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ORIGINAL ARTICLE

The relationship between reviewer judgments and motion picture success: re-analysis and extension

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Abstract The relationship between the judgments of professional reviewers and the economic success of cultural products, such as motion pictures, has been the topic of controversial debates involving both scholars and industry experts. This study builds on previous research that distinguishes an "influencer effect" of reviews from a "predictor effect." By empirically separating consumers' and reviewers' perceptions of movie quality through an auxiliary regression approach (and thus effectively controls for consumers' quality perceptions), this study advances the discussion by investigating whether and how isolated reviewer quality perceptions are associated with box office results. The authors empirically test a non-linear effect of reviewers' quality perceptions on box office returns, including a comprehensive investigation of the moderating forces of this relationship, using regression and simple slope analyses. Data from all 1,370 narrative films released in the United States between 1998 and 2006 reveal that though the short-term box office generally is not influenced by isolated reviewer quality perceptions, a non-linear relationship exists between reviews and long-term box office returns, such that films rated highly by reviewers are more strongly influenced than those that are not. In terms of moderators, the authors find evidence for several arthouse and mainstream characteristics to moderate the relationship between isolated reviewer quality perceptions and box office results.

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There is no general consensus on the market power of film critics.

—*King (2007, p. 171)*

1 Introduction

An intense ongoing debate among media and marketing scholars pertains to whether the judgments of professional reviewers influence the economic success of experiential products, such as motion pictures. Understanding this relationship has cultural and intellectual relevance, but is also of commercial and economic importance. To what extent should producers, distributors, and exhibitors adapt their marketing and distribution strategies and actions according to how much reviewers like their movies? Movie studios spend millions of dollars to woo reviewers by preparing special information packages and organizing previews for them (e.g., Ravid et al. 2006). Are such investments economically justified, and if so, under which circumstances?

Seminal work has revealed positive correlations between reviews and box office success (Litman 1983), often suggesting that positive reviews increase demand for a movie, whereas negative ones reduce it (e.g., Prag and Casavant 1994; Sochay 1994). In their highly cited article, Eliashberg and Shugan (1997; hereafter, E&S) advanced the discussion by distinguishing between causal ("reviewers as influencers") and merely correlational ("reviewers as predictors") links between reviews and films' success at the box office. On the basis of the pattern of correlations they found, they argued that reviewer effects are spurious and that the empirical correlations between reviews and box office originate from the mutual quality judgments of reviewers and consumers. Since then, various scholars have criticized E&S's approach and suggested alternative methods to deal with the overlap of reviewer and consumer judgments (e.g., Basuroy et al. 2003; Boatwright et al. 2007). Although these results contrast with E&S's and suggest that reviews influence film success, their methods still leave room for interpretation. The question thus remains far from answered.

This research aims to offer a fresh investigation into the question of whether reviewers have an impact on the economic success of motion pictures, one that overcomes the limitations of previous work. As acknowledged by several scholars (e.g., Eliashberg and Shugan 1997; Litman 1983), the key problem when measuring review effects is that no behavioral inferences can be made about the correlation between reviewers and box office, because such a finding could be caused by consumers reacting to reviews, or it could be the result of consumers' quality perception of the movie, which is only reflected in the reviews. Because consumers' and reviewers' quality perceptions are nested concepts (Holbrook 1999, 2005; Holbrook and Addis 2007), adding both as independent variables in a regression model cannot solve the problem.

Instead, we empirically separate consumers' and reviewers' quality perceptions by employing an auxiliary regression approach that isolates the deviation in reviewers'

quality perceptions from consumers' quality perceptions. The approach enables us to identify that part of reviewers' quality perceptions that does not overlap with consumers' quality perceptions and thus determine which effects are attributable solely to reviewer judgments. Moreover, instead of searching for a universal answer, we systematically study potential moderating forces and non-linear relations.

In what follows, we begin with a comprehensive review of literature on reviewer effects, then develop our conceptual model and hypotheses. We explain our econometric approach, which combines auxiliary regressions with polynomial regression analysis and simple slope analyses, and discuss the results obtained from a sample of all 1,370 narrative films released in the United States during the years 1998–2006. The main findings reveal that isolated reviewer quality perceptions influence long-term box office returns in a non-linear way, but do not exert a main effect on short-term box office (i.e., a movie's opening weekend). As moderators, we determine that individual arthouse characteristics tend to make a movie more prone to reviewer influences and that various mainstream characteristics tend to make it less subject to the effects of reviews. We then derive implications for both scholars and the film industry.

2 Literature review

2.1 Studies linking reviewer judgments to motion picture success

In Table 1, we provide a comprehensive overview of previous empirical studies that have linked reviewer judgments to financial movie success. For each study, we list sample characteristics, reviewer-related variables beyond judgments (i.e., number of reviews and dissent), and other factors that have been included as independent variables (e.g., marketing expenses).

The table illustrates the contradictory results regarding the effect of reviewer judgments on box office: 8 of 12 studies report an effect on short-term box office (while the others do not find such an effect), 13 of 19 studies report a significant effect on total box office, and 5 of 8 report a significant effect on the difference between total and short-term box office (i.e., long-term box office). Most of the studies included reviewer judgments only as a control while focusing on the effect of other variables and thus did not account for any overlap between reviewers' and consumers' quality perceptions or the potential spurious character of the effect. Furthermore, only three studies studied interaction effects with reviewer judgments. In what follows, we discuss studies that actually focused on the role of reviewers and those that studied interactions in the following sections.

2.2 Studies focusing on the effects of reviewer judgment on success

2.2.1 The Eliashberg and Shugan study

Eliashberg and Shugan (1997) distinguished two possible roles of professional movie reviewers: influencers and predictors. In the "influencer role," reviewers

Table 1 Empirical Studies with Reviewer Judgments as Independent Variable

Study		Data		Dependent variables			Independent variables					
Authors	Years	Sample size	Time period	Financial success			Reviewer evaluation (Critics)				Consumer behavior	
				Short-term revenues	Long-term revenues	Total revenues	Reviewer judgments	Reviewer dissent	Number of reviews	A-wards	Ordinary evaluation	Popular buzz
Basuroy et al.	2003	162	1999–1993	✔*	✔*	✘	✔	✘	✔	✔	✘	✘
Boatwright et al.	2007	466	1997–2001	✔*	✔*	✘	✔	✔	✘	✔	✘	✘
Brewer et al.	2008	466	1997–2001	✘	✘	✔*	✔	✘	✘	✔	✔	✘
Chang and Ki	2005	431	2000–2002	✔n.s.	✘	✔*	✔	✘	✘	✘	✔	✘
Collins et al.	2002	216	1998–1999	✘	✘	✔*	✔	✘	✘	✘	✘	✘
Dellarocas et al.	2007	80	2002	✔*	✔*	✘	✔	✘	✘	✘	✔	✔
Desai and Basuroy	2005	275	1991–2000	✘	✘	✔n.s.	✔	✘	✘	✘	✘	✘
Elberse and Eliashberg	2003	164	1999	✔*	✘	✘	✔	✘	✘	✘	✔	✘
Eliashberg and Shugan	1997	56	1991–1992	✔n.s.	✔*	✔*	✔	✘	✔	✘	✘	✘
Elliott and Simmons	2008	527	1999–2003	✘	✘	✔*	✔	✘	✘	✘	✘	✘
Gemser et al.	2007	84	1998–2003	✔n.s.	✘	✔n.s.	✔	✘	✔	✘	✘	✘
Hennig-Thurau et al.	2006	331	1999–2001	✔*	✔n.s.	✘	✔	✘	✘	✔	✔	✘
Jansen	2005	120	1993–1998	✘	✘	✔*	✔	✘	✘	✘	✘	✘
King	2007	273	2003	✘	✘	✔*	✔	✔	✘	✘	✘	✘
Lampel and Shamsie	2000	409	1991–1992	✘	✘	✔*	✔	✘	✘	✘	✘	✘
Litman	1983	125	1972–1978	✘	✘	✔*	✔	✘	✘	✔	✘	✘
Litman and Kohl	1989	464	1981–1986	✘	✘	✔*	✔	✘	✘	✔	✘	✘
Liu	2006	40	2002	✔*	✔n.s.	✘	✔	✘	✔	✘	✔	✔
Moon et al.	2010	246	2003–2005	✔*	✔n.s.	✘	✔	✘	✘	✘	✔	✘
Prag and Casavant	1994	195	1990	✘	✘	✔*	✔	✘	✘	✔	✘	✘
Ravid	1999	175	1991–1993	✘	✘	✔n.s.	✔	✘	✔	✔	✘	✘

Table 1 continued

Study		Data		Dependent variables			Independent variables					
Authors	Years	Sample size	Time period	Financial success			Reviewer evaluation (Critics)				Consumer behavior	
				Short-term revenues	Long-term revenues	Total revenues	Reviewer judgments	Reviewer dissent	Number of reviews	A-wards	Ordinary evaluation	Popular buzz
Ravid and Basuroy	2004	175	1991–1993	✘	✘	✔n.s.	✔	✔	✔	✔	✘	✘
Ravid et al.	2006	172	1991–1993	✔*	✘	✔n.s.	✔	✔	✔	✔	✘	✘
Reinstein and Snyder	2005	609	1999	✔n.s.	✘	✔n.s.	✔	✔	✘	✘	✘	✘
Sawhney and Eliashberg	1996	101	1992	✘	✔*	✘	✔	✘	✘	✘	✘	✘
Sochay	1994	263	1987–1989	✘	✘	✔*	✔	✘	✘	✔	✘	✘
Wallace et al.	1993	1687	1956–1988	✘	✘	✔*	✔	✘	✘	✘	✘	✘

Study		Data		Independent variables (continued)								Mode-rating effects
Authors	Years	Sample size	Time period	Movie characteristics				Movie type		Post-filming studio actions		
				Stars	Sequel	Age rating	Genre	Target audience	Production Budget	Ad spending	Release strategy	
Basuroy et al.	2003	162	1999–1993	✔	✔	✔	✘	✘	✔	✘	✔	✘
Boatwright et al.	2007	466	1997–2001	✔	✔	✔	✘	✘	✔	✔	✔	✘
Brewer et al.	2008	466	1997–2001	✔	✔	✔	✔	✘	✔	✘	✔	✘
Chang and Ki	2005	431	2000–2002	✔	✔	✔	✔	✔	✔	✘	✔	✘
Collins et al.	2002	216	1998–1999	✔	✔	✔	✔	✘	✘	✘	✘	✘
Dellarocas et al.	2007	80	2002	✔	✘	✔	✔	✘	✘	✔	✔	✘
Desai and Basuroy	2005	275	1991–2000	✔	✘	✘	✔	✘	✘	✘	✘	✔[1]
Elberse and Eliashberg	2003	164	1999	✔	✘	✔	✔	✘	✔	✔	✔	✘
Eliashberg and Shugan	1997	56	1991–1992	✘	✘	✘	✘	✘	✘	✔	✔	✘

