Experts versus Audience's Opinions at the Movies: Evidence from the North American Box-Office[1]

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The impact of critics' movie reviews has eroded in recent times while users' movie reviews have gained significance in terms of influencing movie-goers' decisions. While some movie-goers continue to trust movie critics, others rely more on their peers or friends for information regarding a movie's quality. Social networking platforms like Twitter and Facebook continue to drive the latter's influence and unsurprisingly, users' reviews are now increasingly being recognised as a significant factor in movie consumption decisions. Using North American box-office data, this paper compares the effects of on-line user reviews against critics' reviews on the success of a movie in terms of its opening weekend, post opening weekend and overall total cumulative box-office grossing. The paper found significant effects for both critics' and users' reviews, but the users' reviews had stronger effects in all three measures of movie success. The results show that users (moviegoers) not only have a greater influence on attendance than critics, but also provide more accurate predictions of a movie's box-office success.

Keywords: Motion picture industry, consumer behaviour, box-office receipts, movie critics' opinions, moviegoers' opinions, social networks

Introduction

Motion picture box-office returns are notoriously difficult to predict. Over the years, academic and marketplace research has found various factors that account for revenue, but the findings are inconsistent at best. Some of these factors include the number of screens released, star power, production and marketing budget (see De Vany & Walls, 1999), critics' reviews (see Eliashberg & Shugan, 1997; King, 2007 and Gemser & Oostrum, 2006), time of release, and moviegoers' word-of-mouth.

The last factor has been deemed by many as increasingly influential as the web community, who mostly relied on the internet networking platforms for social and information exchange, gets larger. Given the explosive popularity of social networks like Twitter and Facebook, the impact of the "word-of-mouth" process on movie sales has increased and many in the industry are increasingly taking note of this. In fact, such electronic word-of-mouth is more immediate, thus, in some cases, may even make or break a film within 24 hours. Richard Corliss, a movie critic with Time Magazine calls Friday the new weekend given the power of the instant messaging or the "*Twitter Effect*" as it is popularly known.

As opposed to their peers' opinions, moviegoers also read critics' reviews before they buy movie tickets, but such belief has been questioned by many researchers although it

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remains significant to some extent. King (2007) found positive correlation between critics' review and a movie's box office performance taking into account of only "bigger" movies, i.e. those that were released on more than 1000 screens. He also found that production budget, the number of opening screens and the critics' report accounted for more than half of the variance in his sample of movies released in North America in 2003.

The Impact of Users' Comments via Word-of-Mouth

Many research studies done on the motion picture industry appear to find critics playing an insignificant role in movie box-office returns and, surprisingly, recorded some negative correlation in their relationship. Some have attributed this phenomenon to the growing influence of social networking tools like Twitter and Facebook, which have been increasingly important for exchanging information and comments. Given the prevailing importance of these technologies that are dominating how communities interact and socialise, the power of word-of-mouth influence on movie attendance may have grown much stronger than it has ever been. However, the advent of technologies would also facilitate a lower search cost for critics' reports on movies. Further, such technological evolution would also ensure a more mature and sophisticated movie audience as well.

In addition, the source of information for movie consumption considerations may also include theatrical trailers and television advertisements. Thus, it is not surprising to see movie studios investing huge sums to prop up the movie's trailers, with some of these "teaser trailers" appearing even up to a year before the movie's release. These marketing ploys in many instances serve as tools to create word-of-mouth awareness and curiosity that ultimately carries a movie's success. Sometimes it is not the marketing budget but the creative approach that leads to success; for instance, the clever approach used by studios in creating the hype surrounding the low-budget semi-documentary horror picture, *The Blair Witch Project* ultimately led to phenomenal box-office returns for the movie back in 1999, underlining the power of the internet (see Howell, 2014).

Social feeds like Twitter and the various other message blogs provide up-to-date information of the movies premiering and, as such, it is no wonder that these users' comments have played a prevalent role in the success or failure of movies. For instance, it is widely believed that the interest generated through these social networks led to the success of some movies like the Quentin Tarantino-helmed war movie, *Inglorious Basterds*, which managed to pull in a better-than-expected mid-August weekend haul of US$$38,054,676[2].

Another example of this phenomenon was the 2009 blockbuster *New Moon* (sequel to the 2008 hit, *Twilight*), which registered the third highest weekend gross of US$140.7 million and even shattered the record for a single-day earning, achieving the feat through Friday screenings which cumulated to US$72.7 million[3]. While the existing fan base is a

[2] Despite being critically-acclaimed, none of the four Tarantino-directed movies after 1994's Pulp Fiction made anything close to $US100 million domestically. As of 15 November 2009, Inglorious Basterds has made $120,135,237 in the North America market (source:www.boxofficemojo.com).

[3] Figures quoted from www.boxofficemojo.com

significant factor, it is also clear that the power of the Twitter effect had a strong hand in this event as the on-line social network communities have been building on its hype way before it was even released.

Data provided by www.fizziolo.gy, a website that tabulates the number of social conversations on many issues including movies, placed New Moon in the Top 10 since early October 2009 when the site began operating. By the second week of November 2009, it not only topped the chart but also achieved it with highest ever score recorded at the time. Unsurprisingly, the movie, which opened on 20th of November 2009, shattered several records including the biggest opening day gross (US$72.7 million), the biggest midnight screening gross (US$26.3 million). It also achieved the distinction of being the third biggest weekend grossing (US$140.7 million) at the time.

The horror movie *Paranormal Activity* also displayed patterns similar to those seen in *New Moon* as networking websites contributed to an enormous interest among moviegoers, especially the Twitter crowd. It was still in the top three in the Fizziology chart for the week ending 17 November 2009 even though it was released on the 25th of September. In fact, the Fizziology website was still reporting a wave of fans going to see the movie again (see www.fizziolo.gy) and it is likely that the so-called positive on-line word-of-mouth had contributed to the success of the movie. This film has seen a sensational return from a small budget of US$15,000 and was originally slated only for a 160 screen-showing (the movie would go on to gross $107,854,596 at the North American box-office).

