# Determinants of Motion Picture Box Office and Profitability: An Interrelationship Approach 

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#### Abstract

Producing and marketing motion pictures is notoriously risky, with only three out of ten movies breaking even and one becoming profitable at the box office. Extending knowledge on the factors that influence a movie's box-office and on the interrelations between these factors can be seen as major contribution to aid in lowering the number of failures in the motion picture industry. The major aim of this study is to distinguish direct and indirect effects between potential success drivers and motion picture success by understanding the interrelationships among different determinants of movie success. Hypotheses are developed with regard to the relationships among a number of factors that have been shown to impact motion-picture box office as well as movie profitability. Applying path analysis, which allows a simultaneous testing of factor interrelations, the hypotheses are subsequently tested against a sample of 331 movies.


Keywords: Movie marketing, inter-factor relationships, movie stars, reviews, awards, path analysis

## Determinants of Motion Picture Box Office and Profitability: An Interrelationship Approach

## 1. Introduction

Producing and marketing motion pictures is a risky business, with only three to four out of ten movies breaking even, and about one out of ten becoming profitable at the box office (Valenti, 2004; Vogel, 2001). Although movies today are also distributed through other channels such as DVDs, video-on-demand, and even mobile devices such as i-pods which can help to recoup a movie's costs, the theatrical channel is crucial as a movie's success in secondary channels is usually affected by the movie's success in theaters (Elberse and Eliashberg 2002). Accordingly, extending our knowledge on the factors that influence a movie's box-office and on the interrelations between these factors can be seen as major contribution to aid in lowering the number of failures in the motion picture industry. Understanding the factors that drive a movie's box office is made more complex because movies are experiential goods (Cooper-Martin, 1991; 1992). Hence, the primary reason for people to consume a movie is to experience it, rather than expecting it to fulfill a physiological need. This means that hedonic value (e.g., pleasure, thrill) is the main motive for experiential consumption, while utilitarian motives play an ancillary role (Cooper-Martin, 1991; Holbrook and Hirschman, 1982). This pleasure-driven character of movies is important as the nature and outcomes of this pleasure motive are much more difficult to understand than utilitarian motives. Moreover, even though information from word-of-mouth and from professional critics' reviews is available prior to purchase, the quality of movies can be assessed by consumers only when watching them -- "no one knows they like a movie until they see it" (De Vany and Walls, 1999, p. 288). From an information economics perspective, this implies a clear dominance of experience qualities (Caves, 2000), forcing the potential
moviegoer to rely on proxies called "quasi-search qualities" (Hennig-Thurau, Walsh, and Wruck, 2001).

Although several studies exist that analyze the drivers of motion picture success (e.g., Basuroy, Chatterjee, and Ravid, 2003; De Vany and Walls, 1999; Hennig-Thurau, Houston, and Walsh 2006; Lehmann and Weinberg, 2000; Neelamegham and Chintagunta, 1999; Ravid, 1999), the extant literature almost exclusively addresses only the direct relationship between various "success factors" (e.g., star power, advertising) and movie success. Such an approach is implicitly based on the assumption that each success factor influences movie success independently, but does not take into account the existence of inter-factor relationships, where one success factor exerts an influence on other success factors. In this paper, we argue that the independence approach may result in misleading findings, as multifarious relationships exist between different success factors of motion pictures. For example, does advertising influence a movie's long-term box office directly by creating a stimulating media presence, or indirectly through impacting consumers' quality perceptions of the movie? Such a question can be answered by examining inter-factor relationships. Gaining a better insight into those relationships is helpful, if not necessary, to increase our understanding of motion pictures' success potential and to ex ante assess the market prospects of new movie projects.

Consequently, the major aim of this study is to complement the existing body of scholarly work on the motion picture industry that tests direct relationships between potential success drivers and box office success. We do so by analyzing inter-driver relationships. Specifically, we distinguish direct and indirect effects between success factors and motion picture success by hypothesizing and empirically testing interrelationships among different determinants of movie success. Another contribution of this paper is that while most empirical
research focuses on revenues, we go beyond extant studies by examining not only box office revenues, but also movie profitability as a further key facet of motion picture success.

This paper is organized as follows. After reviewing the literature on success factors of motion pictures, we develop hypotheses with regard to the relationships among those factors. The hypotheses are subsequently tested empirically using path analysis which allows a simultaneous testing of factor interrelations. Finally, we discuss the results and implications for motion picture research and management.

## 2. Literature Review on Success Factors of Motion Pictures

A number of approaches from several disciplines have been used in the literature to understand and explain various aspects of motion picture success. In the following, we briefly review the existing streams of literature. Basically, three groups of movie-success drivers have been identified by extant research; namely movie characteristics, post-filming marketing studio actions, and non-studio factors (Elberse and Eliashberg, 2002; Hennig-Thurau, Walsh, and Wruck, 2001).

Movie characteristics discussed in the literature include the concepts of star power, director power, cultural familiarity, genre, and certification. Based on the omni-presence of stars in movie business media coverage, it is not surprising that several authors have found stars to positively influence movie revenues. However, the impact of stars on movie success remains a contested issue as other researchers question this relationship (e.g., Austin, 1989; De Vany and Walls, 1999; Elberse 2005; Ravid, 1999). Regarding director power, to the best of our knowledge, no study has empirically supported a significant impact of a movie's director on the film's economic success. However, paralleling the argumentation from star power, such an impact seems plausible because of the director's ability to combine all creative aspects of a movie into an attractive mix (e.g., Elberse and Eliashberg, 2002; Shugan, 1998).

Whether a movie is a sequel or is based on a familiar story or other cultural element also appears to be relevant to movie success (Hennig-Thurau and Heitjans, 2004; Sood and Dreze, 2006). Hennig-Thurau, Houston, and Walsh (2006) view a sequel as a dimension of the broader concept of 'cultural similarity' (sometimes also referred to as 'symbolicity', see Hennig-Thurau, Walsh, and Wruck 2001), which describes a movie's potential to be categorized into existing cognitive categories by consumers to which the consumer has positive associations. Besides producing sequels, cultural familiarity can be fostered through remakes, the drawing on a TV series or other elements of popular culture (e.g., novels, comics, or computer games; Simonet, 1987). Finally, the analysis of the impact of a movie's genre and its certification on movie performance has lead to contradictory findings. Genres such as 'action' have been shown to have superior performance at the box office, which can be attributed to higher production values and other movie factors such as the participation of stars. However, a review of the literature suggests that research findings are not conclusive (Elberse and Eliashberg, 2002). Certifications impact both consumers' ability to attend a movie and their interest in the movie. While some authors have found that restrictive certifications (i.e., R and NC-17) weaken a movie's cumulative rentals or revenues (e.g., Litman, 1983; Sawhney and Eliashberg, 1996), other studies show no significant impact of certifications (e.g., Prag and Casavant, 1994).

Turning to studio actions, the actions discussed in the literature include the movie's budget, advertising expenditures, timing, and the number of screens. A number of researchers have reported a positive correlation of movie budget with box office (Litman, 1983; Litman and Kohl, 1989; Zufryden, 2000). However, there has been less effort directed toward an understanding of the nature of this relationship (a noteworthy exception is Basuroy, Chatterjee, and Ravid, 2003). The level of advertising associated with a movie's release has been shown to influence box-office success (e.g., Hennig-Thurau, Houston, and Walsh, 2006;

Lehmann and Weinberg, 2000; Prag and Casavant, 1994). However, since it is plausible that more advertising is allocated to potentially popular and successful movies, the lack of interfactor relationships in existing studies leaves questions about the causality of the relationship.