Table 1 continued

Study		Data		Independent variables (continued)								Mode-rating effects
Authors	Years	Sample size	Time period	Movie characteristics				Movie type		Post-filming studio actions		
				Stars	Sequel	Age rating	Genre	Target audience	Production Budget	Ad spending	Release strategy	
Elliott and Simmons	2008	527	1999–2003	✘	✔	✔	✔	✘	✘	✔	✔	✘
Gemser et al.	2007	84	1998–2003	✔	✔	✘	✘	✔	✔	✘	✔	✘
Hennig-Thurau et al.	2006	331	1999–2001	✔	✔	✔	✘	✘	✘	✔	✔	✘
Jansen	2005	120	1993–1998	✔	✘	✔	✔	✔	✔	✘	✔	✘
King	2007	273	2003	✘	✘	✘	✔	✔	✔	✘	✔	✘
Lampel and Shamsie	2000	409	1991–1992	✘	✘	✘	✘	✘	✔	✘	✔	✔[2]
Litman	1983	125	1972–1978	✔	✘	✔	✔	✘	✔	✘	✔	✘
Litman and Kohl	1989	464	1981–1986	✔	✔	✘	✔	✘	✔	✘	✔	✘
Liu	2006	40	2002	✔	✘	✔	✔	✘	✔	✘	✔	✘
Moon et al.	2010	246	2003–2005	✘	✔	✘	✘	✘	✘	✔	✔	✔[3]
Prag and Casavant	1994	195	1990	✔	✔	✔	✔	✘	✔	✔	✘	✘
Ravid	1999	175	1991–1993	✔	✔	✔	✘	✘	✔	✘	✘	✘
Ravid and Basuroy	2004	175	1991–1993	✔	✔	✔	✘	✔	✔	✔	✔	✘
Ravid et al.	2006	172	1991–1993	✔	✔	✔	✘	✘	✔	✘	✔	✘
Reinstein and Snyder	2005	609	1999	✘	✘	✘	✔	✘	✘	✘	✔	✔[4]
Sawhney and Eliashberg	1996	101	1992	✔	✔	✔	✔	✔	✘	✘	✔	✘
Sochay	1994	263	1987–1989	✔	✘	✔	✔	✔	✘	✘	✔	✘
Wallace et al.	1993	1687	1956–1988	✔	✘	✔	✔	✘	✔	✘	✔	✘

✔ indicates that a variable was included in the respective study; ✘ indicates that a variable was not included in the respective study. * = significant influence of reviewer judgments; *n.s.* non-significant influence of reviewer judgments, *n.i.* reviewer judgments is not included for this dependent variable; (*1*) reviewer judgments × star and genre; (*2*) reviewer judgments × budget and number of screens; (*3*) reviewer judgments × ad spending; (*4*) reviewer judgments × review release

serve as opinion leaders, valued for their expertise and consulted for advice, and their reviews influence a movie's success at the box office. If they play the "predictor role," reviewers are merely leading indicators who do not influence box office success but represent consumers to the extent that their reviews can predict how much consumers will like, and thus patronize, a film. When empirically separating these two effects, E&S argued that if professional movie reviewers were influencers, the relationship between reviewer judgments and box office success would be strongest at the beginning of a movie's run, because their reviews should still be salient in consumers' memories. Assuming that the influence of reviewers decreases over time, a stronger relationship later in the movie's run seemingly would support a predictor role. Using a sample of 56 movies (shown in theaters for at least eight weeks) and ordinary least squares regressions for different weeks, they found no significant effect of reviews in the first four weeks, whereas an effect emerged in the following four weeks. They interpreted this finding as support for a predictor instead of an influencing role of reviewers.

Despite its notable contribution to our understanding of reviewer effects, E&S's work suffered some serious limitations. In particular, their assumption that reviewers' judgments must be correlated more strongly with early than late box office returns to provide evidence of a causal reviewer effect is problematic (e.g., Boatwright et al. 2007), because it ignores alternative explanations for their finding. Opening weekend audiences (mainly male teenagers; Epstein 2010) are structurally distinct from later moviegoers and might react differently to critical reviews. The argument that the measured effect is based on an overlap in quality perceptions also is not empirically demonstrated. Further, the sample is biased toward successful movies, in that E&S systematically excluded the 67 % films of the original sample that did not stay in theaters for a minimum of eight weeks. Finally, the four-week time frame chosen by the authors to separate the influencer and spurious effects appears arbitrary.

2.2.2 Studies that find an impact of reviewer judgments on success

Basuroy et al. (2003) analyzed weekly box office data using a similar approach, but found that reviewers' opinions related significantly and positively to success over the entire eight-week period following a movie's release, with a declining effect of negative reviews over time. Building on the same assumptions as E&S but collecting different data, they offered an interpretation that favors both effects, albeit with stronger support for the influencer role. Hennig-Thurau et al. (2006) also considered the impact of professional movie reviews at different chronological stages of box office success and found that reviews related significantly more to short-term than to long-term theatrical success; they also tried to control for consumers' quality perceptions by adding a measure of ordinary evaluations (e.g., Holbrook and Addis 2007) to the long-term (but not the short-term) success equation. Their approach could not resolve the systematic overlap between reviewers' and consumers' quality perceptions though (Litman 1983), so it also cannot provide a sufficient answer to the question whether (and when) reviewers are influencers.

Acknowledging the problems associated with E&S's early versus late box office assumption, Boatwright et al. (2007) employed a different approach: They aggregated different reviewers' opinions into a consensus measure of expert opinion, which they interpreted as a movie's underlying quality. They argued that the degree to which an individual reviewer's opinion deviated from this measure revealed his or her incremental impact, beyond the intrinsic quality of the movie—if the deviation parameter was significant for early or late box office, the reviewer would be an influencer or a predictor, respectively. They found no predictor effects, and influencer effects for only few reviewers. However, their approach also raises interpretational problems, because they calculated opinion deviations only *within* reviewers' judgments (but not considering consumers), and it is not clear what such deviations mean. Their correlations with success could still be explained by their measure's overlap with consumers' quality perceptions, for example.

Finally, Reinstein and Snyder (2005) aimed to disentangle reviewers' and consumers' quality perceptions by analyzing the impact of televised, professional reviews by the well-known reviewers Gene Siskel and Roger Ebert. At the time of their study, Siskel and Ebert hosted a weekly, nationally syndicated television show. Focusing on the timing of the reviews relative to the films' openings, Reinstein and Snyder argued that for films reviewed during their opening weekend, both influencer and predictor effects were possible, whereas films reviewed after their opening weekend could only register a predictor effect. In terms of the difference in total effects between the two groups of films, the authors found no significant effects (at $p < .05$) for the total sample, which suggested that Siskel and Ebert functioned neither as influencers nor as predictors. However, it must be noted that for movies that Siskel and Ebert reviewed after their opening weekend, audiences might still have gathered similar information from *other* reviewers prior to the movies' openings whose judgments often overlap with the ones from Siskel and Ebert.[1] The authors also included another quality variable, by film expert Leonard Maltin, whose role is unclear, but which was strongly correlated with box office (unlike the review variables).

2.3 Moderating effects

Limited attention has been directed toward moderator effects, which we find surprising considering the heterogeneous nature of the findings about reviewers' roles in movie success. Although they did not systematically investigate moderator variables, Reinstein and Snyder (2005) split their data into distribution and genre subsamples and found varying effect patterns. Specifically, the effect of positive reviews that they interpreted as an influencer effect emerged for dramas but not for other genres, and a predictor effect was reported for widely released movies but not for narrow releases. These patterns were not fully consistent though; for example,

[1] To test this argument, we collected data for 22 leading US newspapers and magazines from the metacritic.com website for the sample of films used in the empirical part of this study and correlated them with Roger Ebert's judgments. All correlations were significant at $p < .001$ and substantial, ranging from .37 to .55.

mixed reviews had a stronger positive effect than unanimous recommendations of a film.

In a follow-up study, Gemser et al. (2007) used a sample of Dutch films to focus on the moderating role of distribution characteristics. They found no support for their proposed moderating effect of arthouse versus mainstream films. Consistent with this, King (2007) found no differential effect of reviewers' perceptions for wide and limited releases among movies that opened in North American theaters in 2003. Levin et al. (1997), Desai and Basuroy (2005), and Suárez-Vázquez (2011) all used experimental laboratory settings to study stars as potential moderators of the effect of reviewers' quality perceptions. Their results again were contradictory: The first study discovered a much greater effect of reviewer judgments on movies without stars than on movies with them, the second study found the exact opposite, and the third study revealed no moderation at all.

3 Conceptual model and research hypotheses

3.1 Conceptual model

We present the conceptual model for this research in Fig. 1. The main relationship is represented by the two thick arrows between reviewer judgments and (a) short-term box office (i.e., opening weekend box office revenues of a movie) and (b) long-term box office (i.e., a movie's total box office revenues minus its opening weekend box office revenues). As visualized by the overlap of reviewer judgments and ordinary evaluations, this research isolates the reviewer effect on box office revenues from effects that also could be attributed to consumers' quality perceptions. We use an auxiliary regression approach, in which ordinary evaluations, as a measure of consumers' perceived quality (Holbrook and Addis 2007), serves as a regressor that can identify the isolated reviewer quality perception, which then enters the box office regressions as our measure of reviewer judgments. Ordinary evaluations serve as a control variable.

We provide theoretical arguments for a non-linear effect of isolated reviewer quality perceptions on box office revenues; to the best of our knowledge, this research is the first to do so. As another substantive contribution, we undertake a comprehensive investigation of potential moderators, derived from prior research on motion picture success factors (e.g., Hadida 2008; Hennig-Thurau et al. 2001), including movie characteristics (i.e., star power, sequels, and MPAA ratings), movie types (i.e., various genres and target audiences), post-filming studio actions (i.e., advertising spending and release strategy), information cascades (i.e., popular buzz and short-term box office; the latter's moderating effect applies only to the relationship between reviewer judgments and long-term box office), and review characteristics (i.e., number of professional reviews and reviewer dissent).[2]

[2] We did not include the production budget as a moderator or control, because this variable would have added a high level of multicollinearity to the analysis.