However, the impact of social media can also be adverse, as seen in the disastrous outing of the summer 2009 released Sasha Cohen comedy *Bruno*, which was panned by many of the users through the many social network websites. After a solid opening weekend release (it took in some US$30 million in its first weekend of release, a decent haul by summer releases' standards) the film subsequently failed badly in the following weeks. Admittedly, the critics' reports on this movie were mostly negative but it was the sensational drop in its earnings that underlined the speed of word-of mouth in an electronic era.[4] Over the years, there have been many summer movies which had poor critics' reviews but made respectable earnings especially when given a significant boost in the opening weekend's haul, a situation that clearly does not resonant with the case of *Bruno's*.

Holbrook (1999) found significant differences between popular tastes and experts' ratings in his study using Home Box-office TV channel viewer surveys (representing user reviews) and critical guidebooks (representing expert judgments). If critics and users differ in their opinions (as they are likely to, since ordinary moviegoers tend to favour entertainment that is more readily accessible and less demanding while critics are instead drawn to more challenging and intellectually stimulating artworks (see Holbrook, 1999; Bourdieu (1984)), then which of the two groups are likely to play a greater role in a moviegoer's consumption decision?

[4] Bruno, which opened in 2756 screens across North America made US$ $30,619,130 in its first weekend but fell 72.8% and 65.9% respectively in its second and third weekend. It went on to take up only US$$60,054,530 over its entire run at the North America box-office and is widely regarded by many in the industry as a phenomena that was due to the negative buzz generated by Twitter. See Corliss (2009).

However, given that even industry players are now beginning to keep a keen eye on the phenomena of users' comments via various social networking websites, the suggestion that moviegoers seek their peers' approval before consumption cannot be taken lightly. According to the president of marketing at DreamWorks Studios, Christine Birch, marketers today are increasingly paying more attention to moviegoers' comments in the internet. Such developments are not hard to believe especially given that a bigger proportion of Twitter users' population have greater movie consumption habits compared to the general population (Ecommerce Journal, 2009).

Literature Review

Echoing the famous quote by legendary screenwriter William Goldberg, *"With due respect, nobody knows anything"*, De Vany and Walls' 1999 paper also acknowledged the great extent of risk in the industry and found no individual causal factor for a movie's success.[5] They highlighted the complexity of movie as products and the cascading of information among filmgoers during their short course of run evolves along too many paths that make it impossible to attribute the true determining factors of a movie's box-office returns. Concluding that there are no success formulas in Hollywood and asserting the notion of the audience being the ultimate determinant of a movie's return, they nonetheless concluded that a movie's success is also down to its quality.

Elsewhere, Eliashberg and Shugan (1997) found that critical reviews significantly correlate with the late box-office revenue and cumulative earnings thus disputing the conventional wisdom of critics being a strong determinant only in the early stage of a movie's run. Using weekly box-office data, their paper suggested that critics may be more of forecasters of a movie's earning success rather than a motivating (or otherwise) factor to a movie's audience attendance. Hence, the argument put forward by them was more of the role of critics rather than the influence of critics, i.e., more of a "*prediction effect*" rather than an "*influence effect*".

Meanwhile, King (2007) found no correlation between critical ratings and box office grossing using releases in the North America in 2003. However, bigger releases (which saw openings of exceeding 1000 screens) exhibited positive relationships between critical reviews and movie revenues. In such bigger releases, production budget and opening screen numbers also positively affected the movies' box-office returns. King's findings supported those of Eliashberg and Shugan (1997) which found greater correlation between critics' opinions to later earnings rather than initial earnings. This is surprising because general industry wisdom would expect critics' reports to have a greater influence on movie revenue in the early life-cycle of the movie (see Burzynski and Bayer, 1977) as

[5] The "nobody knows principle" is also used to refer to the film industry which is characterized by symmetrical ignorance by Richard Caves. In fact, the high levels of demand uncertainty which makes it difficult to anticipate the audience's tastes (i.e. audiences themselves may not know what they want until they see it) coupled with the high degrees of product uncertainty (i.e. the producer themselves cannot guarantee exactly what the audience will get until production is complete) characterize the essence of the film industry. For more, see Caves (2000).

information from word-of-mouth is less potent at the start of the movie's initial release period.

Holbrook (1999), using popularity polls conducted by Home Box Office (HBO) in their *Guide to Movies on Video Cassette and Cable TV* in 1989, found the popular appeal and expert judgments sharing similar tastes although albeit a weak correlation (r = 0.25) hence disputing the Bourdieu-led argument (see Bordieu, 1984) that professed popular tastes tend to gravitate towards movies that are accessible by virtue of their greater realism in representing familiar settings while expert judgments are more in favour of movies that are more abstract, complex and basing on less conventional values.

Gemser and Oostrum (2007), using data from the Dutch film industry, found that consumers of art house movies are led by film reviews when making their particular choice of movies; consumers of mainstream-type movies, in contrast, seek other sources of information namely word-of-mouth, movie stars, and/or advertising. They found that film critics' take on an "influencer" role in the case of art house movies but they tend to take a "predictor's" role in the case of mainstream movies.

Finally, antecedent studies on critics' role in box-office returns appeared anything but conclusive. Some like Eliashberg and Shugan (1997) do not support the notion of critics' report having any motivating affects on film attendance although Katz and Lazarfeld (1955) interpreted their results as critics being influential in shaping movie audiences' interests in attending movies. King (2007) meanwhile found no correlation between critical ratings and box-office grossing. Nonetheless, some of the studies that used cumulative box-office earnings instead of earnings at different points in the life-cycle of the movie fail to account for the effects of word-of-mouth in their analysis.

In terms of tracking the correlation between users' on-line search efforts and movie success, Panaligan and Chen's (2013) research paper for Google reveal that movie-related searches on Google went up by 56% in the period of 2011-12. They also found similar trend patterns when comparing box-office index and search related index thus arguing that a connection can be established between search activity and box office. More interestingly, they also found that movie search volume seven days prior to a movie's release is a strong predictor of weekend box office receipts. Similarly, Goel *et al* (2012) argued that search query volume can be used to forecast opening box office grossing, first month sales of video games and weekly ranking of songs. Their statistical findings on search query volume yielded the strongest predictive powers in the case of opening weekend grossing for movies followed by video games sales and subsequently music rankings.

Based on the above literature, this study addressed the following null hypotheses:

H_{01}: Movie critics and users have divergent tastes.