Studios' distributional activities and more specifically, their timing policy have also been shown to correlate with movie box office. Movies released in summer and at Christmas have been found to have significantly higher cumulative theatrical rentals and revenues despite higher competition in peak seasons (e.g., Krider and Weinberg, 1998; Litman, 1983). In addition to such demand-side factors, research has shown that the number of screens allocated to a movie correlates with revenues (e.g., De Vany and Walls, 1997; HennigThurau, Houston, and Walsh, 2006; Neelamegham and Chintagunta, 1999; Sochay, 1994). However, Prosser (2002) conducted stepwise regressions that revealed that the number of screens did not explain significant variance in theater success after accounting for the effects of advertising. Accordingly, the high correlation between screens and advertising appears to make them, to some degree, substitute measures.

Finally, we address non-studio factors. Since a motion picture is a product of high societal interest and involvement, movie success is also influenced by a number of factors over which the producing studio has no or only limited direct control. Such non-studio factors discussed in the literature include; reviews, awards, consumers' perceived movie quality, and early box-office information. Movie reviews provide consumers with presumably expert, 'objective' information and have been shown to correlate with box-office results (e.g., Litman and Ahn, 1998; Ravid, 1999; Sawhney and Eliashberg, 1996; Zufryden, 2000). However, there is ongoing controversy about the causal character of this relationship (Basuroy, Chatterjee, and Ravid, 2003). While Reinstein and Snyder (2000) argue that reviews influence consumers' decision making, Eliashberg and Shugan (1997) contend the correlation only reflects the reviewers' ability to forecast a movie's success, suggesting that reviewers function
as predictors. They argue professional reviews correlate with late and cumulative box office receipts but do not have a significant correlation with early (i.e., opening) box office receipts.

Awards given by prestigious institutions such as the Academy of Motion Picture Arts and Sciences (AMPAS) are the result of a comparison of a year's movies. Awards represent "an institutionalized measure (Levy, 1990, p. 330) from a competitive perspective. Dodds and Holbrook (1988) discovered that a best-movie award generates additional demand worth an average $\$ 32$ million, a finding basically supported and elaborated by Nelson et al. (2001). However, empirical investigations by other authors show no significant influence of the Oscars on consumer decision-making (see Austin, 1989). Market success of motion pictures can be expected to be influenced by consumers' assessment of a movie's quality, particularly through the amount and direction of word-of-mouth communication triggered by that quality assessment (e.g., Rust and Oliver, 1994). Empirical findings by Hennig-Thurau, Houston, and Sridhar (2006) imply that the impact of movie quality on consumer word-of-mouth likely is a key determinant of long-run success at the box office. Neelamegham and Chintagunta (1999), De Vany and Walls (2002), and most recently Liu (2006) have also empirically addressed the relationship between word-of-mouth and movie revenues. However, these studies suffer from measurement limitations, which contribute to contradictory results. Specifically, Neelamegham and Chintagunta (1999), who report a negative effect of word-of-mouth on box office grosses, use the number of consumers who have seen a movie at a certain point in time as their measure, but confess that it "is not a good proxy" (p. 127). De Vany and Walls (2002) do not include a measure of word-of-mouth in their model at all, but draw inferences on its impact on box office based on the course of the box office distribution function. Liu (2006) uses a very specific kind of word-of-mouth, namely the number of postings about a movie on the Yahoo! Movies message board.

Finally, it has been argued that movie going behavior is influenced by early box-office information, suggesting that moviegoers respond to "social proof" (Cialdini, 2001) in that they are drawn to a movie once they realize that a sizeable number of others like it (e.g., Caves, 2000). Such success-breeds-success effects have been empirically shown to impact the overall box office of motion pictures (Elberse and Eliashberg, 2003; Hennig-Thurau, Houston, and Walsh, 2006). "Success-breeds-success" effects are also referred to as noninformative information cascades as they are not based on quality-related information provided by other people, but their revealed behavior (i.e., buying a ticket for a specific movie; De Vany and Walls, 2002).

## 3. Two Demand-Side Interrelationship Models of Motion Picture Success

### 3.1. Model I: Factor Interrelations and Box Office

### 3.1.1. Model Constructs

Although several authors have tested the impact of one or more of the factors discussed in the previous section, this was dominantly done through multiple regression analysis (e.g., Litman, 1983; Litman and Kohl, 1989; Sochay, 1994; Litman and Ahn, 1998; Prag and Casavant, 1994; Smith and Smith, 1986; Ravid, 1999; Simonoff and Sparrow, 2000). A fundamental assumption of this method is that the factors used as regressors share no common variance, i.e., are statistically independent. Interrelated factors in a regression model imply multicollinearity, which strongly distorts regression coefficients. Alternatively, authors have used bivariate analysis methods, primarily correlation analysis (e.g., Prosser, 2002), to measure factors' impact on movie success. Such an isolated consideration of variables ignores factor interrelations, implying the tendency to inflate factors' importance.

We are aware of three studies that have used methods that are capable to adequately model factor interrelationships (Elberse and Eliashberg, 2003; Hennig-Thurau, Houston, and Sridhar, 2006; Hennig-Thurau, Houston, and Walsh, 2006). While Elberse and Eliashberg
(2003) applied a sequential modeling approach that considers a number of demand-side factors (e.g., star power, advertising expenditures) and supply-side factors (i.e., number of screens on which a movie is released) simultaneously to explain movies' success in foreign markets, both Hennig-Thurau, Houston, and Sridhar (2006) and Hennig-Thurau, Houston, and Walsh (2006) used structural equation modeling approaches (covariance-based structural equation modeling and partial least squares, respectively) to identify differences in importance of factors between theatrical box office and home video channels. However, none of these studies explored interrelationships between movie traits, marketing measures, and non-commercial factors.

To close this research gap, we present two related models that contain variables from all three groups of success drivers (i.e., movie characteristics, post-filming studio actions, and non-studio factors) and that explicitly address interrelationships between these factors. In detail, our models contain star power and director power as dimensions of personnel attractiveness, the sequel character of a movie as key dimension of its cultural familiarity, the production budget of a movie, the advertising expenses related to it, the timing of the movie's theatrical release, reviewers' assessment of the movie, consumers' quality perceptions, and awards given to a movie. We do not include genre and certification due to these factors' complexity and their dichotomous character, and we also excluded the number of screens on which a movie is released because this variable highly correlates with advertising. Drawing on Hennig-Thurau, Houston, and Sridhar (2006), this correlation results because both variables reflect the overall effort that a studio dedicates to a movie. Thus, the omission of the number of opening screens should not have an impact on the results..

In the first model we differentiate between short-term box office (i.e., theatrical revenues gathered on the opening weekend) and long-term box office (i.e., theatrical revenues gathered after the opening weekend) as outcome variables. Most studies dealing with movie
success do not make this kind of distinction, despite the fact that the impact of the factors in the model can be expected to differ between the two success variables. For example, movie reviews are regularly published the week before a movie's opening date and can therefore be expected to be more influential for the movie's short-term success, and award-related information is not available at the time of a movie's release. In the second model, the two kinds of box office are substituted by the movie's profitability as an outcome variable that generates additional insights of immediate relevance for movie managers.

