Pre-release Internet Buzz: An Early Predictor of Film Success

Abstract

Word of mouth has always been a potent force influencing the success or failure of new products or services. Recently, its effect has been intensified by the internet which amplifies and intensifies its effect. Nowhere is this more evident than in the movie business. The role of internet buzz prior to a film's release is examined to determine whether it provides an early indication of success. As with previous studies, a film's budget and whether it was a sequel were strong predictors of opening weekend revenues. When internet buzz variables were added to the equation, the R^2 values more than doubled. Factors that contribute to higher levels of internet buzz were also examined.

Pre-release Internet Buzz: An Early Predictor of Film Success

Very few if any industries are helped or harmed by word of mouth to a greater extent than the movie business. The results are immediate and can either doom a film to early failure or propel it to box office success. Unlike physical products which can sit on retailers' shelves until consumers come by to purchase them, a film that does not perform well on its opening weekend is quickly replaced by another. The effect of word of mouth can either be positive, and help increase the size of the audience for a particular film, or negative and have the opposite effect. The inherent fascination with stars and the experiential nature of the product prompts people to talk about the talent and films long before and after their release. For example, the movie version of *Fifty Shades of Grey* will not be release until February 2015, but fans have already begun to make their opinions known. Charlie Hunnam, who was originally cast as Christian Grey, sparked a fan controversy. He withdrew and was quickly replaced by Jamie Dornan (Kroll, 2013a, b)

Word of mouth's role in influencing success of experience goods has been examined systematically for a range of experiential products including, movies (Liu 2006, Dellarocas, Zhang and Awad, 2007), music (Dahr and Chang 2009), books (Chevalier and Mayzlin 2006) and television shows (Godes and Mayzlin 2004).A critical issue is not only how word of mouth builds after exposure to an experience good, but also how word of mouth prior to the actual experience may affect the success of a good or service. Internet buzz about a film starts to build prior to its release. Web sites such as the Hollywood Stock Exchange float IPO's of films that are in development and do not even have a release date. Movies typically begin active trading at least two months prior to their theatrical release, suggesting that at least a subset of active movie goers have an interest and sufficient information to determine whether they want to buy or sell shares of a particular movie (www.HSX.com). More broadly, individuals are using the internet

to find out about upcoming films, post comments about them, and indicate their intention to see them when they are released.. This activity is referred to in this paper as internet buzz and encompasses internet traffic on select web sites that focus on film. Studios are in a position to listen to the internet buzz prior to a film's release and potentially gain insight into how it is likely to perform. To examine this issue more fully, pre-release internet buzz is examined to determine whether it provides an early indication of a film's likely success. In doing so, whether reliable information is available one, two or three weeks prior to the film's release is examined. The role that internet buzz plays in reflecting awareness of a film as well as potential movie goers' intention to see an upcoming release are examined. In addition, film characteristics are examined to provide insight into some of the factors associated with higher levels of internet buzz.

The paper is organized as follows. First, the prior literature that attempts to predict a film's success as well as the literature related to internet buzz are reviewed. Second, the analysis section looks at variables typically used to predict box office revenue such as budget, stars, sequels, MPAA rating, and genre. Internet buzz variables related to awareness and intention- to-see particular films are added to determine their incremental effect. To answer a more general question, the analysis also examines what film-specific characteristics are associated with higher levels of internet buzz. Finally, managerial implications are drawn.

Literature Review

Movie studios go to great lengths to insure that their newly released films are box office blockbusters. Studio executives hope that investing in A-list talent will increase the appeal to movie goers. Films are crammed with expensive special effects to dazzle audiences. Sequels are quickly green lighted to capitalize on the appeal and popularity of the initial film. While the evidence is mixed as to whether some of these strategies are effective (Ravid 1999, Liu 2006,

Dellarocas, Zhang and Awad 2007), studios have to contend with a new, more potent force that can dramatically influence the success of a film. Internet buzz, or electronic word-of-mouth, exerts tremendous influence on whether teens and young adults go to movies. While reviews by movie critics seem to have little influence on movie attendance or only under specific circumstances (Desai and Basuroy 2005, Reinstein and Snyder 2005) or act as predictors rather than influences (Eliashberg and Shugan 1997), word of mouth has long been a powerful influence on product success (Katz and Lazersfeld 1955, Silverman 2001).