H_{02}: Critics' opinions matter more than users' opinions in the determination of box-office outcomes.

H_{03}: Critics' opinions are greater than users' opinions at the immediate and earlier stage of the movie's run, i.e. critics have bigger "*influencer*" effect.

H_{04}: Critics' opinions are greater than users' opinions at the later stage of the movie's run, i.e. critics have bigger "*predictor*" effect.

Method

This paper investigates whether experts' opinions or peers' opinions have the greater influence on a consumer's choice of movies. In order to test this, the paper uses ratings by on-line users and critics' reports.

The average ratings for each movie given by these two groups were sourced from the *Yahoo! Movies* website.[6] This website was chosen because the on-line contributions were substantial for each movie, up to 30,000 to 40,000 users for some movies (more comprehensive than most other websites). However, the number of critics' reports sourced in this website is fewer (in quantity) than some other websites like www.metacritic.com or www.rottentomatoes.com, both of which also tabulate the final overall critics' scores using more meticulous and stringent calculations.

In any event, the move to use the same source for information both in terms of critics' and users' scores is to ensure a consistent source of information since the box-office revenues data (from *Yahoo! Movies*) are also provided by the website www.boxofficemojo.com. Further, data from this site are also used in the collection of the "scores" pertaining to the popularity of stars (both directors and actors), which is represented in the "star power" variable.

To ascertain the reliability of the *Yahoo!* critics' scores, a correlation test was conducted between the critics' scores from the two sources (*Yahoo!* and *Metacritic*). There was a strong and positive correlation ($r = 0.92$; significant at 1%) confirming their similarities and thus, the reliability of the *Yahoo!* critics' scores. This is because the method of tabulation of critics' ratings in www.metacritic.com is significantly more meticulous and the number of critic's reviews being sourced is also higher than the *Yahoo!* site. The correlation pattern between *Yahoo!* critics' scores and *Metacritic*'s scores for the 243 movies in the sample is shown in Figure 1.

[6] Correlation test between Yahoo user reviews and Metacritic user reviews saw significant relationship (at 1%) thus lending support to the validity of using the Yahoo users' data to represent users' opinions.

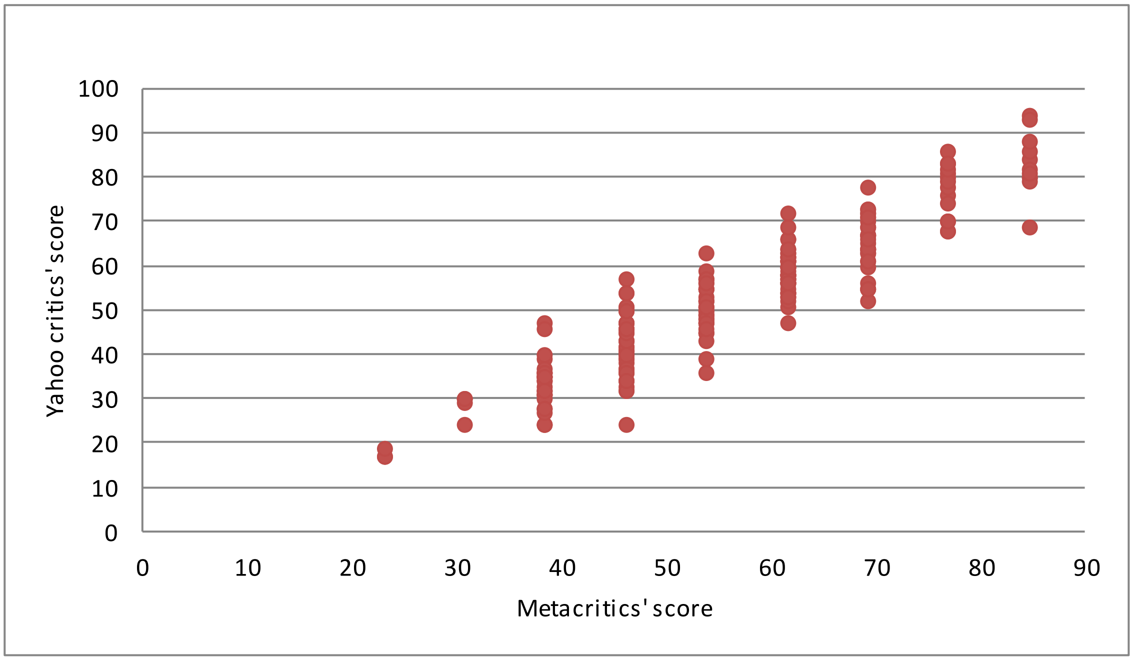

Figure 1. Yahoo critics' movie ratings scores vs Metacritics' movie ratings' scores

In order to test these hypotheses, the present paper employs a statistical regression and descriptive analysis involving variables with Likert scale scores that are recalculated to a 100-point system score. For instance, to measure a movie's critical value, the paper uses the average scores of movie critics on the movie as provided in the *Yahoo! Movies* website. Most of the movies reviewed by this website used contributions from a group of movie critics and the critics' report card comes in the form of grading ranging from A to F (note: including the + and – categories in each of them, e.g. A+ or A-).

Given that there are 13 categories, the scores are then recalculated to a 100 points system, with A+ being 100 while F taking on a figure of 7.6 (i.e. based on a scale of 7.7 for each category). Such an approach is similar to the procedure done by the film website www.metacritic.com, which make such calculations based on the scale range of four to one star rating that is eventually calculated and processed accordingly, for example 100 being four stars, 88 being 3.5 stars and so on.[7]

Meanwhile, consumers' ratings of the movies are used (tabulations similar to the one used for the critics) as their opinions on the movie are assumed to be shared among their peers through electronic word-of-mouth. This presumably takes place via social networking forums like Twitter, Facebook, Yahoo! or Friendster. The measurement of the scores from the consumers' perspective is measured by the average scores obtained through the *Yahoo! Movies* site, as the comments through Twitter or Facebook about

[7] However, *Metacritic*'s calculations also involved a more complicated assessment based on certain weights being assigned to each particular reviewer (in addition to other types of assessments for some reviewers, e.g. based on a ten point scale as opposed to the four-star scaling) in an unpublished subjective methodology. See King (2007) for more.

movies are not available.[8] The huge quantity of movie user responses in the *Yahoo! Movies* site provides a good sample representing the online networking community's opinions of the movies. In essence, *Yahoo!* has various social networking services in many of their products such as My Web, Yahoo! Personals, Flickr, Yahoo! Buzz. In addition, it also provides internet communication services such as Yahoo! Mail and Yahoo! Messenger. These factors justify the selection of its users' reviews as a proxy representative of the on-line moviegoer community.