### 3.1.2. Model Relationships

The inter-factor relationships of the first model and postulated factor-outcome relationships are illustrated in Figure 1. Inter-factor relations are discussed and hypotheses formulated in the remainder of this section.

Insert Figure 1 approx. here

Cultural familiarity, star power, and director power. These three variables can be argued to covariate with a film's production costs. As the production of motion pictures is a risk-intensive venture with success being difficult to forecast (De Vany and Walls, 1999; Vogel, 2001), producers are inclined to engage in risk-reducing strategies, strategies that increase the likelihood of earning sufficient revenues. Outside the movie business, the use of established brands (i.e., brand transfer) has been shown to serve as a powerful strategy to reduce the market risk of new products (Kapferer, 1997). For motion pictures, drawing on established cultural elements (i.e., employing cultural familiarity) as well as the casting of famous stars and directors can be interpreted as a variation of that brand transfer strategy. While cultural familiarity refers to the branding of the overall product, stars and directors serve as branded ingredients of a movie (Hennig-Thurau and Heitjans, 2004; Levin, Levin, and Heath, 1997). Consequently, when a high budget has to be spent on a motion picture, the
studio will push the engagement of popular stars and directors and a high level of cultural familiarity to hedge the planned investments. "Certainly, ... there are films where the budgets are so large, you want to build in that insurance of having a star to get that big opening weekend" (John Calley, CEO Sony Pictures; quoted in Burman, 1999, p. 2). We present our first set of hypotheses:

H1: A movie's production costs positively influence (a) the movie's level of cultural familiarity, (b) the movie's level of star power, (c) the movie's level of director power.

Advertising. We argue the extent of movie advertising spent is influenced by production costs, cultural familiarity, star- and director power, release timing, and reviews. From an investment perspective, a high production budget requires the producing studio to spend an equally high amount on movie advertising to recoup previous investments, as advertising can help to attract moviegoers and to increase awareness. The inclusion of a wellknown star, a high-profile director, and a high level of cultural familiarity all represent assets that can help to attract moviegoers and therefore are expected to encourage studios to spend money on advertising. Regarding timing, the summer season (i.e., June, July, and August) is considered the toughest time of the year in terms of level of inter-movie competition in the US, but is also the time with the highest monthly box office grosses. Therefore, it can be seen as a sound strategy from a push (i.e., competition) as well as a pull (i.e., box office) perspective to spend more on advertising during summer months than in other periods. Finally, professional reviews are pre-opening indicators of the acceptance or rejection of a movie by audiences (Eliashberg and Shugan, 1997) and can therefore be argued to proxy the return of advertising investments. We confess that the latter relationship is limited by the short time frame between reviews and a movie's theatrical opening, which prevents studios to adjust their advertising spending before the movie's release. However, as a non-trivial share of the advertising budget is usually spent after a movie's release (Ho, Dhar, and Weinberg 2005), studios can adjust this post-release budget based on positive or negative reviews,
something which can regularly be evidenced when excerpts from professional reviews are included in advertising campaigns. We present our second set of hypotheses:

H2: A movie's advertising expenses are positively influenced by (a) the movie's production costs, (b) the movie's level of cultural familiarity, (c) the movie's level of star power, (d) the movie's level of director power, (e) a summer release of the movie, (f) the movie's reviews.

Movie reviews. We argue movie reviews to be influenced by a movie's star- and director power. Stars and high-profile directors guide reviewers because they reassure them of the competence associated with their work compared to inexperienced actors or directors. Also, stars and high-profile directors are likely to create a halo effect in that critics expect other movie factors, such as a script or production values, to be of an equally high caliber as the stars and director. That said, a high level of star- and director power signals professionalism and competence, which may increase reviewers' perceptions and assessments of the movie's quality, resulting in more positive reviews. We present our third set of hypotheses:

H3: A movie's reviews are positively influenced by (a) the movie's level of star power, (b) the movie's level of director power.

Consumer-perceived quality. We argue that the consumers' quality perception of a movie to be influenced by production costs, advertising, star- and director power, and movie reviews. Production costs are accessible to interested consumers either through traditional or online media or can be inferred from a movie's production values, such as set design, costumes, and special effects. Audiences can interpret production costs as signals of a movie’s high quality, i.e., professionalism of concept and execution. Advertising increases a movie's awareness among consumers and has an influence on consumers' attitude toward a new movie. Similar to their postulated effect on reviewers, star power and director power are expected to signal competence also to potential audiences. Finally, professional reviews allow
consumers to assess a movie’s overall quality before actually attending it (Caves, 2000). We present our fourth set of hypotheses:

H4: A movie's consumer-perceived quality is positively influenced by (a) the movie's production costs, (b) the movie's advertising expenses, (c) the movie's level of star power, (d) the movie's level of director power, (e) favorable movie reviews.

Awards. We argue that awards are influenced by movie reviews, consumers' quality perceptions, star- and director power, and timing. Professional reviewers assess the overall quality of a movie. Reviewers often rank a year's movies and present "top lists" in late December, which make it likely that reviewers' judgments are read and considered by awardgivers (e.g., AMPAS members) when asked for their own assessment of a movie year. As the Academy Awards tend to represent a compromise between art and commerce (Caves, 2000), the positive reception of a movie among audiences does increase its chances to be considered for an award. Moreover, based on the Academy's member structure in which stars represent one-fourth of the total members, movies with star power and director power can be expected to be preferred against movies made by or starring less known artists. Regarding timing, advertising theory suggests that academy members will be more aware of movies released later in the year due to wear-out effects (Lehmann and Weinberg, 2000), a fact that has been taken up by studios which today "release their most prestigious and important films in the late fall and early winter" (Caves, 2000, p. 198). Hence, a movie’s summer release is likely to diminish its Oscar prospects. Supporting this, an analysis of the release dates of thirty bestpicture nominees during the 1980s revealed that only 5 of those were released during June, July, or August (Caves, 2000). We present our fifth set of hypotheses:

H5: The number of awards given to a movie is influenced positively by (a) favorable movie reviews, (b) consumers' quality perception of the movie, (c) the movie's level of star power, (d) the movie's level of director power, and negatively by (e) a summer release of the movie.

For the sake of completeness, we propose all model factors discussed above to directly impact short-term (STBO) and long-term box-office (LTBO) grosses by drawing on the findings reported in the literature review section. The only exception is awards which is modeled to have a direct impact on LTBO but not on STBO. In addition, short-term success is expected to influence long-term success, which is in keeping with the "success-breedssuccess" effect (e.g., Elberse and Eliashberg, 2003). Consequently, the following hypotheses are added:


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H6: A movie's short-term theatrical success is positively influenced by (a) the movie's production costs, (b) a summer release, (c) the movie's level of cultural familiarity, (d) the movie's level of star power, (e) the movie's level of director power, (f) the movie's advertising expenses, (g) favorable movie reviews, and (h) the consumers' quality perception of the movie.

H7: A movie's long-term theatrical success is positively influenced by (a) the movie's short-term success, (b) the movie's production costs, (c) a summer release, (d) the movie's level of cultural familiarity, (e) the movie's level of star power, ( $f$ ) the movie's level of director power, ( $g$ ) the movie's advertising expenses, ( h ) the reviews the movie receives, (i) the consumers' quality perception of the movie, and (j) number of awards given to the movie.


