

Devising a Practical Model for Predicting Theatrical Movie Success: Focusing on the Experience Good Property

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This study attempts to devise a new theoretical framework to classify and develop predictors of box office performance for theatrical movies. Three dependent variables including total box office, first-week box office, and length of run were adopted. Four categories of independent variables were employed: brand-related variables, objective features, information sources, and distribution-related variables. Sequel, actor, budget, genre (drama), Motion Picture Association of America rating (PG and R), release periods (Summer and Easter), and number of first-week screens were significantly related to total box office performance.

The theatrical movie industry is immense and still growing. According to the Motion Picture Association of America (MPAA, 2003), total box office receipts for 2002 in the United States reached \$9.5 billion and increased by 13.2% over 2001. However, an in-depth analysis of historical trends reveals some negative signs as, compared with double-digit growth in the late 1990s, the long-term growth rate has decreased to single-digits since 1999. Worse, when considering the growth of competing entertainment industries, such as video/DVD, pay-per-view, and video on demand, it might be difficult for the movie industry to escape the low-growth trend.

Competing media, however, can function as new windows for distributing theatrical movies. In other words, development of new competing media can contribute to increasing the revenues of movie distributors, much like the introduction of television and VCRs increased, rather than demolished, revenues. These multiple and repeated uses of movies should contribute to larger revenues for Hollywood studios.

Despite the increased significance of the new windows, they are still ancillary markets and theatrical releases are located at the heart of the transnational conglomerate business because the box office comes first in the chain of windows and tends to determine performance in the subsequent markets (Litman & Ahn, 1998). For example, previous research (Litman, 1979; Taylor 1974, 1976) showed that theatrical performance was an important determinant in explaining the expected ratings for movies on primetime television because theatrical performance of movies has been used to determine the quality of the movies (Wasko, 1994). It is therefore certain that the box office plays a critical role as the gateway to financial success for theatrical movies (Litman & Ahn, 1998).

Considering the importance of theatrical success, several studies have been conducted to ascertain unexplained factors affecting the success of a movie in the mass distribution era. In reviewing the previous literature, we discovered two aspects for which additional research is required. First, although most literature stressed the importance of prediction as a research objective, practical considerations were not sufficient. For example, some studies (Litman, 1983; Litman & Ahn, 1998) adopted being nominated for, or winning awards (e.g., Oscar), as independent variables for box office performance. However, in most cases, awards are decided after movies are released, so it is not reasonable to assume causality in terms of a practitioner's perspective and not practical to enter the variable into prediction equations. Second, a theoretical framework focusing on the economic properties of movies may diversify literature concerned with box office success factors. Although some recent research began adopting theoretical frameworks, such as the industrial organization (IO) model (e.g., Litman & Ahn, 1998), there are still an insufficient number of studies that have classified independent variables based on the economic characteristics of movies. This study pays special attention to the experience good characteristic, which some researchers (e.g., Reddy, Swaminathan, & Motley, 1998) have adopted for classifying predictors for entertainment products such as Broadway shows.

This research has two objectives. First, this study strives to devise a new theoretical framework that is capable of efficiently categorizing and developing predictors for the box office success of movies by examining the experience good property of a movie. Second, by critically reviewing and empirically testing predictors that have been adopted in previous studies, this study suggests combinations of practical variables that can be adopted by field practitioners for the purpose of predicting movie success.

The Literature Review section is divided into two parts, corresponding to the two previously stated research objectives. The first part explains the experience good property of movies and the other provides a review of previous literature. Based on theoretical work covered in the Research Model and Method section, this study suggests practical prediction models for box office performance. The suggested models are empirically tested using movies released during the period 2000 to 2002 in the Results section. The Discussion and Conclusion section provides implications of this study.

LITERATURE REVIEW

The Theatrical Movie As an Experience Good

A theoretical framework is important in predicting box office performance because it helps to generate new variables based on guidance from the framework, and to efficiently classify independent variables that may otherwise be used spontaneously. Early studies for predicting box office performance seem to have adopted variables without serious consideration for their theoretical framework, although theoretical justifications for each variable were usually made. Recent research, however, began to stress the importance of frameworks. Based on work by Litman (1983) and Sochay (1994), creative sphere, scheduling, release pattern, and marketing effort were used as categories of independent variables. However, an explicit criterion was not suggested for this categorization. Litman and Ahn (1998) divided their independent variables into production stage, distribution stage, and exhibition stage based on an IO model. However, little research focusing on the inherent experience good property of movies has been conducted. There is an advantage in using the experience good property in that it is closely related to a movie audience's decision-making process.