Internet Buzz

Word of mouth is a potent force in influencing acceptance of new products and services. It is typically viewed as more credible than marketer dominated media. Its potency has not changed, but what has changed is its velocity. Historically, word of mouth depended on physical proximity and spread slowly, as it required face-to-face interaction and spread through social networks of proximate friends and acquaintances. The internet has changed that in at least four major ways. First, physical proximity is no longer necessary as it is just as easy to obtain opinions from someone in a different state as it is from someone next door. Second, it is no longer a slow sequential process from one person to another with temporal delays between each transfer of salient information. One person's opinion can be communicated to many individuals simultaneously, as it now occurs instantaneously through the internet. A film opening on a Friday night that does not meet audience expectations is doomed to experience a shrinking audience on Saturday. Alternatively, a film that exceeds audience expectations will generate positive word of mouth and draw in a larger audience the following day. Third, related to the speed is the changed magnitude of the word-of-mouth. From a one-to-one process, it has become a one-to-many phenomenon which magnifies its impact. Fourth, with the wide array of internet

sites and blogs, word-of-mouth becomes a permanent record, rather than a fleeting comment which requires constant repeating to continue to exist.

The impact of the internet on film success has examined the effect that movie reviews and user ratings posted on internet sites by both critics and movie goers have on box office revenues (Desai and Basuroy 2005, Reinstein and Snyder 2005, Eliashberg and Shugan 1997). These studies provide valuable insights into how evaluations of a movie affect subsequent box office revenue and a sense of how information diffuses and its impact in later weeks. More recently, researchers have examined the effect of electronic word of mouth on box office revenue. Duan, et al. (2008) found that online user ratings influenced box office revenue; however, they did not include any variables that captured film-specific characteristics. Similarly, Wang, et al. (2010) examined the effect of online word of mouth and prerelease media mentions on box office revenue for movies in China. However, individual movie characteristics were not included in their analysis. Liu (2006) examined a range of variables on box office performance, including the level of word of mouth over a nine week period, including one week prior to the release. In addition, he examined five film-specific characteristics associated with word of mouth one week prior to the film's release. Two of the film-specific variables were significant. Action/Adventure genre was positively related and an R rating was negatively related to the volume of word of mouth. This begins to address a critical issue facing studio executives, gaining insight into how well the movie will perform before it is released. Although, one week before a film's release does not provide much time to make adjustments.

Film Development

Broadly, pre-release internet buzz reflects the extent to which potential movie goers are aware of a film prior to its theatrical release and show an interest in seeing it. Listening to movie goers internet chatter can be helpful in the latter stages of the film development process. Films start with an idea that is ultimately translated into a cinematic experience. The ideas can spring from a popular book, a news event, an historical incident, a video game, a previous film, a toy, and so on. One common element in all these is the risk that the film will not be successful and end up losing money. For example, only seven percent of British films released between 2003 and 2010 made a profit (Rosser 2013). To minimize financial risk studios employ broad strategies such as having a portfolio of films of different budgets and genres, entering into coproduction deals, or acquiring finished films to limit risk.

Film development involves the interplay between two components, creativity and business. Creativity is essential, but ultimately the studio has to make money to stay in business. At the individual film level studios use research, both before and after a film is green lighted, to mitigate risk. Just as with consumer products and services, studios conduct concept tests before green lighting a film. Different versions of the potential concept can be tested to determine which is most likely to succeed. This can help studio executives decide whether to green light the film and what level of investment is warranted.

After the film is made, studios conduct screenings to gauge audience reaction. This allows them to test alternative endings, eliminate portions of the film that are not well received, and take steps to improve it before the release date. In addition to identifying possible flaws that can be fixed through editing, the audience's reaction allows the studio to fine tune their

promotional strategy. In addition to research on the finished film, studios also do tracking research to determine the levels of awareness and interest in the film. If awareness levels are low, they can increase their ad spend. If interest in seeing the film is low, the studio can modify its marketing materials to increase their effectiveness. As a complement to or substitute for tracking studies, listening to pre-release internet buzz can potentially provide studios with an early indication of whether a film will be successful.Concept testing, screening and tracking studies all help to raise the odds that a film will be successful. Listening to internet buzz can augment tracking studies.