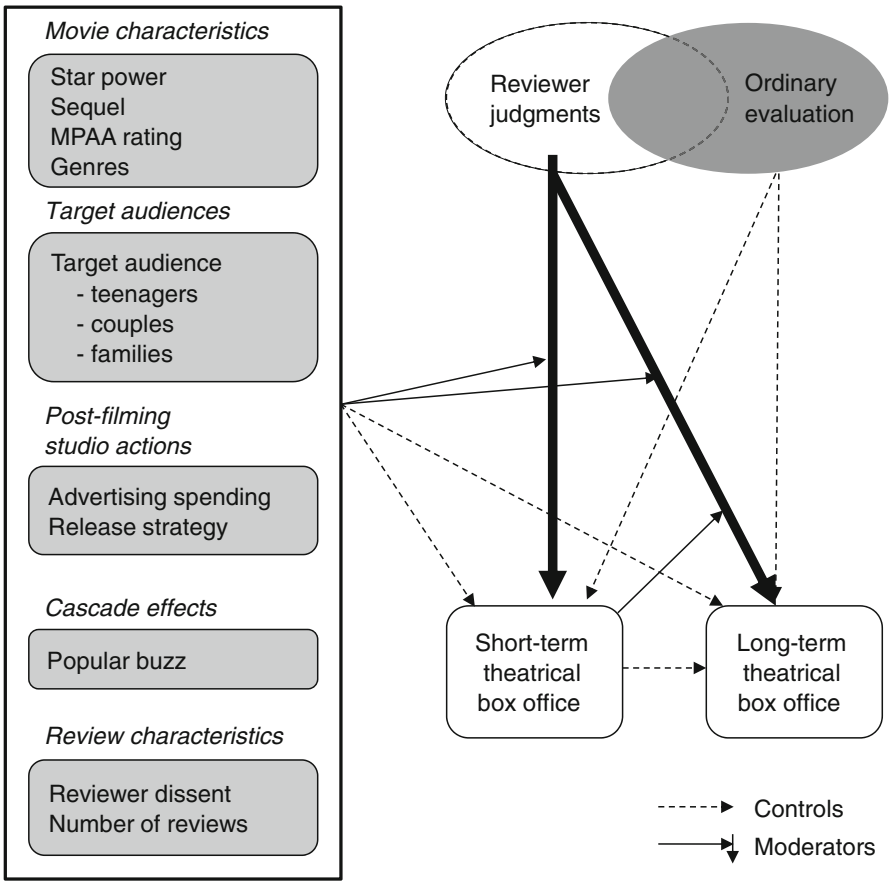

Fig. 1 Conceptual model

3.2 Research hypotheses

3.2.1 Main effects

We propose that professional reviewers positively influence consumers' movie decisions and thus movies' box office revenues. Reviews act as neutral information sources, free of commercial bias (Hennig-Thurau et al. 2001; Levin et al. 1997), so they should be more valuable to consumers than advertising and other company-related sources. Reviews also result from refined judgmental skills, acquired by reviewers through their specialization and training (Cameron 1995; Holbrook and Addis 2007), which grants them notable consistency and should increase their credibility for consumers, especially in contrast with other laypeople's (i.e., consumers) comments. We thus posit:

H_1 Reviewer judgments have positive influences on a movie's (a) short-term and (b) long-term box office revenues.

We distinguish influence effects on short- versus long-term box office. Movies with mass appeal rely heavily on the opening weekend for large earnings and try to push early success with heavy investments in advertising, stars, and screen counts (De Vany and Walls 2004). Clearly less is spent after the release date; Elberse and Anand (2007) report that studios spend only 12 % of its advertising budget after the opening weekend. Therefore, consumers who attend a film early during its run should base their decision more on these company signals, leading to a *lesser* impact of reviews on the short-term box office. Also, opening weekend audiences consist mostly of male teenagers, who are less susceptible to reviewer judgments than to marketing efforts and brands (Epstein 2010)—one of the characteristics that makes this segment particularly attractive to Hollywood producers.

However, following E&S, reviews are usually published around the release date of a movie and are most prominent to audiences during the opening weekend, whereas their presence decays over time. This trend would suggest a *stronger* impact of reviews on the short-term box office. Because we cannot judge theoretically which effect prevails, we offer competing hypotheses (Armstrong et al. 2001):

H_2 The effect of reviewer judgments is stronger on long-term than on short-term box office revenues.

H_{2ALT} The effect of reviewer judgments is stronger on short-term than on long-term box office revenues.

If a film earns very high or very poor professional reviews, these judgments should have a stronger effect on consumers than mid-range ("so–so") judgments. Very low ratings invoke a negativity bias and have a stronger effect than mid-range judgments, which instead are less distinctive and less informative, all else being equal. If films receive very high ratings, movie marketers usually incorporate the reviews in their advertising (Basuroy et al. 2003; Ravid et al. 2006), so those positive reviews are likely more visible to consumers than negative ones, which should result in a stronger effect compared with mid-range judgments. Because we predict an overall positive relationship between reviewers and box office revenues, we propose an S-shaped relationship, in which the reviewer influence levels out at a medium reviewer judgments ranking, then becomes steeper at the high and low extremes:

H_3 The effect of reviewer judgments on box office revenues is non-linear, such that reviewer judgments have stronger influences at very high and very low levels of reviewer ratings, compared with at medium levels, for (a) short-term and (b) long-term box office revenues.

3.2.2 Moderator effects

In proposing several moderators of the effect of reviewer judgments on box office success, we build on the distinction between arthouse and mainstream movies (e.g.,

Gemser et al. 2007). We also study how review characteristics, including number of reviews and dissent, might moderate this link.

Despite some differences in the details, the general definition of arthouse movies considers them "artistic or experimental in [their] primary intent" (Oxford Dictionary 2011); mainstream films instead are "produced and distributed by major Hollywood studios" and "aimed at the mass market" (Gemser et al. 2007, p. 44, 45). The box office revenues of arthouse movies should be influenced more strongly by reviewer judgments than those of mainstream movies, for two reasons. First, salient information that helps consumers approximate a new movie's quality, prior to seeing it, is generally available from other sources for mainstream movies, with their higher advertising budgets and branded ingredients, such as stars and sequels (Lampel and Shamsie 2000). For arthouse movies, though, such information is often lacking, so that consumers must largely rely on the information from professional reviews to make an informed choice. Second, arthouse audiences should trust reviewer judgments more than audiences of mainstream movies, mainly due to the higher preference match between reviewers and arthouse audiences (King 2007; Reinstein and Snyder 2005).

Extant research has offered limited support at best for the moderating role of arthouse versus mainstream movies though. We believe that this result reflects the aggregate-level perspective used to operationalize the two movie types; prior studies have not considered the individual facets of arthouse versus mainstream movies separately. Thus, we build on the preceding general arguments, but offer specific hypotheses about movie characteristics, target audiences, post-filming studio actions, and cascades.

Movie stars are typically associated with mainstream appeal and fulfill a function similar to ingredient brands (Levin et al. 1997; Hennig-Thurau et al. 2011). Star power gives consumers salient information about a movie, which enables them to judge its quality a priori on their own and makes them less likely to turn to reviewer judgments to choose a movie:

H_4 If a film has star power, the influence of reviewer judgments on (a) short-term and (b) long-term box office revenues is weaker.

Sequels, as extensions of existing movie brands (Sood and Drèze 2006; Hennig-Thurau et al. 2009), usually stem from highly successful previous mainstream films and tend to aim for broad appeal. As branded products, sequels are known to large audiences, who consider the brand as valuable information when anticipating the quality of a new film. Potential sequel audiences thus will rely less on reviewer judgments (King 2007):

H_5 If a movie is a sequel, the influence of reviewer judgments on (a) short-term and (b) long-term box office revenues is weaker.

Arthouse movies are typically rated R by the MPAA, because they tend to be more "edgy" and "counterculture" (De Vany and Walls 2002) than mainstream movies, which often receive less restrictive ratings of G, PG, or PG-13. Reviewer judgments may be more valuable for R-rated content, because such edginess implies a higher level of consumer risk, prompting consumers to pursue additional

information; less restrictive ratings involve a lesser level of risk. Thus, we expect reviewer judgments to have a stronger effect for R-rated movies:

H_6 Reviewer influences on both (a) short-term and (b) long-term box office revenues are stronger when a movie is rated R by the MPAA than when it is rated G, PG, or PG-13.

Another essential movie characteristic is its genre (Hennig-Thurau et al. 2001). Dramas are generally considered to have a greater focus on art characteristics (Reinstein and Snyder 2005), whereas action, thriller, comedy, and romance films instead rather cater to mainstream preferences. Because dramas convey more complex signals in terms of quality then other genres, they require additional information from sources such as reviewers. Thus, we expect that reviewer influence is stronger for the drama genre but weaker for the other genres:

H_7 Reviewer influences on both (a) short-term and (b) long-term box office revenues are (i) stronger for the genre drama and (ii) weaker for the action, thriller, comedy, and romance genres.

Regarding target audiences, teenagers stand out as a group particularly focused on the social aspect of moviegoing (Stradella Road 2010). They constitute the core target group for blockbuster movies, partially because of their reported limited susceptibility to professional reviews (Epstein 2010). We expect them to pay less attention to film reviews than do other audiences. In couples, women and men might have different ideas of a "good" movie, so more information is needed to ensure that both partners like it; this demand should increase the influence of reviewer judgments. Predicting the effect of families is more complicated though. Although families probably focus little on arthouse appeal and expect limited predictive validity of reviewer judgments for their own decisions (which would suggest a lower influence of reviews), we expect this effect to be dominated by parents' strong need for valuable information about a film when preparing for a family outing to ensure that it is suitable for their children and thus expect a higher influence of reviews for movies targeted at families:

H_8 Reviewer influences on both (a) short-term and (b) long-term box office revenues are (i) weaker for movies with teenagers as target audiences and (ii) stronger for movies with couples and families as target audiences.

Post-filming studio actions (e.g., advertising, distribution; Hennig-Thurau et al. 2001) also differ between mainstream and arthouse movies and should moderate reviewers' influences. Because mainstream films receive so much more advertising spending (De Vany and Walls 2004), extensive information is easily available to consumers when such a film releases, which may limit consumers' need for review information (King 2007):

H_9 The more advertised a film is, the less influence reviewer judgments have on (a) short-term and (b) long-term box office revenues.

Turning to distribution variables, mainstream films are often released on a wide scale, but films with arthouse components tend to be released narrowly, sometimes

using only a small number of theaters as a platform for building positive word of mouth (Chen et al. 2007). Because narrow releases are more likely to attract people interested in arthouse characteristics, we expect a stronger influence of reviewer judgments:

H_{10} Reviewer judgments have a stronger influence on (a) short-term and (b) long-term box office revenues for narrow than for widely released movies.