The experience good property has two aspects. First, movies are an experience good because individuals choose and use movies solely for the experience and enjoyment (Hirschman & Holbrook, 1982; Holbrook & Hirschman, 1982). That is, in the case of movies, consumption experience is an end itself (Reddy et al., 1998). Second, movies are an experience good because individuals do not know what the value of the movie will be to them until they experience it (Shapiro & Varian, 1999). When the audience watches a movie, they enter into a purchase agreement with little knowledge of the particular movie; the form may be familiar, but the content is not (Reddy et al., 1998).

This study focuses special attention on the second aspect because lack of knowledge about a particular movie may lead the audience to search for additional information before making a final decision. It is natural for the audience, whose prior knowledge of a particular movie is not sufficient, to seek additional information to avoid risks, such as wasting money and time, related to their decision (Rook & Hoch, 1985). Therefore, the experience good property of movies is closely related to the audience's purchase decision process.

Reddy et al. (1998) applied the experience good property and a related information seeking strategy to their research about the success of Broadway shows. They proposed a conceptual framework in which a Broadway show's success is determined by (a) information sources (critical reviews, previews, and advertising) and (b) objective characteristics (ticket prices, show type, talent characteristics, and timing of opening). This research determined that there is an overwhelming impact

made by information sources, particularly the influence of critical reviews, on the success of Broadway shows.

This study adopts, with some revisions, the model suggested by Reddy et al. (1998) as a conceptual model, and categorizes the independent variables into four mutually exclusive groups: brand-related variables, objective features, information sources, and distribution-related factors. Unlike Reddy et al.'s model, this study introduces brand-related and distribution-related factors. In Reddy et al.'s research, the effect made by directors or actors was included as a talent characteristic in the category of objective features. We, however, emphasize that the effect of talent should be categorized differently because evaluations of talent are made by the audience, whereas the admission price or show type are related to the movie itself and have little possibility of variation among audiences' perceptions. Specifically, this study chooses brand theories to explain the effects of those variables based on an audience's perception because brand theories (especially consumer knowledge-based perspective) argue that the effect of a brand stems from audience knowledge (including both familiarity and attitude) of the brand (Keller, 1998). In brief, this study suggests that the brand-related factors are related to audience, objective features to the movie itself, and information sources to third-person evaluation. Although these three factors are related to the audience's additional information seeking behaviors, the fourth factor, the distribution-related factor, focuses on the effect of market power and the release strategies employed by movie studios.

Previous Research on Success Factors of Theatrical Movies

Researchers have conducted several studies on the box office or financial performance of movies by primarily adopting psychological or economic approaches (Litman & Ahn, 1998). The psychological approach focused on the individual moviegoer's decision to choose a movie over other entertainment options and to select particular movies, whereas the economic approach was based on the mainly economic and industrial factors that are determined by the supply side (Litman & Ahn, 1998). Methodologically, psychological studies primarily used survey methods, whereas the economic approach used secondary data. This study essentially followed the methodological procedure and individual variables that have been traditionally adopted by the economic approach. However, it also stresses the importance of the psychological approach by adopting a theoretical framework based on audience information seeking needs and behaviors.

Variables Included in This Study

Sequels. According to brand theories, a movie sequel can be conceptualized as a brand extension. A brand extension is when a firm uses an established brand name to introduce a new product (Keller, 1998). By using the established brand as-

sets of parent brands, extended brands can easily gain customer attention and reduce marketing costs during introduction. For instance, Star Wars Episodes I and II explicitly utilized the popularity of the prior series with the same title. Several researchers (Litman & Kohl, 1989; Prag & Casavant, 1994; Ravid, 1999; Wyatt, 1991) showed that whether or not a film was a sequel was important in predicting the financial success of the movie. However, some researchers (Litman, 1982; Sochay, 1994) did not find significant effects.

Actors. The effects of actors or star power have received considerable attention in the literature (Basuroy, Chatterjee, & Ravid, 2003; De Silva, 1998; De Vany & Walls, 1999; Holbrook, 1999; Levin, Levin, & Health, 1997; Litman, 1983; Litman & Ahn, 1998; Litman & Kohl, 1989; Neelamegham & Chintagunta, 1999; Prag & Casavant, 1994; Ravid, 1999; Smith & Smith, 1986; Sochay, 1994; Wallace, Seigerman, & Holbrook, 1993; Wyatt, 1991) because in Hollywood the importance of actors to the success of movies has been considered common sense. In terms of brand theories, the use of superstars is strongly recommended because the use of stars in movies is actually ingredient branding, which involves creating brand equity for materials, components, and parts that are necessarily contained within other branded products (Keller, 1998; Levin et al., 1997). Empirical studies of actor effect, however, produced conflicting results. Although some researchers (Litman & Kohl, 1989; Sochay, 1994; Wallace et al., 1993; Wyatt, 1991) found significant contributions from star power, several other studies (De Silva, 1998; De Vany & Walls, 1999; Litman, 1983; Litman & Ahn, 1998; Prag & Casavant, 1994; Smith & Smith, 1986) did not find any significant effect.