Research Hypotheses

There is a rich tradition of examining factors associated with success of a film's theatrical release. Researchers have identified a number of film-specific characteristics that are associated with box office revenue, either opening weekend or total. Prior investigations (Ravid 1999, Siminoff and Sparrow 2000) suggest that a movie's budget, whether it is a sequel, and the presence or appeal of stars (Karniouchina 2011) are all significantly related to total box office. Although, the findings on sequels and the impact of stars is more mixed. Below are a series of seven hypotheses that guided the research. The first five are based on prior research and are designed to demonstrate that the current sample of films produces results comparable to those of earlier studies. The remaining two are based more broadly on the advertising literature that suggests that awareness and purchase intentions are both key factors in driving purchase decisions.

A studio's willingness to spend large amounts of money to produce a film is rooted in their belief that a bigger production budget will result in a more appealing film and consequently greater box office revenue. Two key factors responsible for large budgets are A-list talent and

extensive digital effects. Numerous studies have shown that films with larger budgets do generate greater revenue (Ravid 1999, Siminoff and Sparrow 2000). However, Liu's (2006) study found no effect of production budget on box office revenue. The expectation is that films with larger production budgets will have greater box office revenue. While not measured directly, films with larger budgets also spend more on advertising to help insure high levels of awareness on the opening weekend.

H1. Films with larger budgets will have larger opening weekend revenues.

Anecdotal evidence suggests that studio executives believe that big stars such as Brad Pitt, Angelina Jolie, Will Smith, Johnny Depp, and others can help open a film and attract large audiences to the theater. The empirical evidence on the impact of stars on box office revenue is mixed. Neelamegham and Chintagunta (1999) found a positive effect of stars, as did Sawhney and Eliasberg (1996) and (Karniouchina 2011). However, Liu (2006) found no effect of stars on box office as did Ravid (1999) and Goliath et al. (2013). The second hypothesis is stated with the expectation that there will be some impact of star power on box office, despite the mixed evidence.

H2. Films with more star power will have larger opening weekend revenues.

In their quest for certainty, Hollywood has embraced sequels as a mechanism to reduce risk and help insure success at the box office. Sequels reduce the risk of failure, as the initial film demonstrated its audience appeal and the loyal fan base is likely to want to see more of what they enjoyed initially. The importance of sequels is underscored by the fact that four of the top five movies in 2010 were sequels (*Toy Story 2, Iron Man 2, The Twilight Saga: Eclipse, Harry Potter and the Deathly Hollows, Part I*), all five of the top five movies of 2011, four (all except *Hunger Games*) of the top five in 2012 were sequels, and the trend shows no sign of abating as four (all

except *Frozen*) of the top five films of 2013 were sequels. The empirical evidence is again mixed. Ravid (1999) and Siminoff and Sparrow (2000) found that sequels were an important predictor of box office revenues, while in Elberse and Eliasberg's (2003) study, sequels were not significant. Given the mixed academic research and the prevalence of sequels at the box office, the hypothesis was stated with the expectation that sequels will have a positive effect on box office revenue.

H3. Films that are sequels will have higher opening weekend revenues.

MPAA ratings indicate the appropriateness of films for particular audiences. The ratings range from G which is suitable for all audiences to R where children under 17 are not admitted unless accompanied by a parent or guardian. Ravid (1999) found that films rated G and PG had significantly higher revenues. Liu (2006) found that an R rating had a negative effect of box office revenue. In many respects the ratings serve as an ordinal scale that progressively restricts the potential audience for a particular film. The film's MPAA rating was coded from most to least restrictive with 1 being G-rated and 4 being R-rated.

H4. A more restrictive MPAA rating will result in lower opening weekend revenues.

Prior studies have shown that different genres affect box office, but the patterns are not consistent. Liu (2006) found that neither Science Fiction nor Action/Adventure had a significant effect on box office revenues. When examining the performance of films in territories outside the US, Craig et al.(2005) found that the genres of Action, Fantasy, Animated, Mystery, and Horror all performed significantly better, while Family performed significantly worse. Although these effects were not consistent across all language groupings. Neelamegham and Chintagunta (1999) looked at films released in the US as well as in international markets. They found that Thriller was the most popular and Romance was the least popular genre across the 14 countries studied.

The pattern for Action and Drama genres was mixed. Hypothesis 5 is formulated with the expectation that genre will have some effect, but the literature does not provide consistent expectations regarding which genres will be influential.

H5. A film's genre will influence its opening weekend revenues.