We also propose two types of action-based cascade effects that might moderate the impact of reviewer judgments (Bikchandani et al. 1992). The first effect, which measures popular buzz as the level of anticipation present among consumers before they see the film (Houston et al. 2011), relates to the general distinction between mainstream and arthouse films, because mainstream films usually generate more popular buzz than art films (e.g., due to their branded nature). If lots of people talk about a film, an "anticipation-cascade" effect can develop, in that consumers are interested in a film primarily for its buzz, which reduces the impact of reviewers' judgments of movies:

H_{11} The greater the popular buzz for a movie, the less influence reviewer judgments have on (a) short-term and (b) long-term box office revenues.

We also expect success-breeds-success effects to moderate reviewer effects, regardless of the mainstream or arthouse elements. Specifically, higher short-term box office revenues prompt more consumers to go to see the film, because other consumers have seen it, which constitutes an "action-based cascade" (Bikchandani et al. 1992) or "uninformative information cascade" (De Vany and Walls 2004). Early success signals the attractiveness of a movie to mass audiences and caters to consumers' informational needs, making them less likely to seek information in reviews:

H_{12} The higher a film's short-term success (beyond what can be expected from film characteristics and post-filming studio actions), the weaker the influence of reviewer judgments on its long-term box office revenues.

In addition to these movie-related moderators, we argue that the number of reviews published by major outlets and the dissent among reviewers can moderate the effect of reviewer judgments. Specifically, the number of professional reviews of a new movie published by major outlets indicates the level of anticipation present among experts, similar to what popular buzz reflects for anticipation among consumers. When consumers perceive strong buzz among experts as a result of the large number of reviews, the effect of a review's valence likely is lesser than that for movies that have been reviewed less, all else being equal:

H_{13} The higher the number of reviews for a movie, the less influence reviewer judgments have on (a) short-term and (b) long-term box office revenues.

Finally, reviewer dissent, or the extent to which reviewers disagree with one another (also sometimes referred to as variance or disparity), could raise consumers' uncertainty about the quality of a movie (Basuroy et al. 2006). West and Broniarczyk (1998) argue that reviewer dissent negatively influences the relative

weight consumers assign to reviewer judgments versus other information. Similarly, D'Astous and Touil (1999) found that consensus among experts led consumers' evaluations to follow the critics' judgments. Therefore, more reviewer dissent should make reviewer judgments less relevant for consumer decision-making and box office:

H_{14} The greater the reviewer dissent for a movie, the less reviewer judgments influence (a) short-term and (b) long-term box office revenues.

4 Method

4.1 Data, variable operationalization, and correlations

This research considers all 1,370 narrative films that were first released in US theaters between January 1998 and December 2006 and generated at least $1 million at the domestic box office.[3] Documentaries and foreign films were dropped, because consumer decision-making processes likely differ from those of narrative films that have been first released in the United States. Table 2 provides detailed information regarding the operationalization of the variables.

Reviewer judgments, our key variable of interest, came from Metacritic.com, a site that aggregates the ratings of professional reviews published in 46 publications into a "Metascore." We conducted an auxiliary regression to isolate the part of reviewer judgments that do not overlap with consumers' quality perceptions, regressing the Metascore on consumer-perceived quality, or ordinary evaluations. Our measure of ordinary evaluations came from user ratings from Netflix (netflix.com), the most popular movie rental and download site in the United States, and Yahoo! Movies (movies.yahoo.com), one of the most frequented movie websites (Liu 2006). Consumers can rate films on a scale from 0 to 5 stars on Netflix and from A+ to F on Yahoo! Movies.[4] We *z*-standardized the average scores from Netflix and Yahoo! and used the mean of the two values in the auxiliary regression. We preferred these measures over user ratings from the movie website IMDb, because IMDb users are mostly "elitist" consumers with more expertise than their fellow viewers, by virtue of their stronger engagement with motion pictures. In contrast, both Yahoo! and Netflix target ordinary consumers and thus better capture the concept of ordinary evaluations (Moon et al. 2010).[5]

The residuals of the auxiliary regression (significant at $p < .01$, $R^2 = .21$, no indication of a non-linear relationship), which represents the part of reviewer

[3] The latter condition is applied by *Variety* magazine to compile its annual list of movie releases, which served to identify the relevant titles.

[4] From A+ to D−, each letter has three grading levels (e.g., A+, A, A−). There are no E grades, and F represents the worst grade, with no sublevels. Overall, 13 different grades are thus possible.

[5] This argument is supported empirically by correlations among the different quality variables in our data set. Although IMDb correlates highly with reviewer judgments (measured by Metascore) at $r = .76$, both Yahoo! and Netflix show clearly lower correlations ($r = .41$ for Yahoo!; $r = .44$ for Netflix). The interitem correlation between Yahoo! and Netflix is quite high, with $r = .72$.

Table 2 Operationalization of model variables

Variable	Label	Operationalization	Data source
Dependent variables			
Short-term box office	STBO	North American box office revenues generated by a movie's opening weekend in USD million, converted to US-$ values of 2006 to correct for inflation and log-transformed to correct for exponential distribution	Boxofficemojo.com
Long-term box office	LTBO	Difference between total North American box office revenues of a movie and its North American box office revenues generated at its opening weekend in USD million, converted to US-$ values of 2006 to correct for inflation and log-transformed to correct for exponential distribution	Boxofficemojo.com
Quality variables			
Reviewer judgments	RJ_RES	Residuals of auxiliary regression with the Metascore regressed on ordinary evaluation (mean of z-standardized average scores from Netflix and Yahoo! Movies ratings)	Metacritic.com, netflix.com, movies.yahoo.com
Ordinary evaluation	ORDINARY_EVAL	Two-item index, mean of z-standardized Netflix and Yahoo! Movies ratings	Netflix.com and movies.yahoo.com
Moderator variables			
Star power	STAR	1 if a star of a film was listed on Quigley's Annual List of Box Office Champions up to three years before the film was released; 0 otherwise (e.g., Hennig-Thurau et al. 2011)	Quigley's Annual List of Box Office Champions
Sequel	SEQUEL	1 if a movie was a sequel to a previous film, 0 otherwise	IMDb.com
Rating	R_RATING	1 if the movie's MPAA rating was R (e.g., Moon et al. 2010)	MPAA
Drama	GENRE_DRAMA	1 if one of the movie's genres was drama	IMDb.com
Action	GENRE_ACTION	1 if one of the movie's genres was action	IMDb.com
Thriller	GENRE_THRILLER	1 if one of the movie's genres was thriller	IMDb.com
Comedy	GENRE_COMEDY	1 if one of the movie's genres was comedy	IMDb.com
Romance	GENRE_ROMANCE	1 if one of the movie's genres was romance	IMDb.com
Teenagers as target audience	AUDIENCE_TEENS	1 if the movie's target audience was listed as "teens" by Jinni.com	Jinni.com

Table 2 continued

Variable	Label	Operationalization	Data source
Couples as target audience	AUDIENCE_COUPLES	1 if the movie's target audience was listed as "couples" by Jinni.com	Jinni.com
Families as target audience	AUDIENCE_FAMILIES	1 if the movie's target audience was listed as either "family outing" or "kids" by Jinni.com	Jinni.com
Advertising spending	ADVERTISING	The sum of all advertising expenses during the entire theatrical run of a film in thousands of US-$; values were converted to US-$ values of 2006 to account for inflation	TNS/Kantar Media
Narrow release	NARROW_RELEASE	1 if a movie has been released on less than 500 screens at its initial North American release (e.g., Boatwright et al. 2007), 0 otherwise	Boxofficemojo.com
Popular buzz	BUZZ_RES	Residuals of auxiliary regression with a movie's inverted Moviemeter rank on IMDb in the week before its North American release (e.g., Ho et al. 2009) being regressed on advertising spending	IMDb.com
Success-breeds-success of STBO	STBO_RES	Unstandardized residuals of the final short-term box office regression	See Table 5
Number of reviews	NO_OF_REVIEWS	The number of reviews used to create the Metascore of a movie	Metacritic.com
Reviewer dissent	REVIEWER_DISSENT	Variance of the (up to 46) individual professional reviews that are considered for the Metascore of a movie	Metacritic.com

judgments that did not overlap with ordinary evaluations, then provided the reviewer judgments variable RJ_RES in the box office regressions. In other words, RJ_RES measured the deviation of reviewer judgments from average consumers' quality perceptions, as represented by the Yahoo! and Netflix measures.

For each of the hypothesized moderators, we created an interaction variable to measure its interaction with RJ_RES. We used a residual centering approach (Lance 1988) to form the interaction terms by regressing the product term of the interaction variables on both variables, then using the residuals from that regression in the final estimation. For example, for the variable star power (STAR), we regressed RJ_RES × STAR on RJ_RES and STAR, and the residuals of that regression were saved as RJ × STAR. Residual centering allows for the consideration of only that part of the interaction term that is not explained by the two interacting variables, which eliminates potential multicollinearity problems and provides a conservative estimate of interaction effects in comparison with other methods.

The moderator variables for short-term box office and popular buzz require some additional comments. Regarding the postulated moderation of RJ_RES on long-term box office by short-term box office, we used the (unstandardized) residuals for the final short-term box office regression as an independent variable in the long-term box office regression. With this procedure, we ensured that the estimated success-breeds-success effects were caused solely by short-term box office, not confounded with any other variables we considered.

A similar treatment was applied to popular buzz. Considering that buzz likely is influenced by advertising (Karniouchina 2011), we conducted an auxiliary regression to isolate the "organic buzz" not explained by advertising, to avoid multicollinearity. We regressed the movie's inverted Moviemeter rank (i.e., search activity in the IMDb for a movie in a given week) on advertising spending. The residuals of this regression (significant at $p < .01$, $R^2 = .07$) then provided the measure of popular buzz (BUZZ_RES).[6] In Table 3 we provide the correlations among all the model variables.

4.2 Procedure

To test the hypotheses, we used ordinary least squares regressions. Including all 16 or 17 interactions (for short- and long-term box office, respectively) jointly in a regression would create a risk of arbitrary variance allocation, due to the correlations among the interaction terms, so we first ran a separate regression for each interaction term (including all control variables that were to be included in the final regression model and the respective interaction terms). Only interaction terms with significant coefficients at $p < .05$ were subsequently considered for the final regression model. For short-term box office, the interactions of RJ_RES with advertising and buzz reached significance; for long-term box office, the interactions of RJ_RES with star power, sequels, R rating, drama, thriller, comedy, families,

[6] We analyzed the number of released movies in our data but did not find any significant differences or trends across years, months, and weeks, so we did not control for the number of movies released in a given week.

advertising, narrow release, popular buzz, and short-term box office all were significant, as we detail in Table 4.

