are Worthwhile Summer Game Releases So Rare?" *1UP.com: Video Game Reviews, Cheats, and More*. 2 Oct. 2009. Web. 09 Apr. 2010. <<http://www.1up.com/do/feature?cld=3176046>>.