There is a rich tradition in the advertising, marketing, and psychology literature concerning the importance of awareness and purchase intention in determining success (Lavidge and Steiner 1961, Ajzen and Fishbein 1977, Woodside and Wilson 1985). Large advertisers routinely conduct Usage and Attitude surveys to assess the impact of their advertising and marketing efforts. Studios purchase tracking studies that indicate consumers' awareness of planned releases as well as their intention to see the film. Consistent with the academic literature and with industry practice, the next two hypotheses focus on the impact of awareness and intention on opening weekend box office.

H6. Internet buzz (awareness) for a movie prior to its release will result in greater opening weekend revenues.

H7. Internet buzz (intention to see a film prior to its release) will result in greater opening weekend revenues.

A second line of investigation relates to trying to understand what film-specific factors contribute to internet buzz. No formal hypotheses are proposed as the literature on movies is fairly sparse on this. Liu (2006) examined the effect of two genres, Comedy and Action/Adventure, two MPPA ratings, PG and R, and whether there were major stars in the film on word of mouth one week prior to the film's release. He found that Action/Adventure had a positive effect and receiving an R rating had a negative effect. Overall, the variables explained 30 percent of the variance in word of mouth. More broadly, there is a literature suggesting that

awareness (Hoyer and Brown 1990) and intentions (Prendergast *et al.* 2010) are all related in varying degrees to actual purchase behavior.

Method

Data

Information on opening weekend box office revenue was obtained from Box Office Mojo (www.boxofficemojo.com) for all wide-released films from November 2008 through April 2009. This resulted in 62 films with an average opening weekend box office of $20.7 million. *Fast & Furious* was the highest grossing film during this period, grossing over $70 million on its first weekend while *Delgo*, an animated film, grossed less than one million dollars. The opening weekend box office was used since it is highly correlated with eventual box office revenue (Siminoff and Sparrow 2000). Also, pre-release internet buzz should have the greatest immediate impact on the opening weekend box office revenue.

A range of predictor variables were used including the production budget, the strength of the actors in terms of their star power, whether it was a sequel or not, the film's MPAA rating and its genre. Budget information for most of the films was obtained from Box Office Mojo. In cases where this information was not available at that web site, IMDb's box office/business link was consulted (www.imdb.com). Finally, in the instances that budget was not available on either website; an average for that genre was used as a proxy. The average budget for movies in the sample was $60 million. *Quantum of Solace* was the most expensive film to produce at $200 million while the relationship drama *Not Easily Broken* was the least expensive at $5 million (see Table 1 for descriptive statistics for all variables).

Table 1
Descriptive Statistics for Study Variables[a]

Variable	Mean	Maximum	Minimum	Standard Deviation	
Opening Week Box Office	$20.7	$70.9	$.5	$17.5	
Budget	$59.7	$200	$5	$48.8	
Star Power	18.0	36.0	0	8.9	
MPAA Rating	G 3.2%	PG 24.4%	PG-13 45.2%	R 27.4%	
Genres	Action 22.6%	Animated 9.7%	Comedy 32.3%	Drama 25.8%	Horror 9.7%
Sequel	9 of 62 or 14.5%				

[a]All dollar values are in millions
n = 62

A film's star power was determined using the *Forbes* 2009 Star Currency list. *Forbes* assembles a list of over 1,400 actors annually and gives each a score from 0-10 based on their ability to contribute to financing, theatrical box office performance, and post-theatrical life. Among the criteria, of primary relevance to this analysis were actors' ability to drive box office performance, their ability to attract audiences in any genre, and their popularity among most demographic groups. Will Smith was awarded the only 10 while a lesser known actress like Sasha Alexander was awarded a .66. For this study, a film's star power score was computed by summing the Star Currency scores of the five highest rated actors of each film. Limiting it to five stars minimized the impact of larger casts as well as gave major stars more weight. Scores ranged from 36.76 to 0, with a mean of 18.03.

Films that were sequels comprised almost 15 percent of the sample. Sequels were given a value of 1 while non-sequels were coded as 0. A film's MPAA rating was coded as follows: G=1, PG=2, PG-13=3, and R=4. A higher value not only suggests more adult content, but also

that the movie would be available to a more restrictive audience. Genre was coded as a dummy variable. The Internet Movie Database typically lists multiple genres, but the site indicates that "the main genre should always be placed first." Genre was collapsed into five broad categories (Drama, Action, Comedy, Horror and Animated). The most common genre was Comedy (32%), followed by Drama (26%) and Action (23%). Animated and Horror were both just under 10% of the films in the sample.