The final regression models included the direct effects of all variables and the interaction terms that were significant in the preparatory analyses. We also included ordinary evaluations as a control variable in both models. To test the proposed non-linear effect of reviewer judgments on box office revenues, we included the squared (RJ_resSQ) and cubed (RJ_resQB) terms of RJ_RES. In summary, the short-term box office regression contained 23 independent variables, and the long-term box office regression contained 32 independent variables.

5 Results

After adjusting for the number of model variables, the regressions account for approximately 81 and 90 % of short- and long-term box office variance, respectively. The F values for both models are significant ($p < .001$). As a result of our procedure, all the variance inflation factors are less than 4, so multicollinearity is not an issue in either analysis (Cohen et al. 2003). The model parameters for both regressions appear in Table 5.

5.1 Influencer effect and non-linearity

In the short-term box office regression, neither the reviewer judgments variable nor its squared and cubic terms is significant, so we cannot confirm an influencer effect on short-term box office success, or H1a, for movies in general. The results differ for the long-term box office regression though, in which both reviewer judgments and its squared term (but not the cubic term) are significant, in support of H1b. The isolated reviewer quality perception thus influences long-term box office revenues, in contrast with E&S's conclusion. These results also favor H2 and a stronger effect on long-term box office, over $H2_{ALT}$. It can be seen that the effect of reviews on long-term box office that Basuroy et al. (2003) identified was at least partially of an influencer type, but the effects on short-term box office resulted from the conceptual overlap of reviewer and audience quality perceptions.

In Fig. 2, we plot the relationship for the range of reviewer influence values covered by our data; the strength of reviewer influence increases with its value. The negative relationship at extremely low levels, as implied by the proposed U-shaped relationship, hardly takes effect in the relevant range of values, which may explain the lack of significance of the cubic reviewer judgments variable. Thus, reviewer influence has an asymmetric rather than U-shaped effect, strongest at very positive levels, supporting the non-linearity character suggested in H3b, but not exactly its proposed course.

5.2 Moderator effects

The main effect of reviewer judgments is not significant for short-term box office, but two moderators suggest a more differentiated role of professional reviews

Table 3 Bivariate correlations among model variables

	Variable	1	2	3	4	5	6	7	8	9	10	11	12
1	STBO	1											
2	LTBO	.898*	1										
3	STAR	.261*	.289*	1									
4	SEQUEL	.263*	.191*	−.015	1								
5	R_RATING	−.301*	−.283*	−.083*	−.029	1							
6	GENRE_DRAMA	−.303*	−.207*	.013	−.196*	.196*	1						
7	GENRE_ACTION	.327*	.226*	.053*	.190*	−.056*	−.163*	1					
8	GENRE_THRILLER	.191*	.106*	.015	.102*	.218*	−.003	.291*	1				
9	GENRE_COMEDY	−.008	.007	.026	−.032	−.216*	−.325*	−.250*	−.468*	1			
10	GENRE_ROMANCE	−.014	.026	.077*	−.117*	−.133*	.082*	−.193*	−.246*	.226*	1		
11	AUDIENCE_TEENS	.292*	.198*	−.012	.208*	−.163*	−.396*	.170*	−.016	.173*	−.047	1	
12	AUDIENCE_COUPLES	.062*	.093*	.092*	−.057*	−.175*	−.093*	−.225*	−.285*	.389*	.478*	.110*	1
13	AUDIENCE_FAMILIES	.248*	.287*	.010	.115*	−.313*	−.233*	−.004	−.193*	.156*	−.086*	.048	−.072*
14	ADVERTISING	.788*	.832*	.341*	.116*	−.303*	−.152*	.249*	.072*	.003	.005	.136*	.073*
15	NARROW_RELEASE	−.719*	−.558*	−.131*	−.100*	.261*	.290*	−.191*	−.153*	−.060*	−.030	−.238*	−.059*
16	BUZZ_RES	.163*	.136*	−.001	.101*	.144*	−.044	.131*	.116*	−.148*	−.042	.114*	−.035
17	ORDINARY_EVAL	.212*	.378*	.029	.001	−.034	.196*	.044	−.050	−.125*	.014	−.039	.020
18	NO_OF_REVIEWS	.276*	.367*	.208*	−.007	.035	.187*	.038	.044	−.053*	.054*	−.095*	.026
19	REVIEWER_DISSENT	−.007	−.047	.013	.008	.117*	−.106*	.002	.034	.062*	−.033	.085*	.004
20	RJ_RES	−.164*	.015	.053	−.062*	.191*	.270*	−.108*	−.067*	−.039	−.032	−.228*	−.061*
21	RJ_resSQ	−.211*	−.140*	−.056*	−.076*	.161*	.065*	−.094*	−.056*	.059*	−.003	−.033	−.027
22	RJ_resQB	−.100*	.039	.049	−.036	.158*	.195*	−.083*	−.037	−.022	.000	−.167*	−.034
23	STBO_RES	.440*	.343*	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Table 3 continued

	Variable	13	14	15	16	17	18	19	20	21	22	23
1	STBO											
2	LTBO											
3	STAR											
4	SEQUEL											
5	R_RATING											
6	GENRE_DRAMA											
7	GENRE_ACTION											
8	GENRE_THRILLER											
9	GENRE_COMEDY											
10	GENRE_ROMANCE											
11	AUDIENCE_TEENS											
12	AUDIENCE_COUPLES											
13	AUDIENCE_FAMILIES	1										
14	ADVERTISING	.283*	1									
15	NARROW_RELEASE	−.144*	−.546*	1								
16	BUZZ_RES	−.116*	.000	−.062*	1							
17	ORDINARY_EVAL	.081*	.306*	.004	.028	1						
18	NO_OF_REVIEWS	−.013	.481*	−.076*	−.037	.216*	1					
19	REVIEWER_DISSENT	−.074*	−.056*	−.060*	.148*	−.128*	−.119*	1				
20	RJ_RES	.034	.019	.322*	.042	.000	.412*	−.224*	1			
21	RJ_resSQ	−.094*	−.165*	.177*	−.012	−.065*	−.044*	−.058*	.112*	1		
22	RJ_resQB	.017	.029	.230*	.039	−.064*	.341*	−.177*	.820*	.154*	1	
23	STBO_RES	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1

* significant at $p < .05$

Table 4 Significance of interaction terms in separate regressions

Interaction term	STBO regression Beta	LTBO regression Beta
RJ_RES × STAR	−.014	−.027*
RJ_RES × SEQUEL	−.017	−.041*
RJ_RES × R_RATING	.010	.033*
RJ_RES × GENRE_DRAMA	.002	.041*
RJ_RES × GENRE_ACTION	.022	−.010
RJ_RES × GENRE_THRILLER	−.005	−.026*
RJ_RES × GENRE_COMEDY	.020	.034*
RJ_RES × GENRE_ROMANCE	.008	.020
RJ_RES × AUDIENCE_TEENS	.015	−.024
RJ_RES × AUDIENCE_COUPLES	−.014	−.008
RJ_RES × AUDIENCE_FAMILIES	−.015	−.052*
RJ_RES × ADVERTISING	−.062*	−.072*
RJ_RES × NARROW_RELEASE	.017	.056*
RJ_RES × BUZZ_RES	−.038*	−.043*
RJ_RES × NO_OF_REVIEWS	−.035*	−.002
RJ_RES × REVIEWER_DISSENT	.005	.001
RJ_RES × STBO_RES	n.a.	−.041*

n.a. not applicable

* significant at $p < .05$

during a film's opening weekend. Specifically, the interaction terms of reviewer judgments with advertising (H9a) and with buzz (H11a) are significant; the negative coefficients of both interactions indicate that as advertising spending and popular buzz increase, reviewer influence decreases, consistent with our theoretical arguments. However, no other moderating effects appear for short-term box office, so we must reject the remaining short-term box office hypotheses.

For long-term box office, the picture changes notably. Star power exerts a negative moderating effect on the impact of reviewer judgments, in line with H4b. A similar finding applies to sequels, whose negative moderation is in line with H5b. Among the genres, drama has the proposed positive moderation effect (i.e., reviewer judgments has a stronger effect), but so does comedy, which runs counter to our expectations. The findings for H7b thus are mixed. We find a negative moderation effect for movies targeted at families (H8b), whereas we proposed a positive effect. The stronger effect of a narrow release and short-term box office are again consistent with H10b and H14, respectively. The other effects are not significant.

5.3 Simple slope analyses

For a more detailed understanding of the significant interactions, we calculated simple slopes at one standard deviation above and below the mean of the moderator variable in each interaction, using IRSE software by Meier (2008). For the dummy variables, we calculated slopes for dummy values of 1 and 0. The simple slopes of those interactions that were significant in the full regressions appear in Figs. 3 and

Table 5 Final joint regression results

Variable	Isolated reviewer quality perception model	
	STBO	LTBO
STAR	.041*	.042*
SEQUEL	.108*	.071*
R_RATING	−.039*	−.057*
GENRE_DRAMA	−.062*	−.072*
GENRE_ACTION	.053*	−.008
GENRE_THRILLER	.091*	.079*
GENRE_COMEDY	−.005	−.001
GENRE_ROMANCE	.010	.038*
AUDIENCE_TEENS	.067*	.035*
AUDIENCE_COUPLES	.028	.035*
AUDIENCE_FAMILIES	.047*	.060*
ADVERTISING	.466*	.613*
NARROW_RELEASE	−.369*	−.195*
BUZZ_RES	.119*	.102*
ORDINARY_EVAL	.076*	.216*
STBO_RES	n.i.	.340*
NO_OF_REVIEWS	.007	−.045*
REVIEWER_DISSENT	−.025*	.024*
RJ_RES	−.034	.139*
RJ_resSQ	−.016	.043*
RJ_resQB	.030	−.015
RJ_RES × STAR	n.i.	−.018*
RJ_RES × SEQUEL	n.i.	−.018*
RJ_RES × R_RATING	n.i.	.006
RJ_RES × GENRE_DRAMA	n.i.	.021*
RJ_RES × GENRE_THRILLER	n.i.	−.005
RJ_RES × GENRE_COMEDY	n.i.	.030*
RJ_RES × AUDIENCE_FAMILIES	n.i.	−.039*
RJ_RES × ADVERTISING	−.058*	.001
RJ_RES × NARROW_RELEASE	n.i.	.026*
RJ_RES × BUZZ_RES	−.037*	−.014
RJ_RES × NO_OF_REVIEWS	.003	n.i.
RJ_RES × STBO_RES	n.i.	−.046*
R^2/adj. R^2	.812/.809	.904/.902

All parameters are standardized regression coefficients. *n.i.* variable was not included in the respective equation for reasons provided in the text

* significant at $p < .05$

4; we report their spotlight analyses (Fitzsimons 2008) in Table 6. In the spotlight analyses, we shifted the mean level of the moderator variable up and down by one standard deviation, then conducted significance tests for an individual slope (Aiken and West 1991).