Directors. According to brand theories, use of directors can be understood as ingredient branding, like the case of superstars. That is, like superstars who contribute to the box office by attracting a persona-based audience, renowned directors are assumed to have a similar attracting power. However, most previous studies (Litman, 1982; Litman & Ahn, 1998; Litman & Kohl, 1989; Sochay, 1994; Wyatt, 1991) reported that the effect of directors was not significant.

Production budget. Production cost has been considered an important predictor because big budgets translate into lavish sets and costumes, expensive digital manipulations, and special effects that lead to heightened attractiveness to audiences (Basuroy et al., 2003). Most previous studies (Basuroy et al., 2003; Litman, 1982; Litman & Ahn, 1998; Litman & Kohl, 1989; Wyatt, 1991) also supported the importance of budget.

Genre. Some types of movie genre have been given attention for predictions of box office performance. For example, the comedy genre was significant in several studies (Litman, 1982; Litman & Kohl, 1989; Sochay, 1994; Wyatt, 1991). In

addition, the popularity of the sci-fi/fantasy and horror genres was empirically supported in other literature (Litman, 1982; Litman & Kohl, 1989; Wyatt 1991). However, Litman and Kohl's (1989) research determined that drama was negatively related to box office success. These results are not unanimous.

MPAA rating. The content rating assigned by the MPAA has been considered an important factor to the movie industry (Litman & Ahn, 1998; Litman & Kohl, 1989; Prag & Casavant, 1994; Ravid, 1999) because the rating tends to determine the potential size of the audience. Considering that movies rated G, PG, and PG-13 have the largest potential audience, previous research suggested that such movies should be positively related to commercial success at the box office whereas R, X, and NR films should be negatively correlated (Musson, 1969). However, most previous research could not empirically support these relations (Litman & Ahn, 1998).

Critics' rating. Like the case of superstars and budgets, the effect of critics' rating has been widely tested by previous research (De Silva, 1998; Jedidi, Krider, & Weinberg, 1998; Litman, 1983; Litman & Ahn, 1998; Litman & Kohl, 1989; Prag & Casavant, 1994; Ravid, 1999; Sochay, 1994; Wallace et al., 1993; Wyatt, & Badger, 1984, 1990), and with the exception of a few studies, has typically been supported (e.g., Ravid, 1999). Regarding the functions of movie critics, Austin (1983) suggested that critics assist individuals in making a movie choice, understanding the content of the movie, developing an initial opinion of the film, and communicating movie information to others.

Audience rating. One of the most understudied variables in movie success research is audience rating. It reflects the degree of preference by moviegoers and may function as an influencer, which produces a word-of-mouth effect. Despite entailing such important aspects, this variable could not be tested by previous researchers because it was practically impossible to collect audience ratings of sample movies. However, several movie information websites (e.g., Internet Movie Database [IMDb]; www.imdb.com and Yahoo! Movies; movies.yahoo.com) now ask their visitors to evaluate the movies that they have already watched and release the results to the public. Although the demographic profile of the visitors who participate in the evaluations may not be the same as that of an actual audience, the evaluations can function as a good proxy if a sufficient number of participants can be secured.

Market power of the distributor. As in the case of audience rating, market power of the distributor has not been the subject of much previous research. We assume that distributors with high market power will gain a competitive advantage over other competitors in terms of securing and continuing a larger number of screens, forcing theater owners to conduct a higher level of marketing for their movies, and so on. This study adopts an exploratory method to calculate the market

power of the distributor by counting the number of movies ranked as the 100 highest box office movies released by a certain studio during the previous year.

Release date. In several studies, release dates have been used for box office predictions (Basuroy et al., 2003; Litman, 1983; Litman & Ahn, 1998; Litman & Kohl, 1989; Sochay, 1994). The rationale is that a high-attendance-period release (e.g., Christmas) attracts a bigger audience, which leads to higher box office performance. Like the case of genre, in reviewing the high-attendance periods, only a few periods, such as Summer, were empirically supported by previous literature (Litman, 1998; Sochay, 1991; Wyatt, 1991).

Number of screens. It is reasonable to predict that movies released to the greatest number of screens should enjoy higher box office receipts. Several researchers (Elberse & Eliashberg, 2003; Eliashberg & Shugan, 1997; Litman, 1982; Litman & Ahn, 1998; Litman & Kohl, 1989; Sochay, 1994) found that the number of screens was indeed a significant predictor of box office success (see Table 1).