The movies examined are 2008 and 2009 releases of essentially "popular" movies. This paper selected a sample of more popular movies since its main objective is to test the strength of users' comments, i.e., the word-of-mouth (albeit electronically) versus critics' views. Inclusion of movies with fewer screen releases or art-house movies (usually limited in their releases) may be significant for critics' reviews inputs but general audiences are likely to give them a miss.

In any case, movies that are released on lesser screens also suffer from lesser word-of-mouth potential since there are smaller audiences being captured in these selected (limited) locations. Furthermore, opinions between critics and the general audience are also likely to diverge especially in the case of art-house pieces or foreign movies or documentaries as critics are more likely to appreciate cultural diversity as opposed to the masses (see King, 2007 and Bourdieu, 1984).

Negative reviews in the case of art-house movies are not necessarily harmful for this type of movie; quite the contrary in fact, as reported by Gemser and Oostrum (2007) on the impact of art-house movie reviews. They found that it is better to have negative reviews as compared to having no reviews at all as it is the size (of the review article) and number of reviews that are directly influencing consumer decisions.

In light of these factors, the paper focuses on movies of more popular appeal to all and as such, this resent analysis uses the top 150 movies in the year of 2008 and 2009.[9] This fairly recent pool of movies also gives a more accurate sample representation, given that on-line social networking effect is a recent phenomenon.

Finally, the use of movies from 2008 and 2009 also avoids the problems of making price adjustments, as the average ticket prices for both years are the same especially since prices of movie admissions changes over time as a result of economic and technological reasons.[10] Meanwhile, the sample of movies selected in these two years are the more popular ones; i.e., *the top 150 movies of each year although in the case of 2009, the top*

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[8] Comments and conversations on movies (negative or positive) can be found in a website source called www.fizziolo.gy, the first and only chart to measure the world of entertainment using the world of online conversation. Although it attempts to measure the world of entertainment using the world of online conversation, there are still data limitations as its chart tracks only top 10 discussions, thus not all movies may be subjected to conversations and as such, no measurement points would be available for these movies. In addition, since it is very new (started only as of 8 October 2009), there are limitations of historical data as well.

[9] The sample of movies for 2009 excludes those released after 1 October 2009. The figures obtained in the year's top 150 movies were as those tabulated as of 15 November 2009 at www.boxofficemojo.com

[10] Source taken form the website www.boxofficemojom.com (retrieved December 2009). The average prices of movie ticket in 2008 and 2009 are the same at US$7.18.

150 as of 15 November 2009.[11] Those in the list but released after October 2009 were omitted due to the fact that their theater runs may still be in a significant stage at the time of this study. Nonetheless, since the box-office revenues for movies are most significant during the first few weeks of the movie's release, a timeframe of six weeks (in the case of the omission reasoning in the 2009 sample) would probably ensure movies in the sample having taken most of their box-office returns by then.[12] In any event, most movie contract runs call for a minimum of 4 to 8 weeks. In fact, the paper by De Vany and Walls (1999), found about 35, 19 and 12% of all box-office revenues are earned in the first, second and third week of a film's release respectively.

Results

Correlation Patterns

The findings in the descriptive statistical analysis revealed several interesting results. Firstly, there appeared to be a positive relationship between the users' scores and critics' scores, albeit a weak ($r = 0.413$) but statistically significant one. This suggests that the general moviegoer's tastes may not be too distinct from the critics' opinions, a finding in contrast to Bourdieu (1984) who argued otherwise, i.e., that ordinary consumers preferred entertainment that was more readily accessible whereas critics tended to gravitate towards works of higher complexity.

Nonetheless, as the present paper's sample of 243 movies are the top movies from 2008 – 2009, the convergence between users' and critics' tastes may be greater in the case of popular movies. A similar finding was also reported by Holbrook (1999) who also found a weak but significant tendency ($r = 0.25$) for popular appeal and expert judgments to reflect shared tastes between consumers and critics.

The findings also support many of the suggestions (see Crane, 1992; Gans, 1974, 1999) that cultural tastes in the U.S. are not aligned to social status, in contrast to other countries such as France. Figure 2 shows the correlation between *Yahoo!* users and *Yahoo!* critics' movie ratings scores of movies.

The findings reject the null hypothesis H_{01}, which states that there is significant difference between critics' and users' tastes.

The correlation with box-office grossing seems to be stronger in the case of users' scores as compared to critics' scores in all the different cases of box-office achievements. The general perception about the motion picture industry is that critics' scores have a greater correlation with weekend box-office revenue because they are available before a movie's premiere.

[11] At the time of the writing of this paper.

[12] About 65-70% of all motion pictures earn their maximum box-office revenue in their first week of release (De Vany & Walls, 1999).