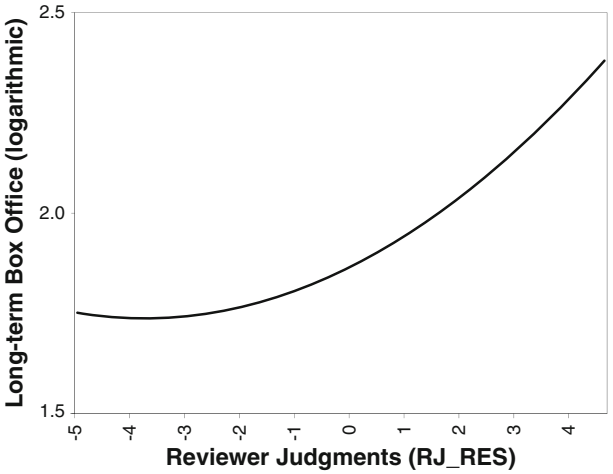

Fig. 2 Non-linear relationship of reviewer judgments and long-term box office revenues

As Fig. 3 shows, reviewers *negatively* influence short-term box office when advertising and the pre-release buzz for a movie is high, which are two central ingredients of "high concept" or blockbuster movies. For such films, it looks as enthusiastic receptions by professional reviewers can actually hurt the early box office, perhaps because potential blockbuster audiences might be irritated by very positive reviewer evaluations (which they expect not to match their own preferences). The slopes are significant for high advertising and buzz levels.

For the long-term box office (Fig. 4, right column of Table 6), films with stars are still positively influenced by reviewers (but less so than films without stars, which produces the negative interaction effect). Sequels are not influenced by reviewer judgments, in contrast to "original" films (i.e., non-sequels). As argued, dramas gain more than other movies from positive reviews; the same is true for comedies. The negative interaction effect for family films results from the lack of a positive impact of reviews for these films, but not from a *negative* impact. For narrow releases, the pattern resembles those for dramas and comedies. Finally, though films with a high short-term box office on average benefit from positive reviews, the effect is weaker than that for films with a small short-term box office.

5.4 Post hoc analyses: comparison with alternative models

To determine to what degree these results can be attributed to our auxiliary regression approach, we also ran two sets of comparison models. In both sets, we employed the raw reviewer judgments variable instead of its residual term; in the first set, we did not include ordinary evaluations, and in the second, we used it as a control variable. The results of the post hoc analyses for both comparison models appear in Table 7.

Although results are similar in general, we note some differences with regard to the effects of reviewer judgments and its postulated interactions. In the comparison

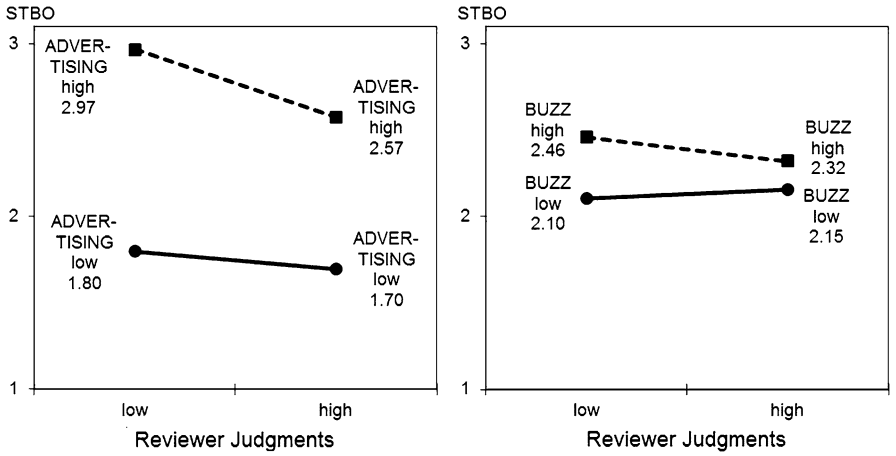

Fig. 3 Simple slope results: moderating effects for short-term box office model

model in which we did not control for ordinary evaluations, the main effect of reviewer judgments was significant in the short-term box office equation, as was its interaction with the number of reviews published. In the long-term box office equation with this model, the cubed term of reviewer judgments became significant, and the interactions of reviewer judgments with star power and the drama genre both lost significance.

In the second comparison model, in which we used the raw data of reviewer judgments but also included ordinary evaluations as a covariate, we find results for the main effect of reviewer judgments that match those from the auxiliary regression approach. In this model, the interaction of reviewer judgments and star power became non-significant in the long-term box office equation. These findings stress the robustness of the findings we have reported for the auxiliary regression approach.

6 Discussion and implications

6.1 Discussion of the results

This study re-analyses controversial previous findings about the relationship between professional movie reviews and product success by taking a novel approach: an auxiliary regression that separates reviewers' quality perceptions from consumers' evaluations. It also provides a comprehensive examination of the conditions that cause this relationship to vary, as we summarize in Table 8.

6.1.1 Influencer effect

We find an effect of isolated reviewer quality perceptions on long-term box office, but not short-term box office, which suggests that reviewer judgments influences

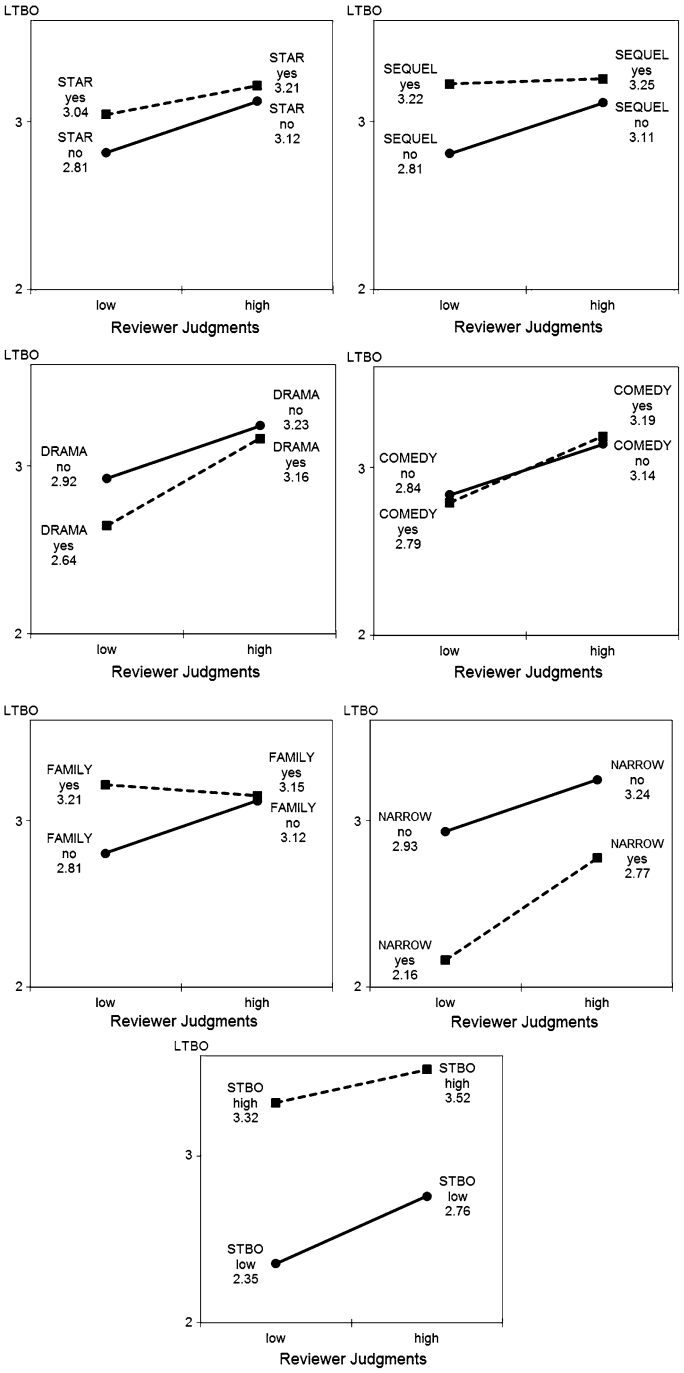

Fig. 4 Simple slope results: moderating effects for long-term box office model

Table 6 Results of spotlight analyses

Slope of reviewer judgments at…		STBO		LTBO	
		Beta	*t*	Beta	*t*
Yes	STAR	n.i.		.05	6.716*
No	STAR	n.i.		.09	10.701*
Yes	SEQUEL	n.i.		.01	.334
No	SEQUEL	n.i.		.09	10.621*
Yes	GENRE_DRAMA	n.i.		.16	9.057*
No	GENRE_DRAMA	n.i.		.09	10.976*
Yes	GENRE_COMEDY	n.i.		.12	7.470*
No	GENRE_COMEDY	n.i.		.09	10.627*
Yes	AUDIENCE_FAMILIES	n.i.		−.02	−.766
No	AUDIENCE_FAMILIES	n.i.		.09	11.064*
High	ADVERTISING	−.12	−5.090*	n.i.	
Low	ADVERTISING	−.03	−2.869*	n.i.	
Yes	NARROW_RELEASE	n.i.		.18	8.728*
No	NARROW_RELEASE	n.i.		.09	10.972*
High	BUZZ_RES	−.04	−3.101*	n.i.	
Low	BUZZ_RES	.02	1.103	n.i.	
High	STBO_RES	n.i.		.06	5.504*
Low	STBO_RES	n.i.		.12	11.281*

* significant at $p < .05$. Note *n.i.* variable was not included in the respective equation for reasons provided in the text

consumers' behavior beyond the starting weekend, rather than during the first days of a movie's release, when alternative information sources instead dominate. However, in some conditions, reviews also affect the opening weekend box office. It is the consumers interested in arthouse aspects of films who are most prone to reviewer influence and react in the direction of a review, but opening weekend mainstream audiences generally do not seem interested in reviews. Also, audiences prone to reviewer influences can consult reviews later—especially considering the easy availability of reviews online, which makes such consultations presumably more common now than they were in the data analyzed by E&S in the early1990s.

6.1.2 Non-linear effect

This study is the first to investigate the potential non-linear effect of reviews and finds empirical support for it. We identify the relationship between reviewer influence and long-term box office as U-shaped. Although reviewer influences become stronger as reviewer opinions about the film increase in praise, they level out at the lower end of the spectrum. The higher a rating, the more strongly it speaks for the film, and the more informative it is to consumers, which leads to stronger reactions. Positive reviews also generally appear in a film's advertising, increasing their exposure and thus their influence likelihood.