Variables Excluded in This Study

Some variables that have been widely used in previous literature are intentionally not used in this study to devise a more practical prediction equation for box office success.

Awards. Some studies adopted awards as an independent variable, following the logic that winning awards would reflect quality, or might generate bigger revenues for the movies. However, it is not clear that the quality reflected by winning awards is significantly related to the quality perceived by moviegoers. In addition, most movies have finished playing in theaters by the time awards are announced. More important, it is not practical to assume that movie strategists can put this variable into their predicting calculations prior to the release of movies.

Competitive forces. It is reasonable to argue that each film competes with other concurrently released films or films carried over from a previous release, and its success is highly dependent on the strength of competitive forces in the marketplace. To measure the competitive forces, some literature used industry concentration indexes such as the Hirfindahl Hirschman Index (HHI) or the Concentration Ratio (CR).¹ We, however, criticize these measurements in that it is

¹The Hirfindahl Hirschman Index is calculated as the sum of the squared market shares of each competitor in the relevant product and geographic markets. Concentration Ratio measures the aggregate market shares of the largest four or eight or more firms (Litman, 1998).

TABLE 1
Summary of Findings of Major Studies

<i>Dependent Variable</i>	<i>Basuroy, Chatterjee, & Ravid (2003)</i>	<i>Elberse & Eliashberg (2003)</i>	<i>Litman (1983)</i>	<i>Litman (1982)</i>	<i>Litman & Kohl (1989)</i>	<i>Ravid (1999)</i>	<i>Sawhney & Eliashberg (1996)</i>	<i>Sochay (1994)</i>	<i>Wallace, Seigerman, & Holbrook (1993)</i>	<i>Wyatt (1991)</i>
Domestic total box office:	Y	Y (opening week)	Y	Y	Y	Y	Y	Y	Y	Y
Brand-related variables										
Sequel	3	—	—	*	*	*	*	—	—	*
Director	—	3	3	*	*	3	—	3	—	*
Actor	3	*	3	3	*	3	*	*	*	—
Objective features	*	3	*	*	*	*	—	—	*	*
Budget	—	Used but not categorized	3	3	3	—	3	—	*	—
Action/adventure	—									
Children/family	—		3	3	3	—	—	—	3	—
Comedy	—		3	*	3	—	—	*	*	*
Drama	—		3	3	*	—	—	3	3	3
Horror	—		*	*	3	—	3	3	*	*
Mystery/suspense	—		3	3	3	—	—	—	3	—
Fantasy/Sci-fi	—		*	*	*	—	—	—*	*	*
MPAA G	3	—	3	3	3	3	3	3	—*	3
MPAA PG	3	—	3	3	3	*	3	3	3	3
MPAA PG13	3	—	3	3	3	3	3	3	3	3
MPAA R	3	—	3	3	3	3	3	—*	3	3

Information source

Critics' rating	* / - *	*	*	*	*	*	*	*	*	*	*	*	*
Audience rating	-	-	-	-	-	-	-	-	-	-	-	-	-
Distribution-related variables													
Release	-	3	*	*	*	*	*	*	*	3	3	*	-
Christmas	3	3	*	*	*	3	3	3	3	*	*	*	*
		Seasonality (0-100)								Seasonality (0-1)			
Summer	3	3	3	3	3	*				*	*	*	*
Easter	3	3	3	3	3	3				3	3	3	*
Others	-	-	-	-	-	-	-	-	-	-	-	-	-
No. of first-week screens	*	*	-	*	*	*	-	-	-	*	*(first 2 weeks)	*	*
<i>N</i>	122-162	164	125	155	464	175	101	101	101	263	1,672	1,672	512
<i>R</i>	.47	.88	.485	.558	.384	.613	.419	.419	.419	.325-.380	.03-.47	.03-.47	.446-.456
Adjusted <i>R</i>	na	.87	na	.524	.368	.585	.395	.395	.395	.304-.360	na	na	.423-.436

Note. * = Significant; 3 = Insignificant; - = Not included in the study.

not practical to expect that movie strategists can successfully estimate the HHI or CR beforehand.

RESEARCH MODEL AND METHOD

Conceptual Model

Using the review of the literature (especially the work of Reddy et al., 1998) as a basis, this study suggests a conceptual framework of the key factors influencing the success of a theatrical movie. Specifically, this study proposes that the success of a movie is determined by (a) brand-related variables, (b) objective features, (c) information sources, and (d) distribution-related variables (see Figure 1).