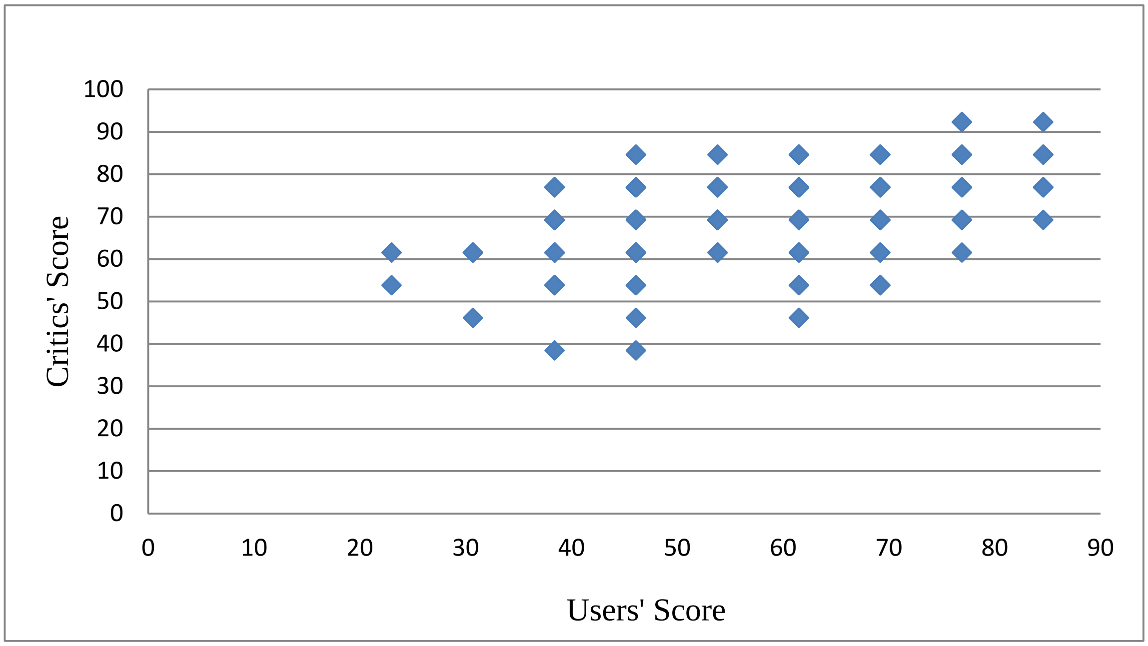

Figure 2. Yahoo critics' movie ratings scores and Yahoo users' ratings scores

Given that a movie's prior quality is not easy to judge, one would expect moviegoers to check out the critics' reports before making their decisions. Both the conventional wisdom and past literatures point to a positive correlation between weekend grossing and critics' scores, with the latter also having a stronger influence than users' reviews during the early run of the movie since other information like word-of-mouth is less available (see Burzynski & Bayer, 1977).

In addition, with limited signaling properties except for the promotional or teaser trailers, one would expect moviegoers to check out the critics' reports first. However, the present results found the correlation between the critics' reviews and various box-office earning indicators to be weak, although still positively related. In fact, the correlation is weakest in the case of opening weekend grossing, thus contradicting the conventional wisdom of critics having the biggest impact in the early life-cycle of the movie.

The weak findings for critics' reviews in the present analysis offers some support for Caves (2000), who argues that "studios anticipating bad reviews would have ratchet up the promotions before the movie's release to "drown-out" the bad critical reviews". In contrast, user reviews were found in the present analysis to have a stronger correlation in all the box-office earning indicators, i.e., *the opening weekend grossing, the total cumulative grossing, the total cumulative grossing minus the opening weekend's revenue and the average grossing* (see Table 1).[13]

Table 1. Correlation between user's reviews and critics' reviews with several box-

[13] A crude calculation involving the total cumulative grossing divided with the maximum number of screens during the movie's theatrical run life-cycle. The move to include this is to control for the number of screenings that is very likely to impact a movie's earning capacity.

office grossing achievements

	Total Cumulative grossing	Weekend grossing	Total grossing minus opening weekend	Average grossing†
Users' reviews	0.328**	0.196**	0.368**	0.430**
Critics' reviews	0.171**	0.050	0.214**	0.321**

†average grossing is calculated by dividing the total cumulative grossing with the film's highest screen count levels.
**significance at p = 0.01.

The present findings suggest that moviegoers may rely more on their fellow moviegoers for opinions or information pertaining to a movie. In the case of the opening weekend grossing, the users' word-of-mouth may be much faster given today's telecommunications technology (e.g., on-line social networking websites, texting and so on) hence making users' comments much stronger in impacting a movie's opening compared to critics' reports.

Although there are also many other factors involved, the fact is, in today's world the word-of-mouth process is much faster and up-to-date than ever. In fact, since the users' reviews also had stronger correlation with the post-weekend movie receipts, it appears that moviegoers' peers' reviews may be a stronger "*influencer*" compared to critics. In addition, as the users' review scores are also stronger in correlation with the total overall grossing and average grossing, it appears that they are also a better "predictor" than the critics' opinions as well.

Perhaps the studios should not worry about uncooperative critics or even fear negative reviews as there is little "*predictory*" and "*influencing*" effect on moviegoers. The experience of movies like *Transformers: Revenge of the Fallen, the Twilight sagas, X-Men Origins: Wolverine* and so on (all released in 2009) has indicated that critics' reviews had little or no effect on these movies' box-office performance. In fact, *Paramount* did not even screen the movie *G.I. Joe* for critics to review but opted instead to "let the audience define the film" (Pomerantz, 2009).

In any event, the phenomena of critics losing their influence at the box-office is not something recent and industry reports pre-Twitter era have previously indicated the changing trend, for example a report by Copernicus, a global marketing strategy and research firm in 2000 put a resounding no to the answer to whether critics matter in box-office returns (http://www.copernicusmarketing.com/about/press11.shtml).

Table 2 presents the correlation between the users' and critics' reviews against total, weekend, and after weekend total box-office grossing in accordance to three groups; (1) "big"size movies, i.e., *movies that are ran in more than 3000 screens*, (2) "medium-size"group, i.e., *movies that ran in between 1000 – 3000 screens* and finally, (3) "small-size" group, i.e., *movies that had lower than 1000 screens*. Unsurprisingly, the correlation is strongest in the case of those movies in group 1.

Table 2. Correlation between user's reviews and critics' reviews with several box-office grossing achievements based on big, medium and small releases movie samples

Movie Sample that opened in	Reviews	Total Cumulative grossing	Weekend grossing	Total grossing minus opening weekend
Group 1 > 3000 screens (n = 95)	Users' reviews	0.557**	0.418**	0.585**
	Critics' reviews	0.501**	0.421**	0.509**
Group 2 Between 1000 - 2999 screens (n = 120)	Users' reviews	0.278**	-0.029	0.339**
	Critics' reviews	0.250**	-0.128	0.342**
Group 3 Less than 1000 screens (n =28)	Users' reviews	-0.285	-0.320	-0.208
	Critics' reviews	-0.076	-0.319*	0.110

**significance at p = 0.01, *significance at p=0.05.

In the case of a movie that is given a substantially wide release (Group 1), the publicity surrounding the movie would be more extensive both in terms of creating curiosity and hype. This factor is likely to be responsible in pushing up the interest of moviegoers in searching for more information (e.g. critics' reports, users' reviews, asking friends who have seen it and so on) about the movie and eventually leading to movie attendance (or otherwise).