Table 7 Post hoc analyses results

Variable	Raw reviewer judgments without ordinary evaluation control model		Raw reviewer judgments with ordinary evaluation control model	
	STBO	LTBO	STBO	LTBO
STAR	.036*	.032*	.036*	.041*
SEQUEL	.111*	.073*	.109*	.072*
R_RATING	−.035*	−.068*	−.034*	−.058*
GENRE_DRAMA	−.058*	−.058*	−.062*	−.069*
GENRE_ACTION	.055*	−.001	.054*	−.002
GENRE_THRILLER	.089*	.073*	.091*	.078*
GENRE_COMEDY	−.009	−.013	−.008	.001
GENRE_ROMANCE	.009	.042*	.010	.037*
AUDIENCE_TEENS	.070*	.043*	.067*	.036*
AUDIENCE_COUPLES	.030*	.046*	.031*	.040*
AUDIENCE_FAMILIES	.048*	.063*	.052*	.066*
ADVERTISING	.482*	.651*	.472*	.611*
NARROW_RELEASE	−.363*	−.193*	−.367*	−.193*
BUZZ_RES	.121*	.101*	.124*	.103*
ORDINARY_EVAL	n.i.	n.i.	.125*	.154*
STBO_RES	n.i.	.344*	n.i.	.340*
NO_OF_REVIEWS	−.005	−.060*	.001	−.041*
REVIEWER_DISSENT	−.026*	.025*	−.026*	.023*
RJ	.135*	.293*	−.099	.148*
RJ_SQ	.004	.044*	−.018	.041*
RJ_QB	−.001	−.128*	.023	−.017
RJ × STAR	n.i.	−.009	n.i.	−.010
RJ × SEQUEL	n.i.	−.032*	n.i.	−.029*
RJ × R_RATING	n.i.	.015	n.i.	.003
RJ × GENRE_DRAMA	n.i.	.015	n.i.	.023*
RJ × GENRE_THRILLER	n.i.	−.001	n.i.	.001
RJ × GENRE_COMEDY	n.i.	.038*	n.i.	.035*
RJ × AUDIENCE_FAMILIES	n.i.	−.048*	n.i.	−.049*
RJ × ADVERTISING	−.071*	−.011	−.088*	−.004
RJ × NARROW_RELEASE	n.i.	.038*	n.i.	.033*
RJ × BUZZ_RES	−.044*	−.003	−.042*	−.012
RJ × NO_OF_REVIEWS	−.131*	n.i.	.057	n.i.
RJ × STBO_RES	n.i.	−.070*	n.i.	−.065*
R^2/adj. R^2	.814/.811	.898/.896	.816/.813	.908/.906

All parameters are standardized regression coefficients. *n.i.* variable was not included in the respective equation for reasons provided in the text

* significant at $p < .05$

Table 8 Overview of hypotheses and results

Hypothesis		Influence of	DV	Direction	Variable (s)	Beta	Support
H1	a	Reviewer judgments	STBO	+	RJ_RES	−.034	No
	b		LTBO	+		.139*	Yes
H2		Reviewer judgments	Both DVs	Stronger on LTBO	RJ_RES	See above	Yes
H2alt				Stronger on STBO			No
H3	a	Reviewer judgments	STBO	Stronger at high and low than medium levels of evaluation	RJ_RES	−.034	No
					RJ_resSQ	−.016	
					RJ_resQB	.030	
	b		LTBO		RJ_RES	.139*	No
					RJ_resSQ	.043*	
					RJ_resQB	−.015	
H4	a	Star power	STBO	−	RJ_RES × STAR	n.s.	No
	b		LTBO	−		−.018*	Yes
H5	a	Sequel	STBO	−	RJ_RES × SEQUEL	n.s.	No
	b		LTBO	−		−.018*	Yes
H6	a	R rating	STBO	+	RJ_RES × R_RATING	n.s.	No
	b		LTBO	+		.006	No
H7	a	Genre drama	STBO	+	RJ_RES × GENRE_DRAMA	n.s.	No
		Genre action		−	RJ_RES × GENRE_ACTION	n.s.	No
		Genre thriller		−	RJ_RES × GENRE_THRILLER	n.s.	No
		Genre comedy		−	RJ_RES × GENRE_COMEDY	n.s.	No
		Genre romance		−	RJ_RES × GENRE_ROMANCE	n.s.	No
	b	Genre drama	LTBO	+	RJ_RES × GENRE_DRAMA	.021*	Yes
		Genre action		−	RJ_RES × GENRE_ACTION	n.s.	No
		Genre thriller		−	RJ_RES × GENRE_THRILLER	−.005	No
		Genre comedy		−	RJ_RES × GENRE_COMEDY	.030*	No
		Genre romance		−	RJ_RES × GENRE_ROMANCE	n.s.	No

Table 8 continued

Hypothesis		Influence of	DV	Direction	Variable (s)	Beta	Support
H8	a	Teenage audience	STBO	−	RJ_RES × AUDIENCE_TEENS	n.s.	No
		Couple audience		+	RJ_RES × AUDIENCE_DATE	n.s.	No
		Family audience		+	RJ_RES × AUDIENCE_FAMILIES	n.s.	No
	b	Teenage audience	LTBO	−	RJ_RES × AUDIENCE_TEENS	n.s.	No
		Couple audience		+	RJ_RES × AUDIENCE_DATE	n.s.	No
		Family audience		+	RJ_RES × AUDIENCE_FAMILIES	−.039*	No
H9	a	Advertising spending	STBO	−	RJ_RES × ADSPEND	−.058*	Yes
	b		LTBO	−		.001	No
H10	a	Narrow release	STBO	+	RJ_RES × NARROW_RELEASE	n.s.	No
	b		LTBO	+		.026*	Yes
H11	a	Popular buzz	STBO	−	RJ_RES × BUZZ_RES	−.037*	Yes
	b		LTBO	−		−.014	No
H12		STBO	LTBO	−	RJ_RES × STBO_RES	−.046*	Yes
H13	a	Number of reviews	STBO	−	RJ_RES × NO_OF_REVIEWS	.003	No
	b		LTBO	−		n.s.	No
H14	a	Reviewer dissent	STBO	−	RJ_RES × REVIEWER_DISSENT	n.s.	No
	b		LTBO	−		n.s.	No

n.s. not significant in separate regression and therefore not included in the final regression model. *DV* dependent variable

* significant at $p < .05$

6.1.3 Moderator effects

For movies with high levels of advertising and popular buzz, reviewer influence can conflict with opening weekend success. Mainstream viewers seem to use positive reviewer judgments of arthouse films as reasons not to view them. The significant influence, even at low advertising levels, suggests that arthouse films are not strong enough on their opening weekends to overcome this effect. For long-term box office (i.e., tickets sold after the opening weekend), several mainstream characteristics of films, such as stars, sequels, and wide distribution, can mitigate reviewers' influence. Also, the higher a film's short-term box office, the less reviewer influence there is; success alone has informative value for consumers.

Furthermore, reviewer influence is stronger for comedies than non-comedies, though the label "comedy" traditionally has been interpreted as a mainstream characteristic. This tendency could be because—similar to dramas—the label "comedy" has been applied to such a wide range of films (think Woody Allen vs. Jim Carrey!) and offers little real information about the film's nature or content, such that consumers must seek further information. Because reviewer influence is not significant for films that target teenage or couple audiences, we conclude that these groups of consumers do not believe that reviewers' evaluations coincide with their own and do not consider reviewers very helpful on average. The negative impacts of reviewer judgments for arthouse films disappear in the long-term box office model.

6.2 Managerial implications

The results lead to some recommendations regarding the treatment of professional movie reviewers for film industry practitioners. Producers of mainstream and "high concept" films need not expend a lot of time or money getting reviewers on their side, especially to benefit their opening weekends. For mainstream films, advertising around the opening weekend also does not need to include reviews; they might even confuse *early* target audiences in some cases. However, professional reviews can play a role later in the run of these films. It is thus advisable for producers to get reviewers on their side after the opening weekend, and perhaps even encourage later reviews. Our findings suggest that producers might reduce the influence of bad reviews by concentrating their efforts (in terms of advertising and the generation of popular buzz) before the movie's release and by using branded elements such as sequels and stars.

For arthouse films, reviewers represent an important asset for a film's marketing strategy. If an arthouse film is expected to garner positive reviews, the producer should work to preview the film for as many reviewers as possible, to secure maximum exposure in publication outlets. Once these positive reviews appear, they should be included in the movie's advertising, and the more positive the reviews are, the stronger their effect on box office success. For example, instead of superlatives with mass appeal, such as "extraordinarily funny," more intellectually appealing

statements, such as "full of verbal and visual wit," should be excerpted on movie posters [7].

If negative evaluations are expected though, avoiding previews makes it harder for reviewers to cover the film as early as usual. However, because the main influence does not take hold until later, it probably would serve to irritate professional reviewers more than to diminish their influence. This irritation could lead to more negative evaluations, with notable consequences later in the run, so it is not a recommended approach in general.

As the first research that offers a comprehensive investigation of the moderators of the reviewer judgments–box office link, the insights of this study go beyond the mainstream versus arthouse dichotomy. Producers can gain insights into the potential effect of critical reviews (positive or negative) for their individual films by accounting for their diverse characteristics that influence the strength and direction of the reviewer judgments–box office relationship. This type of fine-grained insight might help them allocate the appropriate amount of attention (and resources) to their interactions with reviewers.

6.3 Limitations and further research directions

Although this study separates reviewer judgments and ordinary evaluations and involves a large sample, it is subject to several limitations. First, the sample consists of films produced and released in the United States from 1998 to 2006. To ascertain the applicability outside the United States, additional studies should sample other countries. Second, the effects examined in this study likely are not time-invariant, so similar studies should be conducted with recent data every few years to detect any changes. This recommendation is particularly pertinent considering the rapidly changing newspaper and magazine market, in connection with the proliferation of social networking and film-themed websites and devices such as smartphones and tablet computers.

More generally, with our use of aggregate data, this study makes behavioral inferences based on theoretical considerations, though alternative processes might underlie the findings too. To make more definitive statements and fully understand consumers' use of professional movie reviews in their decision-making, experimental settings would be beneficial. A further question for research relates to the formation of opinions by professional movie reviewers. It is conceivable, for example, that films with certain characteristics are systematically rated more positively or negatively, or that a reviewer's opinion depends somewhat on the target audience of the publication outlet for which she or he writes.

Although our auxiliary regression systematically isolates reviewers' quality perceptions from those of average consumers, it must not be confused with a true causal design. Reviewer judgments still might influence consumers' perceptions of movies, so our method, despite its merits, cannot fully disentangle the interrelations

[7] Both these statements came from an actual review of the movie *High Fidelity* in the *Guardian* (French 2000).

between concepts—something that could be achieved only in an experimental setting.