Data Source

The sample for this study was drawn from IMDb, a renowned online movie information service. Movies that were released between 2000 and 2002 and earned at least \$1 million in the domestic theatrical market were selected for analysis. When summing up yearly movies, two factors contributed to reduce the number of analyzed movies. First, some movies were run in the domestic markets for more than 1 year. For example, a movie released in late 2000 would generally continue to run in theaters into 2001. In this case, the movie was included in the year 2000 dataset, not the year 2001 dataset.² Second, foreign films were eliminated because they do not fit in with measuring the effect of brand-related variables. In addition, some movies with limited available data were not used in the final analysis.

A total of 463 movies were used for the final analysis and the number of movies per year was evenly distributed (in 2000, 156 movies; in 2001, 154 movies; and in 2002, 153 movies). Considering ticket price increases during the 3 years, the box office records were adjusted by putting less weight on movies in later years.³

Dependent Variables

Three types of dependent variables were used: total domestic box office, first-week box office, and length of run.

²Some movies that have been shown in theaters for 2 years often appeared in the movie lists of both years. In this article, those movies were counted only once, leading to the reduced number of movies.

³This adjustment was suggested by an anonymous reviewer. According to the National Association of Theater Owners, average movie ticket prices increased from \$5.39 in 2000 to \$5.65 in 2001 to \$5.80 in 2002.

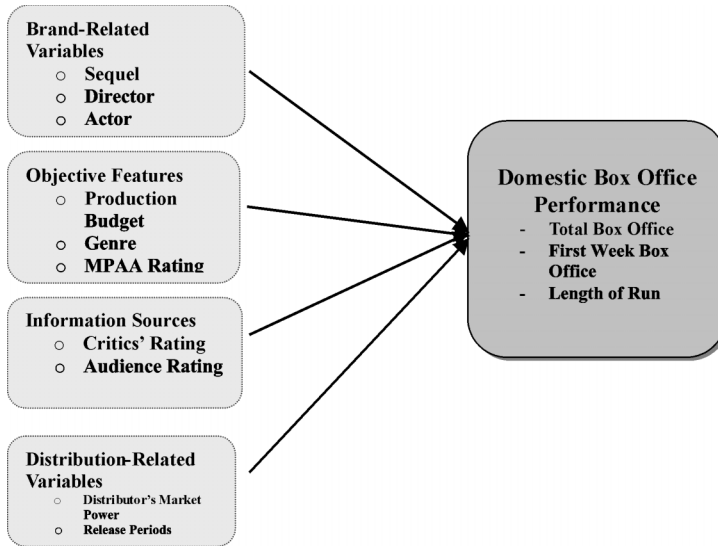


FIGURE 1 Conceptual model.

Total (total domestic box office). This was the most frequently used variable in the previous literature. Although some researchers (e.g., Litman & Ahn, 1998) used both domestic and worldwide box office records, this study did not use the worldwide gross for two reasons. First, in the case of foreign releases, several uncontrolled or indeterminate variables, such as cultural factors, could affect the box office performances (Oh, 2001). In addition, the effects of some independent variables (e.g., brand-related variables) in this study might be domestically constrained.

First (first-week box office). Although first-week box office is considered to be highly correlated with the total domestic box office, this study adopted this variable to test whether some independent variables affect the two dependent variables to different degrees.

Length (length of run). Some recent studies (e.g., Sochay, 1994) began to adopt length of run as an important dependent or intervening variable. We agree with such studies in that length of run may be highly related to total performance. Thus, this study adopts *length* as a dependent variable.

Independent Variables

Sequel 1–Sequel 2. Applying brand theories, this study separated the concept of sequel into two parts: sequel from movie (*sequel1*) and sequel from other media (*sequel2*). Movie sequels were easily recognized and the IMDb provided

data that showed whether a movie was based on other media such as books, television programs, and so on. Both variables were treated as dummies.

Actor 1–Actor 2. Most literature has dealt with talent or superstars as dummy variables. This study, however, tries to more accurately measure the effect of superstars. Revising the methodology adopted by Reddy et al. (1998), this research selected two variables: box office performance of the most recent movie an actor appeared in (*actor1*) and the total number of movies the actor has appeared in during his or her career (*actor2*). Applying brand theories, the authors believe that *actor1* represents horizontal (contemporary) brand power whereas *actor2* captures vertical (longitudinal or cumulative) brand power. Considering the high level of effort involved in coding for the two variables, only the first lead character was considered for coding.

Director 1–Director 2. The same logic used for actor is applied to measurement of director brand power. *Director1* shows the box office record of the director's most recent movie and *Director2* captures the total number of movies the director has directed during his or her career.

Budget. The production budget data were brought in from the IMDb. Accurate information on production budgets is highly difficult to obtain because it is considered confidential. Therefore, some caution is required in using the production budget data because they are usually based on press releases by the studios or estimates by insiders in the industry.