The correlation scores in Table 2 are also consistent with the correlation analysis when taking the sample overall (see Table 1); i.e., *user reviews have higher correlation to the various box-office indicators especially in groups of movies that are released and ran in more than 1000 screens*. From the results (Table 2's reporting on the correlation scores which mostly indicate stronger correlation in the case of users' reviews compared to critics' reviews with the various categories of box-office revenues), it appears that users' reviews are both a stronger "predictor" and "influencer" (indicating that it is the word-of-mouth and not the experts' opinions that matter) factor in movies that ran in more than 1000 screens.

Nonetheless, for smaller releases (those released on less than 1000 screens), the correlations were not significant and were mostly negative. This may be due to the much smaller sample size but it is also possible that smaller releases would have a much lower word-of-mouth capacity as lesser people would have seen it immediately after its premiere.

The other interesting result in the case of the smaller releases is that the negative correlations affect both the users' and critics' reviews suggesting that their tastes may not be that that distinctly different even in the case of smaller movies, i.e., *those less mainstream Hollywood blockbuster fares*. Although the scores are insignificant, nonetheless the pattern does offer some support in rejecting the null hypothesis H_{01} thus disputing the Bourdieu-led reasoning of cultural hierarchy among movie audiences, i.e. *the experts are likely to favour more intellectually stimulating fare while the rest of the masses flock to movies of higher commercial content*.

Regression

As there are various factors that can affect a movie's attendance besides users' and experts' opinions, several regression models were performed. In the case of regression, both the linear and logarithmic models are used. In terms of the other factors, they are likely to be:

- the timing of release (e.g. summer and Christmas season movies are likely to bring in more crowd as a result of the holiday seasons);
- the "celebrity" or "star" factor (i.e., major box-office draws like Tom Cruise or Brad Pitt have huge appeals);
- the total number of screens released (as a movie's revenue is highest in its first week, the number of screens released is paramount in many cases to ensure box-office success although positive word-of-mouth may also lead to the increase in the number of screens played subsequently after the initial release screen quantity and hence the revenues as well);
- the production budget[14] (a bigger budget will increase the probability that a "star" is involved or bigger special effects and presumably will also increase the likelihood that studios will put in more money into the marketing of the movie as well);
- continuation from past work (i.e., whether the movie is a sequel or prequel – any movie that is building from such prior work will have the advantage of having a captured and loyal audience), and finally
- the movie's rating category (i.e., whether it is rated as G, PG13, R and PG).[15]

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[14] Although marketing cost will also be a strong factor, it is not included as the data is difficult to collect and unreliable at best. The same goes to production budget but the website www.boxofficemojo.com provided production budget for 165 movies in our sample of 211 (downsize from the earlier size of 243 movies a result of non-availability of user/critics' ratings). The rest of the movies' production budgets were sourced from various on-line movie data websites. The sources included (a) http://www.aceshowbiz.com, (b) http://movies.about.com/od/bruno/a/behind-the-scenes.htm, (c) www.wikipedia.org. (d) http://www.the-numbers.com/movies/2009/STPLY.php, and finally (e) http://coffeeandcelluloid.com/2008/05/07/dinner-and-confessions-of-a-shopaholic.

[15] As there are two and four categories respectively in the "continuation from past work" and "movie rating" variables, there are one and three dummies representing them respectively in the regression. In the case of "continuation from past work", the dummy will take the value of 1 if the movie is a sequel/prequel while the control category in the case of the movie rating is PG.

Overall, the independent variables in the model are:

- the users' ratings, the critics' ratings,
- the movie's production budget,
- two dummy variables to account for the timing of a movie's release (i.e., summer season, Christmas holidays and others[16]),
- the movie's production budget,
- the total number of screens,
- continuation from past work,
- the movie's rating, and
- a variable to account for the inclusion (or non) of a crowd-pulling star power individual (i.e., *a popular actor/actress/director who can "guarantee" a movie's opening or overall performance*).

In the case of the "star" variable, some authors used various lists of powerful and popular movie star endorsed by certain publication for their coded calculation; for instance De Vany and Walls (1999) opted to use the list of top 100 most powerful people in Hollywood by Premiere magazine or James Ulmer's list of A and A+ people while Holbrook (1999) coded dummy variables to represent "stars" using the number of movies directed (in the case of directors) or number of movies appeared (for actors/actresses) as a criteria.

The present paper, however, opted to use star power measurement as dictated through the on-line hits/visits of popular celebrity pages provided in the www.boxofficemojo.com website. This website provides the annual top 100 most popular celebrities in terms of the pages linking to them being viewed. The table ranks each of the celebrities in terms of the percentage of total movie pages viewed and provides the respective saturation scores for each celebrity in terms of percentage over the 100. The most popular celebrity will have the highest percentage score and their share of the 100% are given in the saturation scores, e.g. *Russell Crowe tops in 2008 with a share of 5.86% while Angelina Jolie ranked first a year later with a share of 6.06%*.

Each movie which has a leading actor or actress (or producer or director) in the top 100 is assigned the percentage score based on their respective saturation scores. If a movie has more than one person making the top 100 list, the highest score among the pool of "stars' in the particular movie will be the one selected. Only the score of one "star" (i.e. the "star" with the highest score) is selected for each movie.

In terms of the multiple regression models, three were performed for linear and logarithmic respectively, using;

[16] The summer season movies refers to movies released between may to the first week of September while the Christmas holidays season is taken as between the last week of November (taking into account the Thanksgiving holidays) through to the first week of January the following year.

- total grossing,
- weekend grossing and
- total grossing after the opening weekend

as dependent variables respectively from the list of 209 movies.[17]

The results for the linear model are presented in Table 3.