### 3.2. Model II: Factor Interrelations and Movie Profitability

### 3.2.1. Model Constructs

While revenues are a major target variable for movie studios, a studio's primary interest is in translating revenues into maximum profits. Consequently, the two box-office variables of the first model are substituted in this model by movie profitability. The latter construct is conceptualized as the difference between a motion picture's total North-American box office and its production and advertising costs. While our profitability measure certainly lacks important components of a movie's overall profitability (most importantly, international and home entertainment revenues and costs revenues), high correlations between North American and international box office results (Elberse and Eliashberg 2003) as well as between theatrical and home entertainment channels (Hennig-Thurau, Houston, and Walsh
2006) suggest that our conceptualization should be a good proxy of overall movie profitability, The success factors in this model are the same as the ones used in the first model. It shall be noted that we focus on profitability as an "overall" measure instead of its components (i.e., revenues and costs), as we are mainly interested in the total effect a variable has on profitability.

### 3.2.2. Model Relationships

The relationships amongst success factors are identical for the two models, with H1H5 being also considered for the second model, whilst H6 and H7 are not applicable, as boxoffice success is no longer part of the model. Instead, all model factors are expected to positively impact a film's profitability. We argue that this includes advertising expenses and production costs, with the positive impact of both variables on revenues being expected to outweigh their negative impact through the cost dimension of profitability. Figure 2 shows the expected relations of the second model. We propose our final set of hypotheses:

H8: A movie's profit is positively influenced by (a) the movie's production costs, (b) a summer release, (c) the movie's level of cultural familiarity, (d) the movie's level of star power, (e) the movie's level of director power, ( $f$ ) the movie's advertising expenses, ( $g$ ) favorable movie reviews, (h) the consumers' quality perception of the movie, and (i) the number of awards given to the movie.

Insert Figure 2 approx. here

## 4. Model Testing: Calculating Factors' Direct and Indirect Impact on Motion-Picture Success

### 4.1. Sample and Operationalization

The sample originally consisted of all 361 movies that have been shown in American movie theaters and were listed in Video Store Magazine's US Top 50 video charts between August 1999 and May 2001 at least one time and were no longer shown in theaters or listed in video charts by March 2002. The video-listing condition was chosen as it enabled us to
identify motion pictures that distributors supported with meaningful efforts toward marketplace success versus specialty projects that lacked broad appeal or market support (see Appendix for a complete listing of movie titles).

For the operationalization of the model variables, we drew from several different data sources, including the Internet Movie Data Base (imdb.com), the Hollywood Reporter's Star power and Director power indices, the Ad\$Summary advertising expenditures listings, and the Metacritic.com database. A detailed listing of the operationalizations used for each variable in this study is given in Table I.

Insert Table I approx. here

### 4.2. Method

To measure the set of hypotheses contained in each model simultaneously, we applied path analysis. As the use of secondary data implied the direct measurement of most variables, path analysis was chosen as an adequate method which considers the model as an interdependent system of equations and estimates all structural coefficients at the same time. By doing that, path analysis allows for the separation of direct and indirect causal effects in cross-sectional data sets like the one used here (Jöreskog and Sörbom, 1993). Despite the fact that it does not match the methodological rigor of full structural equation models (SEM), path analysis has been frequently applied by scholars when the calculation of a full SEM was found inappropriate (e.g., Chaudhuri and Holbrook, 2001; Li and Calantone, 1998).

### 4.3. Results

Table II lists means, standard deviations and bivariate correlations for all model variables, and Table III reports the detailed results of the hypotheses testing procedure for the box-office model and the profit model.

Looking at the results of the path analysis of the box-office model (i.e., model I), the fit indices suggest a good model fit, with $\chi^{2}(15)=28.60$, Root Mean Square Error of Approximation $($ RMSEA $)=.053($ with PClose Fit $=.404)$, Goodness of Fit Index $(G F I)=.984$, Adjusted Goodness of Fit Index $($ AGFI $)=.932$, Normed Fit Index (NFI) $=.977$, and NonNormed Fit Index $(\mathrm{NNFI})=0.953$. However, as some of the model paths were nonsignificant, we developed a "trimmed" model which contained only the significant paths of the full model. Model trimming is appropriate if it is not used to replace theoretically-driven, a priori hypothesis specification (Anderson and Gerbing, 1988). In our case, the trimmed model had an even better global fit $($ RMSEA $=.036$, with PClose Fit $=.834$; GFI $=.975$; AGFI $=$ .949; $\mathrm{NFI}=.966 ; \mathrm{NNFI}=.979)$ and did not perform significantly worse, with $\chi^{2}(32)=46.61$ and a critical $\chi^{2}(32-15=17)$ of 27.59 for $p<.05$. As the full model can therefore be considered as being overly complex (Kelloway, 1998), we focus on the trimmed model in the following discussion. Regarding the variance explanation of the two box-office constructs in the model, $63 \%$ of STBO and $81 \%$ LTBO are explained by the model elements.

### 4.3.1. $\quad$ Model I - Box office model

Looking at the path coefficients of the model, a significant positive direct impact on STBO was found for five out of eight factors and on LTBO for six out of ten factors. Professional reviews and star power both had a small but significant indirect impact on STBO (mediated by consumers' quality perception), with star power's impact being negative. The strongest total impact on STBO was from production costs, followed by cultural familiarity (i.e., success of a predecessor), a summer release, and the consumers' quality perception. For director power, the data showed neither a direct nor an indirect impact on a movie's opening weekend box office. Referring to LTBO, production costs, advertising expenses, and reviews
all had only a positive indirect impact. Like with STBO, star power also has a small, but significant negative impact on LTBO. LTBO is mostly influenced by the movie's STBO, its production costs (fully mediated through cultural familiarity, advertising, and STBO), cultural familiarity (half directly, half mediated through STBO), consumers' quality perception (mostly direct) and awards (exclusively direct).

Turning to the factor interrelationships, our predictions were only partially supported. While all parts of H1 were confirmed, production costs was the only factor that had a significant impact on advertising expenses. Critics' reviews are shown to be largely uninfluenced by star- and director power. Advertising, reviews, and stars together accounted for $38.4 \%$ of consumers' quality judgment. While the impact of advertising and reviews was consistent with our theoretically-derived expectations, the weaker impact of star power was of a negative kind, different than theoretically expected. Reviews (positively) and a summer release date (negatively) were found to influence awards. However, no such impact was found for star- and director power and the consumers' quality perceptions.

### 4.3.2. $\quad$ Model II - Profitability model

When calculating the path analysis for the profitability model (i.e., model II), we included only significant inter-factor relationships from the first model. The model also had an excellent fit $($ RMSEA $=.044$, with PClose Fit $=.639 ; \mathrm{GFI}=.977 ; \mathrm{AGFI}=.947 ; \mathrm{NFI}=.936$; NNFI $=.946$ ) and explained $29.8 \%$ of movie profit. With the exception of star power and director power, all factors considered in the model were found to significantly impact movie profit. Interestingly, awards were found to influence profit strongest, followed, in descending order, by advertising expenditures (directly and through consumers' quality perception), the consumers' quality judgment (through the resulting word-of-mouth and re-visiting effects), professional reviews (although fully indirectly through awards and consumer-perceived quality), a summer release date, and movie cultural familiarity, with a preceding film
positively influencing its successor's profitability. Regarding production costs, the positive effect mediated through advertising, cultural familiarity, and director- and star power was dominated by a negative direct effect. The inter-factor path coefficients were identical in all cases to the ones of the trimmed box-office model, which provides additional support for the stability of our findings.