Genre. Based on previous research (especially Litman & Ahn, 1998), the movies are categorized into seven genres: *action/adventure*, *children/family*, *comedy*, *drama*, *horror*, *mystery/suspense*, and *sci-fi/fantasy*.⁴ This listing is complete and mutually exclusive. To code genre, this study consulted IMDb and TV Guide (2003), which coded genre for most of the sample movies. Specifically, the first genre suggested by these two sources was compared, and in cases where the genre was different, we decided the genre by considering the second or third genre listed by the two sources.

MPAA rating. There are six possible rating categories: G, PG, PG–13, R, NC–17, and NR. Among the six categories, NC–17 and NR rated movies were not

⁴In fact, Litman and Ahn (1998) used two more variables such as musical and western. In the sample, however, only one movie each was included for musical and western. To reduce the number of independent variables (especially dummy variables), this study changed the genres of two movies to the second genre as suggested by sources, which were consulted.

found in the sample. Therefore, only the remaining four variables were used in the analysis as dummy variables.

Critics' rating. Using the method of Litman and Ahn (1998), this study averaged scores from three nationally recognized sources—TV Guide (2003), Ebert (2003), and Maltin (2003). Because the sources used different scales, this study transformed each score based on a 0–1 scale and then averaged them.

Audience rating. IMDb supplies averaged evaluation scores on movies from visitors to its web site. The scale ranges from 0 to 10. One caution is that the sample of participants may be skewed because most of the participants might be Internet users and have relatively high interest in movies.

Distributor (market power of distributors). To overcome the limitation of previous literature in coding distributors as major or others, this study measured the actual records of distributors. That is, market power of a distributor is defined as the number of movies included in the top 100 movies released by the distributor during the previous year.

Release (release periods). Adopting the method of Litman and Ahn (1998), this study used four categories: *Christmas* (November and December), *Summer* (May through August), *Easter* (March and April) and *Other* (the remaining months).

Screen (number of first-week screens). Based on data provided by the IMDb, this study coded the number of screens that showed a movie in the first week. In the case that a movie was released in only a limited number of cities during the first or early weeks, this study counted the number of screens when the movie was formally released nationwide.

RESULTS

Sample Characteristics

The sampled movies earned an average of \$47.0 million in the domestic market. The mean of the first-week earnings was \$13.0 million, showing that the performance of the first week accounted for approximately 28% of the total box office receipts. The average length of run was approximately 14.0 weeks.

Among the total 463 movies, 45 (9.7%) movies were sequels and 181 (39.1%) were based on other types of media. This means a critical portion of movies produced each year relies on brand extensions. The average revenue from the movies

that actors most recently participated in was \$44.4 million and the average number of movies the main character had participated in during his or her career was 17.9. In the case of directors, the averaged revenue from their previous movies was \$35.4 million and the average number of works was 5.0. The reason that the average of most recent movie revenue of actors is higher than that of directors seems to be that, unlike main actors, new directors are more likely to be hired by movie studios than are new or little known actors. This confirms a general belief that movie studios consider brand assets of main actors more than those of directors.

The average production budget of the sample was \$36.9 million, which accounted for 78.5% of the average box office receipts. The domestic return might be positive because the budget did not include marketing costs, such as advertising. Comedy ($n = 163$, 35.2%) and drama ($n = 123$, 26.6%) were dominant in the sample followed by action/adventure ($n = 78$, 16.8%), mystery/suspense ($n = 42$, 9.1%), horror ($n = 27$, 5.8%), sci-fi/fantasy ($n = 19$, 4.1%), and children/family ($n = 11$, 2.4%). In the case of MPAA ratings, R ($n = 215$, 46.4%) and PG-13 ($n = 202$, 43.6%) prevailed, followed by PG ($n = 39$, 8.4%) and G ($n = 7$, 1.5%). When conducting regression analyses, the children/family genre and G rating dummies with the lowest frequencies were excluded from analysis.

Regarding the factor of information source, the average critics' score was .55 (0–1 scale), whereas the average audience rating was 6.0 (0–10 scale). The average number of the top 100 movies that movie studios distributed in the previous year was 8. Regarding release timing, 88 (19.0%) movies were released during the Christmas season, 140 (30.2%) during the Summer season, 87 (18.8%) during the Easter season, and 148 (32.0%) during the remaining period. In the case of regression analyses, the last dummy (*Other*) was not included. The average number of screens for the first week of release was 1,837 (see Table 2).

A correlation analysis generally indicated that each of the dependent variables was closely related with the independent variables. In the case of total box office, all the nonnormative variables, that is, *director1*, *director2*, *actor1*, *actor2*, *budget*, *critics' rating*, *audience rating*, *distributor*, and *screen* were significantly correlated. In the case of the first-week box office, only *actor2* (total number of previous films) and *critics' rating* were not significantly related. In addition, *director2* (total number of previous films directed) and *screen* were not related with length of run.