Internet buzz captures many different aspects of moviegoers' interest in an upcoming film. In the broadest terms there is general awareness that a film is going to be released. Related to the awareness variable is a more direct measure of intention to actually see the film in theaters. There are a wide range of internet sites that could be selected, ranging from Twitter and Facebook which cover a wide range of topics to web sites that focus specifically on films. To narrow the focus and facilitate the data collection process, two film-specific web sites were selected as the data sources for awareness and one was selected to capture intention to see the film.

The first internet buzz variable, awareness, was a composite of the number of times a trailer for the film was viewed each week on TrailerAddict (www.traileraddict.com) and the number of comments it received each week on the web site ComingSoon (www.comingsoon.net). Someone who views the trailer for a film is considered to be aware of the film as is someone who posts a comment. TrailerAddict is continually updated with new trailers and features various versions of trailers and TV spots for each film. Based on the list of the Top 150 most viewed trailers, the aggregate number of views for all different trailer versions each week was used. If a film did not appear on the Top 150 list, it was assigned the number of views for the 150th film that week. The other major component of awareness was online

discussion and chatter of movie fans on Comingsoon.net. There is a wide array of blogs and discussion boards where bloggers and posters comment, both positively and negatively on movies. The total number of comments on ComingSoon.net was combined with the number of TrailerAddict views. Valence of the comments was not included as studies have shown when using aggregate data that volume is a more important predictor than valence (Chintagunta *et al*. 2010). Further, there is evidence that positive word of mouth is four times more common and that the effects of negative word of mouth are small and insignificant (Romaniuk 2007)

The second internet buzz variable, intentions, was the percentage of people indicating that they intended to see a particular movie. On the website, Fandango, each film has its own web page that indicates where the film is playing and allows individuals to purchase tickets. On the user ratings page, individuals can indicate whether they "Can't Wait" to see a new film or they "Don't Care" to see it. This variable is expressed in terms of the percent of individuals who "can't wait" to see a new release. It reflects affect and is a proxy for intention to attend a particular film.

All data for the internet buzz variables, awareness and intentions, were collected manually at weekly intervals starting three weeks before the film's release and included the Monday after the film was released. The different intervals are examined to determine how early meaningful information about a film's likely box office performance exists. If internet buzz three weeks prior to a film's release is as predictive as one week prior, the studio has more time to react and modify its marketing campaign.

Results

Preliminary Analysis

An essential first step was to determine how internet buzz builds and whether the earliest indications of awareness of the film were related to those observed just before and just after the film's release. The same analysis was done for the intention measure. The measures of awareness and intention taken three weeks prior to the film's release are highly correlated with those two weeks before, one week before and the Monday after the opening weekend. All correlations were highly significant ($p < .001$) and all except one were greater than .88.

The high correlations between the t_{-3} and t data points suggest that t_{-3} provides almost as much information as do the weeks closer to the actual release. Because of these high correlations, the measures taken at t_{-3} are used as independent variables in all regression analyses since they provide reliable information about buzz much earlier. Further, the sooner studio executives have an indication of the film's likely success, the earlier they can make modifications to their marketing efforts.

Regression Results

Predicting Opening Weekend Box Office. Hypotheses 1 through 5 were tested using linear regression. The log of the opening weekend box office was used as the dependent variable and the independent variables were, log of the production budget, star power, sequel, MPAA rating and dummy variables for several genres. The hypotheses were first tested using only these variables. In a second regressions equation, the variables capturing pre-release awareness and intention to see a particular film were included. This allowed testing of hypotheses 6 and 7. The results are contained in Table 2.