## 5. Discussion of Findings and Implications for Motion Picture Research and Management

### 5.1. Discussion

In this paper, we report the results of an empirical study of several factors' impact on two key dimensions of motion picture success, theatrical box office and profitability. Altogether, the factors considered in the analysis explain a remarkable amount of movie success, varying between a total of 30 percent (for profit) and 80 percent (for long-term box office). The findings improve our understanding of motion picture success because for the first time interrelationships between the various factors are considered, which enables the separation of direct and indirect (i.e., mediated) effects. By understanding different kinds of impacts on movie success, studios can allocate budgets more effectively. In addition, the findings offer explanations for contrary findings of several factors' impacts on success.

Starting with movie characteristics, the results show that the use of star power and director power does not guarantee success. Neither do the two characteristics influence the short-term box office and the long-term box office nor the profitability of a movie in a direct way. When considering also indirect effects, star power has even a significant (although small) negative impact on the two kinds of box office. These findings seem to contrast the common picture of the movie industry as a mega-star driven business, where stars are paid up to $\$ 30$ million for their participation in a single feature. However, when analyzing recent boxoffices successes, we find that most of the top grossing movies of the last years (e.g., CARS,
the Lord of the Rings trilogy, Spider-Man, The Chronicles of Narnia) are not built on star power. The data indicates that star power is often used by studios to "secure" a high production budget and contributes to it through astronomic salaries. A thorough analysis of star power's economic consequences is clearly needed. Possible explanations may include a non-linear relationship between star power and success, with the star power effect being limited to a small group of superstars such as Tom Hanks and Julia Roberts. Such a non-linear relationship may also be explained by the fact that in order not to be typecast, some stars choose to do movies that do not 'fit' with their image and which their fans do not appreciate, or as actor Paul Newman put it: "One of the difficult things is that American filmgoers seem less able and willing to accept actors or actresses in a wide variety of roles" (Goldman, 1983, p. 27). Moreover, as the films listed above suggest, star power competes with alternative attractions, including cultural familiarity (such as with Spider-Man, the Ring trilogy, and NARNIA) and "movie quality" (such as with CARs), which have a stronger impact on audiences' decision making. This said, star power may be considered more as a necessity (or penalty) for a movie than the deciding factor (or reward) to attend a specific movie. This argument can be paralleled for director power.

The slight negative total impact of star power stems from the concept's negative relationship with consumers' quality perception. Obviously, the use of star power does not guarantee a positive judgment by audiences, while it bears the danger of a less positive evaluation. This finding might be explained either by disconfirmation theory (e.g., Oliver, 1997), with consumers' holding higher expectations for star-studded movies, or by a realworld tendency to cover a lack of movie quality with stars. Star power does also exert no impact on professional reviewers' recommendations and a movie's chances to gain awards and nominations.

In contrast, highly familiar movie concepts are found to positively influence all three success variables considered, particularly a movie's long-term box office, half directly and half indirectly. As relying on cultural familiarity represents an alternative strategy to reduce uncertainty in investments in motion pictures, a proposition supported by our study, our findings suggest that the concept of cultural familiarity works more successfully than the star power approach to gain attention by audience and to generate a profit. It might not be coincidental that the four top-grossing movies in our sample are all sequels, namely Mission: Impossible 2, Star Wars: Episode I, Toy Story 2, and Austin Powers: The Spy Who Shagged Me.

Of the studio actions, the production budget plays a prominent role for movie success. Interestingly, in addition to significant effects mediated by other variables (e.g., advertising, cultural familiarity), we found a very strong direct effect of the production costs on opening weekend box-office which might be explained by the extensive media hype and the wide accessibility (i.e., number of screens) big-budgeted movies usually experience. The budget does not influence the success of a movie within the following months directly, but only through the film's short-term box office. Despite this large effect on box office, a high budget remains a two-edged sword because of its negative total effect on profitability. This negative effect suggests that, at least for the movies in our sample, studios on average spent too much on production costs, compared to an optimal situation.

Advertising itself influences both short-term and long-term box office, although the extent is always limited in size and fully indirect (mediated by consumers' quality assessment) in the case of long-term box office. However, advertising has a remarkably strong impact on consumers' quality assessment, a finding which helps increase our understanding of how advertising influences movie success. Advertising pays off in terms of profitability (i.e., acquisition effects dominate cost effects), as it positively influences profit both directly
and indirectly. Adopting our argument on the impact of budget on profitability, the positive effect of advertising on profits indicates that for the movies in our sample studios spent too little on advertising, relative to an optimum level.

As expected, a movie release during the summer months increases the movie's chances to become successful, with a clearly stronger direct impact on a movie's opening success than on its success in the period thereafter. It is noteworthy that the positive effect on long-term box office is diminished by the finding that a summer release reduces a movie's chances to become awarded. Nevertheless, the overall impact of a summer release date on long-term success is still positive. The same can be said for its impact on movie profitability.

Finally, the findings also shed new light on the role of non-studio factors for movie success. Specifically, path analysis shows us that the controversially discussed relationship between movie reviews and box office can be understood when including the variables of awards and consumers’ quality perception. Reviews impact neither short-term nor long-term box office directly, but strongly correlate with awards and consumers' quality perception, which results in a significant total relation of reviews with both short-term and especially long-term box office. Eliashberg and Shugan's (1997) argument that the stronger correlation with long-term box office is caused by a non-causal "predictor function" of review must be reconsidered on the basis of these findings. However, the data does not provide an answer to the remaining question whether reviews' correlation with awards and quality perception is of a causal or a covarying nature. Professional reviewers will be interested to learn that their work, through its relation with awards and quality perception, contributes significantly to a movie's profitability.

Awards have the strongest direct and total impact on profitability, a finding that justifies the investments made by studios annually to push their candidates. Awards are negatively influenced by a summer release, uninfluenced by star- and director power and
positively impact a movie's long-term box office. Also as expected, the consumers' quality judgment is massively influenced by advertising expenditures and correlates with professional reviews. Through moviegoers' word-of-mouth and re-visits, consumers' liking of a movie positively influences short-term, and more so, long-term box office, and is shown to serve as a major determinant of movie profitability. Eventually, success does indeed breed success to a great extent, with short-term box office having the strongest direct impact on long-term box office of all variables considered in the model.

### 5.2. Implications for Future Research and Motion Picture Marketing and Limitations

The findings of our study provide useful insights for the movie industry and lay open a wide range of future movie research issues. Attention of both studios and movie researchers should be brought to the path coefficients of the two models analyzed in this paper, and especially those relationships within the models that did not perform up to our a priori expectations.

The two popular approaches to market a motion picture, namely the use of star power and a high production budget, are problematical, and a deeper understanding of stars' and budgets' relationships with box office and profitability has to be gained. As some stars obviously are successful at the box office, the factors that determine a star's influence on movie success must be identified. These factors might include the movie genre and the genrestar fit. At the same time, movie studios need to realize that star participation is not only extremely costly, but that it is not a given that stars will increase the box office. The data shows a strong positive impact of production costs on box office, but a negative total impact on profit. Again, the conditions under which a big-budget movie becomes profitable must be identified. Before these conditions are better understood, studios must be careful to not spend extreme budgets as a means to secure profitability.