Actor1 and *actor2*, as well as *director1* and *director2*, were significantly correlated with each other, implying that horizontal brand power is positively related with vertical brand power. In addition, excluding *actor1*, brand-related variables for actors and directors were significantly related with positive evaluations of critics and audience. The ratings of critics and audience were highly correlated with each other ($r = .72$). *Distributor*, which shows the distribution power of studios, was positively correlated with *director1*, *actor1*, *budget*, and *screen* as expected. However, neither *director2* nor *actors2* were significantly correlated with *distributor*. These conflicting results show that the studios are mainly interested in hiring

TABLE 2
Summary of Sample

<i>Variable</i>	<i>Cases</i>	<i>M</i>	<i>SD</i>	<i>Minimum</i>	<i>Maximum</i>
Total	463	45.047	55.2057	1.0	375.2
First	463	12.494	15.2413	0.1	106.7
Length	463	13.98	7.164	2	50
Sequel1	463	0.10	0.297	0	1
Sequel2	463	0.39	0.488	0	1
Director1	463	35.383	59.5131	0	431.1
Director2	463	4.96	6.324	0	40
Actor1	463	44.359	59.5265	0	317.6
Actor2	463	17.92	13.566	0	83
Budget	463	36.893	30.1873	0.2	142
Action/adventure	463	0.17	0.375	0	1
Children/family	463	0.02	0.152	0	1
Comedy	463	0.35	0.478	0	1
Drama	463	0.27	0.442	0	1
Horror	463	0.06	0.235	0	1
Mystery/suspense	463	0.09	0.288	0	1
Sci-fi/fantasy	463	0.04	0.199	0	1
MPAA G	463	0.02	0.122	0	1
MPAA PG	463	0.08	0.278	0	1
MPAA PG-13	463	0.44	0.496	0	1
MPAA R	463	0.46	0.499	0	1
Critic' rating	463	0.5485	0.161	0.07	0.93
Audience rating	463	6.038	1.1999	0.0	8.9
Distributor	463	8.04	5.057	0	16
Christmas	463	0.19	0.393	0	1
Summer	463	0.30	0.460	0	1
Easter	463	0.19	0.391	0	1
Other period	463	0.32	0.467	0	1
Screen	463	1837.29	1074.647	1	3,682

currently popular directors or actors. It is interesting to note that distribution-related variables such as *distributor* and *screen* were negatively related with evaluations of critics and audience (see Table 3).

Multiple Regression Analysis

Table 4 represents the final stepwise regression results with total domestic box office (*total*), first-week box office (*first*), and length of run (*length*) as dependent variables. All three models explained significantly high portions of variances (adjusted $R^2 = .588, .611, .344$ or *total*, *first*, and *length*, respectively). Compared with previous research, these models have the competitive advantage of high prediction power.

TABLE 3
Correlation Matrix

	Total	First	Length	Director1	Director2	Actor1	Actor2	Budget	Critics' Rating	Audience Rating	Distributor	Screen
Total	1.000											
First	0.906**	1.000										
Length	0.561**	0.397**	1.000									
Director1	0.416**	0.410**	0.225**	1.000								
Director2	0.131**	0.103*	0.078	0.266**	1.000							
Actor1	0.188**	0.190**	0.113*	0.166**	0.140**	1.000						
Actor2	0.108*	0.078	0.122**	0.086	0.136**	0.163**	1.000					
Budget	0.663**	0.693**	0.255**	0.513**	0.269**	0.237**	0.270**	1.000				
Critics' rating	0.185**	0.065	0.379**	0.095*	0.155**	0.077	0.185**	0.079	1.000			
Audience rating	0.239**	0.098*	0.426**	0.139**	0.149**	0.036	0.189**	0.097**	0.723**	1.000		
Distributor	0.197**	0.242**	0.133**	0.130**	-0.013	0.124**	0.080	0.272**	-0.108*	-0.122**	1.000	
Screen	0.503**	0.607**	0.060	0.306**	-0.006	0.217**	0.101*	0.619**	-0.282*	-0.235**	0.403**	1.000

* $p < .05$. ** $p < .01$.

TABLE 4
 Regressions of Three Dependent Variables (Unstandardized Coefficients)

Independent Variable	Dependent Variable		
	Total Box Office	First-Week Box Office	Length of Run
Budget	0.735**	0.218**	0.022*
Audience rating	12.631**	2.487**	2.076**
Sequel1	32.982**	11.699**	3.478**
Screen	0.011**	0.005**	
MPAA PG	18.572**		5.063**
MPAA R	-9.554*		-2.185**
Actor2	-0.342*	-0.133**	
Drama	-13.361**		
Critics' rating	34.238*		7.555**
Release (Summer)	11.862**	3.717**	
Release (Easter)	11.500*		
Distributor			0.127*
<i>N</i>	431	431	431
<i>R</i> ²	.598	.617	.355
Adjusted <i>R</i> ²	.588	.611	.344
<i>F</i>	(11, 419) 56.718	(6, 424) 113.678	(7, 423) 33.240
Probability > <i>F</i>	.000	.000	.000

* $p < .05$. ** $p < .01$.