Table 2
Predicting First Weekend Box Office
(Log of Total Box Office)

	Model	
	I	**II**
Variable	Coefficient (Standard Error)	Coefficient (Standard Error)
Constant	14.06[a]	12.86[a]
	(.940)	(.899)
Log of Film Budget	.70[a]	.26
	(.204)	(.178)
Star Power	.007	.001
	(.015)	(.013)
Sequel	.65[c]	.25
	(.326)	(.265)
MPAA Rating	-.13	-.18
	(.163)	(.129)
Genre		
Action	-.30	-.90[b]
	(.337)	(.286)
Comedy	.003	-.016
	(.298)	(.236)
Animation	-.74	-.74
	(.479)	(.379)
Horror	1.03[c]	.41
	(.432)	(.359)
Internet Buzz (Awareness)	--	.23[c] (.097)
Internet Buzz (Intention)	--	2.74[b] (.881)
R^2	.34	.61
Adjusted R^2	.24	.53
F (8, 53)	3.4[b]	
F (10, 51)		7.8[a]

[a]p< .001, [b]p< .01, [c]p< .05

When the awareness and intention variables were not included in the equation (Model I), the adjusted R^2 was .24 and Log Budget, Sequel and the Horror genre were all significant. Films with higher budgets performed better at the box office as did films that were sequels. The only genre than had an effect was Horror, and it was positive. Based on the analysis without internet buzz variables, research hypotheses 1 and 3 were supported and there was limited support for hypothesis 5 in that only one genre seemed to have any influence. Research hypothesis 2 and 4 concerning the impact of stars and MPAA ratings were not supported.

Adding the two internet buzz variables to the equation dramatically changed the results (Model II). The adjusted R^2 more than doubled to .53, suggesting that accounting for the degree of awareness of an upcoming movie and the intention to buy a ticket provides greater explanatory power. The coefficients for traditional explanatory variables such as budget and sequel are no longer significant. The Action genre is now significant but negative and internet buzz and intentions are both significant and positive. The second regression provides strong support for research hypotheses 6 and 7.

Predicting Pre-release Internet Buzz. The above results suggest that pre-release awareness and intentions are strong predictors of how well a film is going to do on its opening weekend. However, it leaves unanswered the question of what film-specific characteristics contribute to pre-release buzz. Two separate regressions were run (see Table 3) using the film-specific variable to predict the two types of internet buzz.

Table 3
Predicting Awareness and Intention: Movie Characteristic

	Awareness	**Intention**
Variable	Coefficient (Standard Error)	Coefficient (Standard Error)
Constant	5.30[a]	.002
	(1.277)	(.140)
Log of Film Budget	.81[b]	.09[b]
	(.278)	(.030)
Star Power	-.02	.003
	(.021)	(.002)
Sequel	.79[c]	.08[c]
	(.442)	(.049)
MPAA Rating	.22	.003
	(.221)	(.024)
Genre		
Action	1.30[b]	.112[c]
	(.458)	(.050)
Comedy	-.10	.015
	(.405)	(.044)
Animation	.15	-.014
	(.651)	(.071)
Horror	1.40[c]	.11
	(.587)	(.064)
R^2	.48	.47
Adjusted R^2	.40	.39
F (8, 53)	5.8[a]	6.1[a]

[a]p< .001, [b]p< .01, [c]p< .05

The first regression used the film-specific variables to predict awareness. Potential movie goers' awareness of a film is influenced by the budget, with bigger budget films creating more pre-release buzz. Whether a film was a sequel or not had an influence, with sequels generating greater buzz. Neither star power nor MPAA rating were significantly related to awareness. The coefficients for two of the genres were significant, with both action films and horror films generating more pre-release buzz. Overall, the film-specific factors explained 40% of the variance in the awareness variable (adjusted R^2 .40, $p < .001$).

An individual's stated intention to see a particular film is a potentially more critical variable. A second regression was run using the same film-specific characteristics. Intention to see a film was influenced by two variables. The size of the film's budget had an impact, with larger budgets being associated with higher intentions to see an upcoming film. The coefficient for sequels was also significant, with films that are sequels generating greater intentions to see them. As with awareness, neither star power nor MPAA rating had any effect. Of the genres, only Action had a significant effect on pre-release intention to see a film and it was positive. The adjusted R^2 was .39 ($p<.001$). Taken together, these two regressions suggest that the most important factors in generating pre-release internet buzz are the size of the film's budget, whether it was a sequel, and whether it is an action film.

Discussion

The current study replicates previous findings regarding some of the film-specific factors that are related to how well a film does on its opening weekend. As with other studies, budget and sequels were significantly related to box office revenues (Ravid 1999). Star power was not related to opening weekend revenues, although some studies have found that stars do influence a

film's success (Karniouchina 2011). Only one of the genres, Horror, was significantly related to revenues. This is not inconsistent with other studies that have found mixed patterns of genres that are related to box office revenue (Craig *et al.* 2005, Neelamegham and Chintagunta 1999). MPAA rating was not related to box office revenues, although this may be a function of the way it was coded. In order to conserve degrees of freedom, it was coded as an ordinal variable from least restrictive to most restrictive (G=1 and R=4), while other studies code MPAA ratings as dummy variables.