Consumers' quality perception is shown to be a major determinant of movies' economic success. Influencing this quality perception is a demanding task, with casting stars being an inappropriate, if not counterproductive way to improve customers' assessment of movies' quality. For studios, this finding carries an important implication, namely, that it is not sufficient to use "branded ingredients" (i.e., stars, director) for a film to become a longterm commercial success but to combine these ingredients in a way that corresponds to the moviegoers' preferences. The results also show that movie advertising can be an effective measure to influence consumers' quality perception. As in this study consumers' quality perception was measured, but not word-of-mouth and re-visits as its immediate consequences that influence box office, future research can further increase our understanding of the factors that drive motion picture success by including word-of-mouth and re-visits as mediator variables.

Another interesting finding refers to the impact of professional reviews on movie success. Although this study cannot end the ongoing "predictor-influencer" controversy on reviewers' role in the movie industry, it adds new insights to the discussion by showing the review-success relationship being mediated by awards and consumers' quality perceptions. To fully understand reviews' function, an experimental setting seems indispensable, allowing distinguishing causal effect from spurious correlations.

Finally, additional research potential can be derived from the limitations of this study. Although we used a fairly extensive database, its size did not allow us to calculate subanalyses on the level of individual genres, stars, directors, or familiarity dimensions. This limitation is especially important for awards which are giving annually so that only three award decision periods could be considered. Because of the data's specificity, we used path analysis which represents a major improvement over regression and correlation analysis dominant in movie research. However, due to the absence of a full measurement model, path
analysis is a methodological limitation which might be overcome by the application of a full structural equations model. Such a full structural equations model would be especially appropriate for measuring complex behavioral variables such as consumers' quality perception of movies, but requires the implementation of additional primary data. Eventually, as at least some of the relationships analyzed here can be expected not to be time-invariant, it would be helpful to test the models presented in this paper for movies outside the 1999-2001 framework.

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FIGURE 1
Model of Factor Interrelations and Factors' Impact on Movie Box Office


FIGURE 2
Model of Factor Interrelations and Factors’ Impact on Movie Profitability


TABLE I
Operationalization of Model Variables

| Category | Construct | Description of measure | Data source |
| :---: | :---: | :---: | :---: |
| Movie Success | STBO | Theatrical box-office generated by a movie on its nationwide opening weekend | Internet Movie Data Base (imbd.com) |
|  | LTBO | The overall theatrical box-office of a movie minus its short-term box-office | imbd.com |
|  | Profit | (STBO + LTBO) - (production costs + advertising expenses) | imbd.com |
| Movie traits | Star power | Sum of Hollywood Reporter's Star power ratings for all stars listed on the movie poster. To calculate an overall star power index for each movie in the sample, the ranking of stars on the poster was used as a weighting variable, with a .5 weight for second place, a .25 weight for third place, and a .125 weight for forth place | The Hollywood Reporter |
|  | Director power | Average box-office of the director's three most recent films in the case his or her name is listed on the movie poster. When a specific film title was referred to, the box-office of this film was used instead. | imbd.com |
|  | Cultural familiarity/ Sequel | The box-office of the most recent film of the movie series | imbd.com |
| Marketing measures | Production costs | Actual production costs for each movie. | imbd.com |
|  | Advertising expenses | Actual advertising expenditures for each movie. | Ad\$Summary volumes |
|  | Timing/ Summer release | Dummy variable. A film theatrically release during the summer months (i.e., June, July, or August) was assigned a 1, otherwise 0. | imbd.com |
| Noncommercial factors | Reviews | The Metascore, a weighted average of up to 30 reviews for each film from national critics and publications measured on a 10point scale was considered.* | Metacritic.com |
|  | Awards | A scoring model was developed to address the different categories of Academy Awards adequately when transferring the number of awards and nominations into a single scale value. Fifty points were attributed to a Best Picture Academy Award, 25 points for each Best Actor, Best Actress and Best Director award, and 10 points were given for each remaining award category. As five movies share nominations in each category, points for nominations were divided by five (e.g., 10 points for a Best Picture nomination) | imdb.com |
|  | Consumerperceived quality | Measure was the Cinemascore rating which is based on openingnight polls of one-thousand people for each movie at a dozen cities around the country. | Cinemascore.com |

[^0]TABLE II
Construct Means, Standard Deviations, and Correlations

|  | Construct | M | SD | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | STBO | 9.48 | 11.63 | 331 |  |  |  |  |  |  |  |  |  |  |  |
| 2 | LTBO | 27.80 | 40.94 | 331 | .830* |  |  |  |  |  |  |  |  |  |  |
| 3 | Profit | -4.70 | 30.16 | 287 | .497* | .632* |  |  |  |  |  |  |  |  |  |
| 4 | Star power | 58.93 | 53.10 | 331 | .176* | .132** | -.131** |  |  |  |  |  |  |  |  |
| 5 | Director power | 7.19 | 28.01 | 330 | .164* | .193* | . 005 | . 062 |  |  |  |  |  |  |  |
| 6 | Cultural familiarity | 6.63 | 39.41 | 328 | .455* | .509* | . 105 | -. 074 | . 013 |  |  |  |  |  |  |
| 7 | Production costs | 30.86 | 28.97 | 331 | .705* | .613* | -.164* | .351* | .287* | .268* |  |  |  |  |  |
| 8 | Advertising expenses | 11.08 | 9.02 | 287 | .687* | .698* | . 043 | .366* | .152** | .204* | .761* |  |  |  |  |
| 9 | Summer release | n.a. | n.a. | 331 | .233* | .180* | .127** | -. 017 | . 022 | -. 033 | .169* | . 115 |  |  |  |
| 10 | Review | 4.86 | 2.15 | 266 | . 057 | .197* | .216* | . 033 | . 106 | -. 012 | . 002 | . 054 | -. 038 |  |  |
| 11 | Awards | 2.48 | 12.11 | 331 | . 046 | .275* | .304* | . 051 | . 009 | -. 008 | . 037 | . 094 | -. 086 | .270* |  |
| 12 | Consumerperceived quality | 3.84 | . 91 | 232 | .293* | .410* | .277* | -. 085 | . 077 | . 096 | .212* | .364* | . 072 | .402* | .146** |

NOTE: n.a. = not applicable; * = correlation is significant at the 0.05 level (2-tailed); ** = correlation is significant at the 0.01 level (2-tailed).