In summary, this study isolates and finds evidence for an influencer effect of professional movie reviews on motion picture success, which predominantly affects movie success after the opening weekend. This effect varies across a range of movie characteristics and becomes disproportionally stronger as reviewer judgments of the film increases. The findings thus offer managerial implications for film practitioners and give rise to interesting questions for ongoing research.

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References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.

Armstrong, J. S., Brodie, R., & Parsons, A. (2001). Hypotheses in marketing science: Literature review and publication audit. *Marketing Letters, 12*(2), 171–187.

Basuroy, S., Chatterjee, S., & Ravid, A. (2003). How critical are critical reviews? The box office effects of film critics, star power, and budgets. *Journal of Marketing, 67*(4), 103–117.

Basuroy, S., Desai, K. K., & Talukdar, D. (2006). An empirical investigation of signaling in the motion picture industry. *Journal of Marketing Research, 43*(2), 287–295.

Bikchandani, S., Hirshleifer, D., & Welch, I. (1992). A theory of fads fashion, custom, and cultural change as informational cascades. *Journal of Political Economy, 100*(5), 992–1026.

Boatwright, P., Basuroy, S., & Kamakura, W. (2007). Reviewing the reviewers: The impact of individual film critics on box office performance. *Quantitative Marketing and Economics, 5*(4), 401–425.

Brewer, S. M., Kelley, J. M., & Jozefowicz, J. J. (2009). A blueprint for success in the US film industry. *Applied Economics, 41*(5), 589–606.

Cameron, S. (1995). On the role of critics in the culture industry. *Journal of Cultural Economics, 19*(4), 321–331.

Chang, B.-H., & Ki, E.-J. (2005). Devising a practical model for predicting theatrical movie success: Focusing on the experience good property. *Journal of Media Economics, 18*(4), 247–269.

Chen, X., Chen, Y., & Weinberg, C. B. (2007). *Learning about movies: An empirical analysis of the platform release strategy*. Presentation, Marketing Science Conference, Singapore.

Cohen, J., Cohen, P., West, S., & Aiken, L. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah: Lawrence Erlbaum Associates.

Collins, A., Hand, C., & Snell, M. C. (2002). What makes a blockbuster? Economic analysis of film success in the United Kingdom. *Managerial and Decision Economics, 23*(6), 343–354.

D'Astous, A., & Touil, N. (1999). Consumer evaluations of movies on the basis of critics' judgments. *Psychology & Marketing, 16*(8), 677–694.

De Vany, A., & Walls, D. (2002). Does Hollywood make too many R-rated movies? Risk, stochastic dominance, and the illusion of expectation. *Journal of Business, 75*(3), 425–451.

De Vany, A., & Walls, D. (2004). Big budgets, big openings, and legs: Analysis of the blockbuster strategy. In A. De Vany (Ed.), *Hollywood economics: How extreme uncertainty shapes the film industry* (pp. 122–138). London: Routledge.

Dellarocas, C., Zhang, X. M., & Awad, N. F. (2007). Exploring the value of online product reviews in forecasting sales: The case of motion pictures. *Journal of Interactive Marketing, 21*(4), 23–45.

Desai, K., & Basuroy, S. (2005). Interactive influence of genre familiarity, star power, and critics' reviews in the cultural goods industry: The case of motion pictures. *Psychology & Marketing, 22*(3), 203–223.

Elberse, A., & Anand, B. (2007). The effectiveness of pre-release advertising for motion pictures: An empirical investigation using a simulated market. *Information Economics and Policy, 19*, 319–343.

Elberse, A., & Eliashberg, J. (2003). Demand and supply dynamics for sequentially released products in international markets: The case of motion pictures. *Marketing Science, 22*(3), 329–354.

Eliashberg, J., & Shugan, S. (1997). Film critics: Influencers or predictors? *Journal of Marketing, 61*(2), 68–78.

Elliott, C., & Simmons, R. (2008). Determinants of UK box office success: The impact of quality signals. *Review of Industrial Organization, 33*(2), 93–111.

Epstein, E. J. (2010). *The Hollywood economist: The hidden financial reality behind the movies*. New York: Melville House.

Fitzsimons, G. J. (2008). Death to dichotomizing. *Journal of Consumer Research, 35*(1), 5–8.

French, P. (2000). This one's a hit…. *The Guardian*, July 23. Retrieved June 13 2011 from http://www.guardian.co.uk/film/2000/jul/23/philipfrench.

Gemser, G., Van Oostrum, M., & Leenders, M. (2007). The impact of film reviews on the box office performance of art house versus mainstream motion pictures. *Journal of Cultural Economics, 31*(1), 43–63.

Hadida, A. (2008). Motion picture performance: A review and research agenda. *International Journal of Management Reviews, 11*(3), 297–335.

Hennig-Thurau, T., Houston, M. B., & Heitjans, T. (2009). Conceptualizing and measuring the monetary value of brand extensions: The case of motion pictures. *Journal of Marketing, 73*(6), 167–183.

Hennig-Thurau, T., Houston, M. B., & Walsh, G. (2006). The differing roles of success drivers across sequential channels: An application to the motion picture industry. *Journal of the Academy of Marketing Science, 34*(4), 559–575.

Hennig-Thurau, T., Völckner, F., & Clement, M. (2011). *The financial value of stars, revisited: An ingredient branding approach accounting for sample selection bias, context effects, and multiple channels*. SSRN Working Paper. Available at http://ssrn.com/abstract=1763547.

Hennig-Thurau, T., Walsh, G., & Wruck, O. (2001). An investigation into the factors determining the success of service innovations: The case of motion pictures. *Academy of Marketing Science Review, 1*(6), 1–33.

Ho, J. Y. C., Dhar, T., & Weinberg, C. B. (2009). Playoff payoff: Super Bowl advertising for movies. *International Journal of Research in Marketing, 26*, 168–179.

Holbrook, M. B. (1999). Popular appeal versus expert judgments of motion pictures. *Journal of Consumer Research, 26*(2), 144–155.

Holbrook, M. B. (2005). The role of ordinary evaluations in the market for popular culture: Do consumers have "good taste"? *Marketing Letters, 16*(2), 75–86.

Holbrook, M. B., & Addis, M. (2007). Taste versus the market: An extension of research on the consumption of popular culture. *Journal of Consumer Research, 34*(3), 415–424.

Houston, M. B., Hennig-Thurau, T., Spann, M., & Skiera, B. (2011). *A theory of buzz for new products: How individual-level anticipation leads to intentional social action*. Working paper.

Jansen, C. (2005). The performance of German motion pictures, profits and subsidies: Some empirical evidence. *Journal of Cultural Economics, 29*(3), 191–212.

Karniouchina, E. V. (2011). Impact of star and movie buzz on motion picture distribution and box office revenue. *International Journal of Research in Marketing, 28*(1), 62–74.

King, T. (2007). Does film criticism affect box office earnings? Evidence from movies released in the U.S. in 2003. *Journal of Cultural Economics, 31*(3), 171–186.

Lampel, J., & Shamsie, J. (2000). Critical push: Strategies for creating momentum in the motion picture industry. *Journal of Management, 26*(2), 233–257.

Lance, C. (1988). Residual centering, exploratory and confirmatory moderator analysis, and decomposition effects in path models containing interactions. *Applied Psychological Measurement, 12*(2), 163–175.

Levin, A., Levin, I., & Heath, E. (1997). Movie stars and authors as brand names: Measuring brand equity in experiential products. *Advances in Consumer Research, 24*(1), 175–181.

Litman, B. (1983). Predicting success of theatrical movies: An empirical study. *Journal of Popular Culture, 16*(4), 159–175.

Litman, B. R., & Kohl, L. S. (1989). Predicting financial success of motion pictures: The '80s experience. *Journal of Media Economics, 2*(2), 35–50.

Liu, Y. (2006). Word of mouth for movies: Its dynamics and impact on box office revenue. *Journal of Marketing, 70*(3), 74–89.

Meier, L. (2008). *IRSE. Interactions in multiple linear regression with SPSS and Excel (Version 1.6) [Computer software and manual]*. Retrieved 20.10.2010 from http://www.urenz.ch/irse.

Moon, S., Bergey, P., & Iacobucci, D. (2010). Dynamic effects among movie ratings, movie revenues, and viewer satisfaction. *Journal of Marketing, 74*(1), 108–121.

Oxford Dictionary (2011). *Art film (art film)*. Retrieved 18.5.2011 from http://oxforddictionaries.com/view/entry/m_en_us1223092#m_en_us1223092.

Prag, J., & Casavant, J. (1994). An empirical study of the determinants of revenues and marketing expenditures in the motion picture industry. *Journal of Cultural Economics, 18*(3), 217–235.

Ravid, S. A. (1999). Information, blockbusters, and stars: A study of the film industry. *Journal of Business, 72*(4), 463–492.

Ravid, S. A., & Basuroy, S. (2004). Managerial objectives, the R-rating puzzle, and the production of violent films. *Journal of Business, 77*(2), 155–192.

Ravid, A., Wald, J., & Basuroy, S. (2006). Distributors and film critics: Does it take two to tango? *Journal of Cultural Economics, 30*(3), 201–218.

Reinstein, D., & Snyder, C. (2005). The influence of expert reviews on consumer demand for experience goods: A case study of movie critics. *Journal of Industrial Economics, 53*(1), 27–51.

Sawhney, M. S., & Eliashberg, J. (1996). A parsimonious model for forecasting gross box-office revenues of motion pictures. *Marketing Science, 15*(2), 113–131.

Sochay, S. (1994). Predicting the performance of motion pictures. *Journal of Media Economics, 7*(4), 1–20.

Sood, S., & Drèze, X. (2006). Brand extensions of experiential goods: Movie sequel evaluations. *Journal of Consumer Research, 33*(3), 352–360.

Stradella Road (2010). *Moviegoers 2010*. Retrieved 2.9.2010 from http://www.stradellaroad.com/wp-content/uploads/2009/10/moviegoers-2010-f.pdf.

Suárez-Vázquez, A. (2011). Critic power or star power? The influence of hallmarks of quality of motion pictures: an experimental approach. *Journal of Cultural Economics, 35*(2), 119–135.

Wallace, T., Seigerman, A., & Holbrook, M. (1993). The role of actors and actresses in the success of films: How much is a movie star worth? *Journal of Cultural Economics, 17*(1), 1–27.

West, P. M., & Broniarczyk, S. M. (1998). Integrating multiple opinions: The role of aspiration level on consumer response to critic consensus. *Journal of Consumer Research, 25*(1), 38–51.