The consistency with previous studies is only part of the story. While the film's budget and whether it is a sequel are strong predictors of success in isolation, when pre-release internet buzz variables, awareness and intention to see the film are added to the equation, their effect disappears. This raises the question more broadly of what is causing internet buzz. Awareness about an upcoming film among other things is likely to be related to the amount of money studios spend on advertising. Once a studio has made a sizable investment in making a film, they also spend heavily on advertising prior to the film's release to help ensure that movie goers will flock to the theaters. Hence, the higher awareness of an upcoming film may simply reflect the higher levels of advertising expenditure. However, individual consumers need to react to the advertising and visit the internet to find out more about the film or to make comments. Further, the intention measure used in this study also requires that consumers go to Fandango and register their preference. While higher levels of advertising would influence both, it is not in and of itself sufficient.

Sequels are associated with greater internet buzz. Films that were initially successful at the box office and that spawn sequels have a loyal fan base who are anxious to see more of the same themed movie. This fact is not lost on Hollywood executives. As indicated earlier, each

year from 2010 to 2013, all or all but one of the five top grossing films were sequels. In terms of specific genre effects, Action films had greater awareness and higher intentions.

Managerial Implications

The strongest managerial implication is that higher levels of internet buzz regarding a particular film are predictive of success on the opening weekend. At least three weeks prior to a film's release, there is meaningful information available about both awareness and intention to see a particular film. This still leaves sufficient time to increase advertising spending, change the content of the ads and trailers being used to promote the film, and actively use social media to increase buzz on the internet. The recent success of *The Hunger Games* bears testament to the power of the internet to help ensure the film's success. In addition to being a compelling story bases on a successful book, some of its initial success is attributed to a skillfully crafted marketing program aimed at stimulating word of mouth. Lionsgate used Facebook, Twitter, YouTube. Tumblr, and iPhone games to build word of mouth and increase consumer involvement (Barnes 2012). While a range of factors are obviously also responsible for the film's success, electronic word of mouth provided an economical and effective means to promote the film to its target audience. It also suggests that studios do not have to remain passive bystanders, but can become actively involved in managing the conversation that takes place on the internet. Also, by listening to the conversations that are taking place about an upcoming film, studio executives can get an early read on its prospects.

To effectively make use of the buzz that exists on the internet about their new releases, studios need to establish benchmark levels of movie buzz for the weeks prior to their release. The benchmarks provide a better idea when the level is not sufficient to ensure box office

success and indicates that studios must increase their marketing spend or modify the strategy. The results of this study suggest that larger budget films will have higher base levels of buzz than smaller budget films. Also, sequels will have higher base level of buzz than non-sequels. Both action films and horror films are also likely to have higher levels of buzz as well. By calibrating the levels of buzz and its relation to opening week box office revenue, the studios can better adjust their marketing activities.

The measure of intentions to see a particular film three weeks prior to its release is equally predictive of box office success, although it may be more difficult to influence. Consistent with the result on awareness, larger budget films and sequels are more like to have higher intentions to see. Action films created higher intentions to see the film, while none of the other genres were significant. Awareness can be increased through increased media weight, but changing individuals' intentions is much more difficult. If the target audience does not find the stars of the movie or the genre appealing, then there is little that the studio can do to increase movie goers desire to see the film.

None of this is to suggest that traditional forms of media advertising are ineffective or unnecessary. Depending on the nature of the target audiences' media consumption habits, efforts to create awareness of an upcoming film still need more traditional media, such as television and newspapers, particularly for films targeted to more mature audiences. In these cases, advertising may serve a dual role of both stimulating interest and also prompting word of mouth activity (Keller and Fay 2009). Older adults are typically less engaged in social media and may require traditional media buys to deliver information about upcoming films to them. There is also some evidence to suggest that studios have been slow to recognize the power of the internet in

influencing movie going. As recently as 2010, major studios allocated 73 percent of their advertising expenditures to television and only 4 percent to the internet (Marich 2011).