TABLE III
Path Coefficients of Models I and II

| Postulated relationship | Full box-office model: standardized path coefficients ( $t$-values) Direct effects | Trimmed box-office model: standardized path coefficients ( $t$-values) |  | Profit model: standardized path coefficients ( $t$-values) |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Direct effects | Total effects | Direct effects | Total effects |
| Inter-factor relations |  |  |  |  |  |
| H1a production costs $\rightarrow$ cultural familiarity | . 270 (5.075) | . 270 (5.068) | . 270 (5.068) | . 270 (5.068) | . 270 (5.068) |
| H1b production costs $\rightarrow$ star power | . 348 (6.727) | . 348 (6.717) | . 348 (6.717) | . 348 (6.717) | . 348 (6.717) |
| H1c production costs $\rightarrow$ director power | . 275 (5.177) | . 275 (5.169) | . 275 (5.169) | . 275 (5.169) | . 275 (5.169) |
| H2a production costs $\rightarrow$ advertising expenses | . 662 (13.869) | . 658 (15.800) | . 658 (15.800) | . 658 (15.800) | . 658 (15.800) |
| H2b cultural familiarity $\rightarrow$ advertising expenses | -. 075 (-1.759) | n.a. | n.a. | n.a. | n.a. |
| H2c star power $\rightarrow$ advertising expenses | . 062 (1.408) | n.a. | n.a. | n.a. | n.a. |
| H2d director power $\rightarrow$ advertising expenses | -. 0294 (-685) | n.a. | n.a. | n.a. | n.a. |
| H2e summer $\rightarrow$ advertising expenses | . 0143 (.340) | n.a | n.a | n.a. | n.a. |
| H2f reviews $\rightarrow$ advertising expenses | . 0121 (.293) | n.a. | n.a. | n.a. | n.a. |
| H3a star power $\rightarrow$ reviews | . 024 (.434) | n.a. | n.a. | n.a | n.a. |
| H3b director power $\rightarrow$ reviews | . 081 (1.472) | n.a. | n.a. | n.a. | n.a. |
| H4a production costs $\rightarrow$ consumer-perceived quality | . 016 (.266) | n.a. | . 218 (5.903) | n.a. | . 218 (5.903) |
| H4b advertising expenses $\rightarrow$ consumer-perceived quality | . 439 (7.538) | . 447 (10.023) | . 447 (10.023) | . 447 (10.023) | . 447 (10.023) |
| H4c star power $\rightarrow$ consumer-perceived quality | -. 222 (-4.755) | -. 218 (-4.884) | -. 218 (-4.884) | -. 218 (-4.884) | -. 218 (-4.884) |
| H4d director power $\rightarrow$ consumer-perceived quality | . 008 (.169) | n.a. | n.a. | n.a. | n.a. |
| H4e reviews $\rightarrow$ consumer-perceived quality | . 428 (9.777) | . 426 (9.808) | . 426 (9.808) | . 426 (9.808) | . 426 (9.808) |
| H5a reviews $\rightarrow$ awards | . 269 (4.636) | . 293 (5.588) | . 293 (5.588) | . 293 (5.588) | . 293 (5.588) |
| H5b consumer-perceived quality $\rightarrow$ awards | . 056 (.955) | n.a. | n.a. | n.a. | n.a. |
| H5c star power $\rightarrow$ awards | . 046 (.869) | n.a. | n.a. | n.a | n.a |
| H5d director power $\rightarrow$ awards | -.020 (-.372) | n.a. | n.a. | n.a. | n.a. |
| H5e summer $\rightarrow$ awards | -.119 (-2.273) | -.116 (-2.211) | -.116 (-2.211) | -.116 (-2.211) | -.116 (-2.211) |
| Factor-success relations |  |  |  |  |  |
| H6a production costs $\rightarrow$ STBO | . 499 (10.162) | . 499 (10.709) | . 662 (17.110) | n.a. | n.a. |
| H6b summer $\rightarrow$ STBO | . 185 (5.367) | . 181 (5.282) | . 181 (5.282) | n.a. | n.a. |
| H6c cultural familiarity $\rightarrow$ STBO | . 313 (8.920) | . 310 (8.891) | . 310 (8.891) | n.a. | n.a |
| H6d star power $\rightarrow$ STBO | . 008 (.214) | n.a. | -.025 (-2.620) | n.a. | n.a. |
| H6e director power $\rightarrow$ STBO | -. 0183 (-.521) | n.a. | n.a. | n.a. | n.a |
| H6f advertising expenses $\rightarrow$ STBO | . 093 (1.903) | . 090 (1.894) | . 141 (3.139) | n.a. | n.a. |
| H6g reviews $\rightarrow$ STBO | . 0275 (.717) | n.a. | . 048 (2.960) | n.a | n.a |
| H6h consumer-perceived quality $\rightarrow$ STBO | . 103 (2.408) | . 114 (3.105) | . 114 (3.105) | n.a. | n.a. |
| H7a STBO $\rightarrow$ LTBO | . 605 (15.259) | . 650 (20.672) | . 650 (20.672) | n. | n.a |
| H7b production costs $\rightarrow$ LTBO | . 048 (1.178) | n.a. | . 541 (14.466) | n.a. | n.a. |
| H7c summer $\rightarrow$ LTBO | . 082 (3.140) | . 076 (2.898) | . 168 (4.711) | n.a | n.a |
| H7d cultural familiarity $\rightarrow$ LTBO | . 212 (7.556) | . 205 (7.251) | . 407 (12.037) | n.a. | n.a. |
| H7e star power $\rightarrow$ LTBO | . 029 (1.099) | n.a. | -. 053 (-4.015) | n. | n.a. |
| H7f director power $\rightarrow$ LTBO | . 056 (2.222) | . 066 (2.645) | . 066 (2.645) | n.a. | n.a. |
| H7g advertising expenses $\rightarrow$ LTBO | -. 009 (-.261) | n.a. | . 168 (5.098) | n.a | n.a. |
| H7h reviews $\rightarrow$ LTBO | . 038 (1.352) | n.a. | . 172 (7.602) | n.a. | n.a. |
| H7i consumer-perceived quality $\rightarrow$ LTBO | . 159 (5.154) | . 171 (6.556) | . 245 (7.051) | n.a | n.a |
| H7j awards $\rightarrow$ LTBO | . 220 (8.594) | . 232 (9.261) | . 232 (9.261) | n.a. | n.a. |
| H8a production costs $\rightarrow$ Profit | n.a. | n.a. | n.a. | -. 414 (-6.154) | -.216 (-4.341) |
| H8b summer $\rightarrow$ Profit | n.a. | n.a. | n.a. | . 262 (5.478) | . 224 (4.451) |
| H8c cultural familiarity $\rightarrow$ Profit | n.a. | n.a. | n.a. | . 148 (3.073) | . 148 (3.073) |
| H8d star power $\rightarrow$ Profit | n.a. | n.a. | n.a. | -. 007 (-.145) | -. 058 (-1.153) |
| H8e director power $\rightarrow$ Profit | n.a. | n.a. | n.a. | . 068 (1.406) | . 068 (1.406) |
| H8f advertising expenses $\rightarrow$ Profit | n.a. | n.a. | n. ${ }^{\text {a }}$ | . 138 (2.064) | . 242 (3.885) |
| H8g reviews $\rightarrow$ Profit | n.a. | n.a. | n.a. | . 004 (.078) | . 198 (3.933) |
| H8h consumer-perceived quality $\rightarrow$ Profit | n.a. | n.a | n.a. | . 233 (3.954) | . 233 (3.954) |
| H8i awards $\rightarrow$ Profit | n.a. | n.a. | n.a. | . 323 (6.609) | . 323 (6.609) |

NOTE: n.a. = not applicable; coefficients in italics are not significant at the 0.05 level (2-tailed).