Table 3. Determinants of Total Grossing, Weekend Grossing and Total Grossing after Opening weekend: Linear Model

	Total Grossing of Movies	**Weekend Grossing**	**Total Grossing after Opening weekend**
Users' reviews	0.233***	0.125***	0.267***
Critics' reviews	0.169***	0.091*	0.194***
Production Budget	0.345***	0.417***	0.300***
Total Release Screens	0.447***	0.393***	0.450***
Star Appeal	0.060	0.077*	0.050
Sequel	0.054	0.136***	0.018
Summer	0.069	0.021	0.085*
Christmas	-0.028	-0.123***	0.013
G-rating	0.048	0.087**	0.030
PG13	0.126**	0.203***	0.088
R-rating	0.097	0.140**	0.075
R^2	***0.714***	***0.725***	***0.672***
Adjusted R^2	0.698	0.709	0.654

Standardised Coefficients
*** p<.01
** p<.05
* p<.10

The findings in the linear regression (see Table 3) revealed that both the users' and critics' opinions are positively related to a film's box-office earnings.

Besides confirming the similarity in tastes between experts and audiences, the bigger coefficients, (the paper reports the standardised coefficients instead of the unstandardised

[17] The final sample size is adjusted from an initial amount of 243 movies due to non-availability of data for some of the variables.

ones as the aim is not about making predictions *per se* but rather, trying to see which of the variables that have an effect on movies' success[18]) in the case of the users' reviews in all three regressions, indicate the following: firstly, users' opinions seemed to be stronger in the case of the weekend grossing thus undermining the conventional wisdom of critics wielding a stronger influence in the early life cycle of a film's box-office and secondly, it appears that users' opinions exert greater influence in the later stages of the movie's performance thus the proponents of word-of-mouth power appeared to be justified as well.[19] Finally, the stronger coefficient of the users' reviews as opposed to the critics' also indicate users' reviews being a stronger predictor of a movie's overall success as well.

The first argument is rationalised along the lines that today's word-of-mouth process gains momentum faster than it did previously as a result of technological changes which are able to facilitate instant information exchange via various on-line social networking websites or specific websites which provide users' feedback. As such, the impact of word-of-mouth can be felt immediately after the movie's premiere date. The *Twitter effect* as claimed by many industry people, is likely to be one of the reasons responsible for many films' sudden change in box-office receipts within days, both negatively and positively.

In the case of the second point, it suggests audiences today rely more on the opinions of other moviegoers rather than the opinion of experts. If this is true, studios should be less concerned about showing their upcoming releases to critics (or spending time trying to influence them) given their limited influence.

Finally, the third finding suggest that audiences are the best predictor of a movie's success, consistent with the argument by De Vany and Walls (1999) who professed that it is the audience that makes a movie a hit. As such, the users (audience) have both stronger *influence* and *predictive* effects than critics based on the results.

The results thus reject the null hypothesis H_{02}, as users' reviews are found to matter more than critics' reviews in the determination of box-office outcomes.

As the results from the Table 3 also showed that users' reviews have a bigger standardised coefficients (compared to critics') in all the three box-office outcomes, the paper finds sufficient evidence to reject both the remaining null hypotheses H_{03} and H_{04} – i.e., *users' opinions are greater than critics at both the earlier and later stages of the movie's run thus confirming that it is both an "influencer" and "predictor" of box-office*.

Other than the users' and experts' opinions, the multiple regressions (linear) also confirmed the other determinants of box-office revenue, namely the production budgets, and the total number of screens released. All three linear regressions provided the expected positive and significant coefficients. However, star appeal is only significant (albeit weak) in the case of opening weekend grossing.

[18] Movie success defined by the movie's total grossing, total grossing after opening weekend and weekend grossing.

[19] To allay fears of potential multicollinearity between users' and critics' scores, all three linear regressions were repeated with users removed and then included and repeated the exercise with critics. No significantly major differences were observed in the case of their coefficients and respective signs. They remained significant in all cases.

One possible explanation for this is that many studios today are opting to use less "bigger" names even in their blockbuster features and prefer to invest much of the production budget in expensive CGI (Computer-generated imagery) effects (e.g., "event" movies like the blockbuster disaster flick *2012* featured no A-list stars other than the moderately famous *John Cusack* in the lead role).

The other possibility is that star power factor may be strongly linked to the production budget factor anyway since big spending movies have a higher propensity to feature big names, hence the huge cost being an indicator of bigger pay-cheques of the stars.

As for the timing of release, the dummy variable for summer (relative to the omitted category of non-holiday period) is not significant for both total and opening weekend grossing[20] while the dummy variable for Christmas (relative to the omitted category non-holiday period) is only significant in the case of weekend grossing and even have negative coefficients in at least two of the regressions. This indicates that the timing of release bears lesser significance in today's market.

As reported in the Asian Wall Street Journal (2009), studios are beginning to change their ways (instead of relying on holiday seasons) on the reasoning that a hit can happen any time of the year given the right marketing strategy and right movie.[21] Generally both summer and Christmas releases should perform better in the box-office due to the extended holiday periods and also the fact that the studios themselves tend to reserve the bigger movies for summer or Christmas release.

Meanwhile, in the case of movie ratings, only the dummy of PG 13 is significant (as compared to the control group of PG-ratings) in the case of total grossing thus indicating that movies rated PG 13 have higher lifetime grossing compared to movies tagged as PG. However, all three rating categories are positive and significant in the case of opening weekend grossing.

Finally, "prior work" is significant only in the case of opening weekend grossing indicating that sequels/prequels' captive audience can ensure good box-office openings.

To provide greater robustness in our users' reviews versus critics' reviews analysis, a hierarchical regression was performed. Table 4 provides the three different regression blocks for total grossing, starting from block 1 which consists of all the independent variables except users' and critics' reviews. Next, the users' reviews variable was added in the second block regression and subsequently, critics' reviews as well, in the third.

The results in Table 4 show that users' reviews add 8.4% to the explained variance while critics' reviews only added about 1.8% more. This finding rejects the null hypothesis H_{02}, as users' ratings drive movie consumption more than critics' reviews.

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[20] However, as expected, the summer season dummy variable had the expected positive coefficient and was significant in the cases of the total box office and the total box office after the opening weekend as studios usually reserved their biggest blockbusters for the summer release.

[21] The 4th installment of the Fast & the Furious franchise (2009) had the biggest April (a non-holiday season) opening ever. In 2010, Alice in Wonderland opened to US$116m in an early March weekend while Clash of the Titans took $US61m in an early April weekend indicating that movies may not have to rely on holiday seasons to enjoy huge weekend openings.