While the information on internet buzz used in this study was gathered manually, web crawlers and bots can be created to automatically compile these types of data. Information on internet buzz for upcoming movies can be continually monitored and used to adjust and refine marketing activities. The fact that these data are readily available on the internet at no cost enhances their value.

The finding that films with bigger budgets and films that are sequels perform better at the box office present an inherent dilemma for studio executives. Bigger budget films perform better, but at the same time increasing the budget increases the financial risk to the studio. Disney recent experience with *John Carter* and *The Lone Ranger* illustrates the perils of making big budget films. Between the two films, Disney wrote down more than $300 million (Garrahan 2013). During that same period Disney had considerable success with other big budget films such as *Iron Man 3* and *The Avengers*, however both of these were sequels.

The finding concerning the performance of sequels is corroborated by the strategies of major film studios. As indicated earlier, over the last four years all or all but one of the top five films were sequels. However, this creates another dilemma. At what point does the movie going public become satiated with a particular movie theme and characters. Will the audience respond as favorably to *Star Wars XV*, as they did to *Star Wars I* through *VI*? At some point, studios need to create new stories with new characters to avoid a surfeit of sequels with diminishing appeal. The challenge is to find ways to continually develop new franchises that can be extended into sequels, while at the same time, minimizing the risk of failure.

Limitations and Future Research

There are a number of limitations related to the nature and size of the sample. The sample size was relative small due to the effort required to collect all the data manually. However, many previous studies also employed samples in the same approximate range. The small sample also made it infeasible to use a holdout sample to see whether the results could be used to predict on the holdout sample. Also, since specific genres and whether the film was a sequel applied to a smaller number of films, a particular genre or sequel might not be present in a small holdout sample. The sample of films reflects a specific time period which may not be representative of all movie-going time periods. However, the fact that the current study obtained results similar to other research on the factors that influence box office revenue suggest that this may not be a serious limitation. Internet buzz was collected from only three film-specific web sites and hence may not be representative of all the online discussion activity regarding newly released films. However, since activity on one site is likely to be correlated with activity on other web sites, this may not be a significant limitation.

Going forward it would be useful to explore more fully what factors are associated with internet buzz. If studio executive have a greater understanding of the factors associated with internet buzz, they should be in a better position to influence, or at a minimum know whether a film approaching its release date is likely to perform well or poorly. Currently, to provide insights into this issue, major studios purchase tracking studies from firms such as MarketCast (www.marketcastonline.com) that allow them to get an early indication of how the movie will perform once it is released. A typical tracking study provides information on awareness of the movie and interest in seeing it. If awareness is low, the studio is in a position to increase its spending on advertising to heighten awareness. If interest is low, there may be an opportunity to

change the trailers and advertisements to make it more appealing to the target audience. Tracking is a necessary, but often expensive undertaking. This study suggests that readily available information on the internet can be used to help predict opening weekend success at the box office.

This paper has focused on listening to internet buzz about films to help determine their success at the box office. As indicated in the introduction, the impact of electronic word of mouth has also been examined for other experience goods. Since the internet and mobile communication are becoming increasingly important, research on the internet's early signaling value for a range of products and service needs to be investigated more fully. This does not replace other types of consumer research, but it can augment what firms are already doing.

Conclusion

Social media can be a powerful influence on the success or failure of any product or service. Rather than just observing outcomes, movie studios are in a position to use this information as an early indicator of a film's likely opening weekend box office revenue. The level of awareness and consumers' intentions three weeks prior to a film's release are strong signals that studio executives can respond to. With an early indication of the level of internet buzz, studio executives are in a position to take actions to the increase the film's likelihood of success. As the internet and mobile communications continue to increase in importance, studios need to listen to the buzz and use it to their advantage.

While the current study examined the effect of internet buzz on the decision to see movies, the implications are much broader. Each movie is a new product so there are multiple opportunities to gauge the impact of word of mouth on sales in a relatively short period of time.

However, the same mechanisms are in play for other products and services that consumers care about. The importance of internet buzz will only intensify as the use of social media increases. Currently, 66 percent of all adults use social networking sites (Brenner 2012). Not surprisingly, this is highest among those 18-29 (86 percent) and still relatively high among those over 65 (34 percent). Consequently, marketers and advertisers must find ways to nurture social media and give social networking a more prominent role in their promotional mix going forward.

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