## APPENDIX

Listing of Movies in the Final Sample

| 102 Dalmatians | Drive Me Crazy | Love Letter. The | Sweet and Lowdown |
| :---: | :---: | :---: | :---: |
| 13th Warrior. The | Drop Dead Gorgeous | Love Stinks | Talented Mr. Ripley. The |
| 200 Cigarettes | Drowning Mona | Lucky Numbers | Tao of Steve. The |
| 28 Days | Dudley Do-Right | Magnolia | Tarzan |
| 3 Strikes | East is East | Man on the Moon | Tea With Mussolini |
| 6th Day. The | El Abuelo (The Grandfather) | Mansfield Park | Teaching Mrs. Tingle |
| Adventures of Elmo in Grouchland. | Election | Map of the World. A | Ten Things I Hate About You |
| The | End of Days | Matrix. The | Thirteenth Floor. The |
| Adventures of Rocky and | End of the Affair. The | Me. Myself and Irene | This is my Father |
| Bullwinkle. The | Entrapment | Meet the Parents | Thomas and the Magic Railroad |
| Affair of Love. An | Erin Brockovitch | Men of Honor | Thomas Crown Affair. The |
| Almost Famous | Est-ouest (East/West) | Messenger: The Story of Joan of | Three Kings |
| American Beauty | Existenz | Arc. The | Three to Tango |
| American Pie | Exorcist (New Version). The | Mickey Blue Eyes | Tigger Movie. The |
| American Psycho | Eye of the Beholder | Midsummer Night's Dream. A | Titan A.E. |
| Among Giants | Eyes Wide Shut | Million Dollar Hotel. The | Titus |
| An Ideal Husband | Fantasia/2000 | Miss Julie | Todo Sobre Mi Madre (All About |
| Angela's Ashes | Fight Club | Mission to Mars | my Mother) |
| Anna and the King | Final Destination | Mission: Impossible II | Topsy-Turvy |
| Any Given Sunday | Finding Forrester | Mod Squad. The | Toy Story 2 |
| Anywhere But here | Five Senses. The | Mumford | Trick |
| Arlington Road | Flawless | Mummy. The | Trippin' |
| Art of War. The | Flintstones in Viva Rock Vegas. | Muppets from Space | Trixie |
| Astronaut's Wife. The | The | Muse. The | Tumbleweeds |
| Austin Powers: The Spy Who | Foolish | Music of the Heart | Turn it Up |
| Shagged Me | For Love of the Game | My Dog Skip | Twin Dragons (Shuang long hui) |
| Autumn in New York | Forces of Nature | My Favorite Martian | Twin Falls Idaho |
| Bachelor. The | Frequency | Mystery Men | U-571 |
| Backstage | Galaxy Quest | Mystery. Alaska | Under Suspicion |
| Bait | General's Daughter. The | Never Been Kissed | Universal Soldier: The Return |
| Bamboozled | Get Carter | Next Best Thing. The | Up at the Villa |
| Bats | Ghost Dog: The Way of the | Next Friday | Urban Legends: Final Cut |
| Battlefield Earth | Samourai | Ninth Gate. The | Virgin Suicides. The |
| Beach. The | Girl. Interrupted | Notting Hill | Walk on the Moon. A |
| Beautiful | Girlfight | Nurse Betty | Watcher. The |
| Beautiful People | Gladiator | Nutty Professor II: The Klumps | Way of the Gun |
| Bedazzled | Go | Office Space | What Lies Beneath |
| Being John Malkovich | God said. "Ha!" | Omega Code. The | What Planet are you from? |
| Besieged | Gojira ni-sen mireniamu (Godzilla | Original Kings of Comedy. The | Whatever it Takes |
| Best Laid Plans | 2000) | Other Sister. The | What's Cooking? |
| Best Man. The | Gone in Sixty Seconds | Out-of-Towners. The | Where the Heart is |
| Better Than Chocolate | Goodbye Lover | Outside Providence | Where the Money is |
| Beyond the Mat | Gossip | Passion of Mind | Whipped |
| Bian Lian (The King of Masks) | Green Mile. The | Patriot. The | Whole Nine Yards. The |
| Bicentennial Man | Groove | Perfect Storm. The | Wild Wild West |
| Big Daddy | Guinevere | Pitch Black | Winslow Boy. The |
| Big Kahuna. The | Gun Shy | Play it to the Bone | Woman on Top |
| Big Momma's House | Hak Hap (Black Mask) | Plunkett and McLeane | Wonder Boys |
| Billy Eliot | Hamlet (2000) | Pokemon the first movie | Wood. The |
| Black and White | hanging up | Pokemon: the movie 2000 | World is not enough. The |
| Blair Witch Project. The | Happy. Texas | Price of Glory | X-Men |
| Bless the Child | Haunting. The | Prince of Egypt. The | Yards |
| Blue Streak | Held Up | Pushing Tin |  |
| Body Shots | Here on Earth | Rage: Carrie 2. The |  |
| Boiler Room | Hideous Kinky | Random Hearts |  |
| Bone Collector. The | High Fidelity | Ready to Rumble |  |
| Book of Shadows: Blair Witch 2 | Highlander: Endgame | Red Planet |  |
| Bossa Nova | Hollow Man | Reindeer Games |  |
| Bounce | Holy Smoke | Remember the Titans |  |
| Bowfinger | House on Haunted Hill. The | Replacements. The |  |
| Boys and Girls | Hurricane. The | Return to me |  |
| Boys Don't Cry | I Dreamed of Africa | Ride with the Devil |  |
| Breakfast of Champions | Idle Hands | Road to El Dorado. The |  |
| Bring it On | I'll be home for Christmas | Road Trip |  |
| Bringing out the dead | In Crowd. The | Romance |  |
| Brokedown Palace | In Too Deep | Romeo Must Die |  |
| Broken Hearts Club: A Romantic | Insider. The | Rugrats in Paris: The Movie |  |
| Comedy. The | Inspector Gadget | Rules of Engagement |  |
| Cecil B. DeMented | Instinct | Runaway Bride |  |
| Cell. The | Iron Giant. The | S.L.C. Punk! |  |
| Center Stage | Isn't she great? | Saving Grace |  |
| Charlie's Angels | Jack Frost | Scary Movie |  |
| Chicken Run | Jakob the Liar | Scream 3 |  |
| Chill Factor | Jing ke ci qin wang (The Emporer | Shaft |  |
| Chuck and Buck | and the Assassin) | Shanghai Noon |  |
| Cider House Rules. The | Joe Gould's Secret | Simon Sez |  |
| Committed | Joe the King | Simpatico |  |
| Contender. The | Keeping the Faith | Sixth Sense. The |  |
| Cookie's Fortune | Kid. The | Skulls. The |  |
| Corruptor. The | La Vita e Bella (Life is Beautiful) | Sleepy Hollow |  |
| Coyote Ugly | Ladies Man. The | Small Time Crooks |  |
| Cradle will rock | Lake Placid | Snow Day |  |
| Crazy in Alabama | Le Violon Rouge (The Red Violin) | Snow Falling on Cedars |  |
| Crime and Punishment in Suburbia | Legend of Bagger Vance. The | South Park: Bigger. Longer and |  |
| Dancer in the Dark | Legend of Drunken Master. The | Uncut |  |
| Deep Blue Sea | (Jui kuen II) | Space Cowboys |  |
| Deterrence | Liberty Heights | Star Wars I: The Phantom Menace |  |
| Detroit Rock City | Life | Steal this Movie |  |
| Deuce Bigalo: Male Gigolo | Light it up | Stigmata |  |
| Dick | Limey. The | Stir of Echoes |  |
| Dinosaur | Little Nicky | Story of Us. The |  |
| Dog Park | Little Vampire. The | Straight Story. The |  |
| Dogma | Lola rennt (Run. Lola. run) | Strike! |  |
| Double Jeopardy | Loser | Stuart Little |  |
| Doug's 1st Movie | Lost and Found | Summer of Sam |  |
| Down to You | Lost Souls | Supernova |  |
| Dr. T and the Women | Love and Basketball | Superstar |  |


[^0]:    NOTE: * = The Metascore weighting procedure assigns weights to the different publications and reviewers, which represent the prestige and importance of each reviewer and publication. Originally, the metascore is published by Metacritic.com on a 0-100 point scale which, however, represents a multiplication of individual reviews used to construct the overall value.