Table 4. Determinants of Total Grossing: Hierarchical Model

	First Block	**Second Block**	**Third block**
Critics' reviews			0.169***
Users' reviews		0.299***	0.233***
Production Budget	0.458***	0.409***	0.345***
Total Release Screens	0.324***	0.378***	0.447***
Star Appeal	0.092*	0.067	0.060
Sequel	0.047	0.036	0.054
Summer	0.085*	0.076*	0.069
Christmas	0.001	-0.025	-0.028
G-rating	0.055	0.056	0.048
PG13	0.083	0.119*	0.126**
R-rating	0.073	0.131**	0.097
R^2	0.612	0.696	0.714
Change in R^2		***0.084***	***0.018***

Standardised Coefficients
*** p<.01
** p<.05
* p<.10

Meanwhile, regressions using a logarithmic model are also performed to allow for the possibility of non-linear relationships (e.g. the effects of total opening screens or the production budget on a movie's grossing could be exponential) as well. The results are reported in Table 5.

From the standardised coefficients in Table 5, it appears that there is very little to separate the users' reviews and critics' reviews (although in the case of weekend grossing, the nature of the correlations is negative for both).[22] Given that users' reviews had significantly stronger unstandardised coefficients[23], the findings thus support the hypothesis of users having not only a stronger "*prediction*" effect, but also bigger "*influencer*" effect as well.

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[22] The negative comparison here takes on an absolute sense, i.e. -0.3039 in the case of users' being bigger than the critics' coefficient of -0.1664. In this sense, the users' ratings have a bigger negative impact on movie revenue compared to critics' reviews.

[23] In the cases of total grossing, weekend grossing and total grossing after weekend, the unstandardised coefficients for users are 1.211, -0.304 and 1.552 while for critics, 0.768, -0.166 and 0.936.

As expected, both total screens and production budget are significant and positively related in all three models. The star appeal factor is significant (albeit weak at 10% level) in total grossing and total grossing after weekend while the timing of release shared similar weak results with the linear model thus further lending support to the claims and observations of changing strategies amongst studios as far as timing of release is concerned.

Table 5. Determinants of Total Grossing, Weekend Grossing and Total Grossing after Opening weekend: Logarithmic Model

	Total Grossing of Movies	Weekend Grossing	Total Grossing after Opening weekend
Users' reviews	0.182***	-0.027	0.231***
Critics' reviews	0.200***	-0.026	0.242***
Production Budget	0.110**	0.233***	0.104*
Total Release Screens	0.688***	0.611***	0.612***
Star Appeal	0.074*	0.034	0.079*
Sequel	0.116***	0.086**	0.092**
Summer	0.045	-0.011	0.067
Christmas	0.041	-0.181	0.087*
G-rating	0.066	0.063	0.061
PG13	0.085	0.106*	0.062
R-rating	0.009	-0.24	-0.022
R^2	***0.697***	***0.731***	***0.638***
Adjusted R^2	0.680	0.716	0.618

Standardised Coefficients
*** p<.01
** p<.05
* p<.10

Compared to the linear model, movie ratings also recorded even weaker findings. Meanwhile, continuation from prior work registered significant findings in all three cases. As sequels and prequels have a captured and loyal audience, this finding is in line with the conventional assumptions on this factor.

Overall, as far as the debate of users versus critics' opinion, findings from the logarithmic models also reject the null hypotheses of H_{02}, H_{03} and H_{04}. Based on the overall findings, these results suggest that in today's motion picture markets, it is the consumers who will ultimately dictate the success of a movie both in terms of its opening and its final tally post cinematic run.

Conclusions

While critics have always played pivotal roles in the arts and the media sector (i.e., *movies, music, theater plays and so on*), their influence on these sectors have been increasingly diluted as a result of many factors. Consumers, in their quest for acquiring information pertaining to the quality of such goods, have various sources that could provide the necessary signals of quality. In the case of the movie industry, one of the signals of quality of films is the experts' reviews which are usually provided in the media before a movie's release. In fact, most studios screen their latest movies to critics before the movies' premiere in theaters.

The stronger correlation between users' opinions with movie performance as compared to critics' opinions revealed in this paper is not entirely surprising given the changes in the market and social environment and also based on the findings from past studies. King's 2007 paper had found a lack of correlation between critical ratings and box-office earnings while De Vany and Wallls' 1999 study also did not provide support for the role of critics in dictating a movie's chances of being a "hit".

Word-of-mouth among consumers have in recent times become increasingly more influential, especially given the fact that technological advancement has accelerated the process and also significantly expanded social network links through on-line feeds like Twitter and Facebook. These social network websites are possibly the reason that have contributed to undermining and drowning out the influence of experts' reports as they provide the platform for strong (and fast) word-of-mouth.

The present paper found users' opinions to matter more than critics' judgments in both influencing movie attendance and predicting a movie's success.[24] This is especially true for big releases, i.e. *movies that are released in more than 1000 screens*, presumably because the word-of-mouth is much greater as a result of more people having seen it immediately after its premiere. In addition, the on-line interest generated through the on-line social community is likely to get a bigger boost in bigger movies since the interest and curiosity levels are much higher in these movies as they are likely to be the recipients of much bigger marketing campaigns.

As the present sample included only the top movies from 2008 and 2009, it is not certain whether the effects of critics get drowned out by users' comments in the case of limited releases type of movies as well, i.e. *documentaries, foreign films and so on*. From the limited number of smaller movies in this paper's sample, the impact of both critics and users opinions have had no significant impact.

[24]Lionsgate, the studio behind the recent summer movie "Killers" did not screen the movie for critics prior to the movie's premiere and instead work on a strategy that allow the viewers to assess the film, presumably through writing about it on Twitter or Facebook (Lemire, 2010).

Finally, the other interesting findings from this paper are the possible changing strategies of studios in terms of the use of “star power” and the “timing of release”, in both cases suggesting a divergence from the usual practices of the pasts by movie studios.

In conclusion, movie studios may need to pay more heed to users’ opinions rather than spending too much time worrying about critics’ assessments. In this sense, the reactions and comments from those pre-release screenings to selected audiences may prove to be very crucial in providing the necessary inputs for further edits and cuts. Finally, it may also pay to downplay the significance of critics’ reactions from their screenings (presumably before the movie’s release) and studio executives should devote fewer resources to making contacts with critics or attempting to influence their views.

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