The first model with *total* as the dependent variable shows that *sequel1*, *actor2*, *budget*, *drama*, *PG*, *R*, *critics' rating*, *audience rating*, *Summer*, *Easter*, and *screen* were significant predictors. As in the previous literature, *sequel1*, based on the original movie, was found to be significant. However, *Sequel2*, which captures the effect of other media, was not significant.⁵ Although this study adopted a more elaborated methodology for measuring the power of superstars and directors, the power was not empirically supported. One interesting finding is that *actor2*, which shows the total number of films, was negatively related to box office. Like the case in Litman and Kohl (1989), this study showed that *drama* was negatively related to

⁵As an anonymous reviewer suggested, it would result in increased explanation power of *Sequel2* to use an interval level variable that absorbs the performance in the previous markets. Due to a huge laboring demand for data gathering, this study could not develop the interval-level variable. Instead, we conducted additional regression analyses by adding a new composite independent variable (*Sequel2*Budget*) into the list of independent variables. The analyses showed that the new variable was positively significant when each of Total Box Office and First-Week Box Office were used as the dependent variable. This result shows that *Sequel2* with heavy budget might significantly affect the theatrical performance whereas *Sequel2* with light budget might not. If we assume that sequels supported by heavy budget can obtain popular sources that showed the high level of performance in the previous markets, this result indirectly implies that it would increase the explanatory power to use a more elaborate variable that reflects the previous market performances.

the box office. The effects of the other genres, however, were not found. Surprisingly, this study showed that the effect of the MPAA rating *PG* was positively and *R* was negatively related to *total*. The authors assume that the recent success of big budget movies tended to contribute to this result because most big budget movies are rated other than *R* (especially *PG*). Both evaluations of critics and audience were found to be significant. *Distributor*, the new variable in this study, was not found to be significant. Release dates and number of screens, however, showed significant contributions for predicting box office. The Summer and Easter seasons were especially important.

The second model predicting the first-week box office performance found a lesser number of significant variables such as *sequel1*, *actor2*, *budget*, *audience rating*, *summer*, and *screen*. All the significant variables in the second model were also significant in the first model. However, *PG*, *R*, *drama*, *critics' rating*, and *Easter*, which were significant with *total* in the first model, lost the significance. It is noteworthy that critics' evaluation was not significant in the first-week box office, but it showed a significant relation with the total box office. This means that *critics' rating* is a predictor, rather than an influencer, on the box office success of a movie. Interestingly, although a fewer number of independent variables were significant compared with the case of *total*, the total explanatory power measured by R^2 did not decrease.

The third model with *length* as the dependent variable exhibited a slightly different pattern. Among the independent variables, *sequel1*, *budget*, *PG*, *R*, *critics' rating*, *audience rating*, and *distributor* were found to be significant. In this model, the market power of distributors, which was not significant in the models with *total* and *first*, showed it could significantly contribute to a longer run of the movies. *Screen*, which captures the market power of distributor, was not significant. This implies that a large number of screens in the first release week do not secure a long run of the movies. The comparatively lower adjusted R^2 (.34) in this model shows that some other variable, which is not used for predicting total and first-week box office, may be required for predicting the length of run of theatrical movies.

Additional Analysis

An additional regression analysis with *screen* as the dependent variable showed a quite different result compared with those of the previous analyses. First, brand-related variables were found to be significant in predicting the selections of theater owners. Four variables, such as *sequel1*, *sequel2*, *actor1*, and *director2*, could significantly predict the number of screens in the first week. However, sequel from other media (*sequel2*) and vertical brand power of director (*director2*) were found to be negatively related to the number of first-week screens. Among the objective features, *budget*, *drama*, *horror*, and *R* were significant. However, both *drama* and *R* negatively predicted the selection of theater owners. *Critics' rating* was signifi-

cant whereas *audience rating* was not, but one caution for interpretation is required because the relation between *audience rating* and *screen* was negative. As expected, most of the distribution-related variables were significant. Only the *Summer* season variable was not significant. It is interesting to note that the *Christmas* season was positively related with the number of screens, whereas the *Easter* season negatively predicted the number of screens (see Table 5).

DISCUSSION AND CONCLUSION

Theoretical Implications

Generally, the brand-related variables were not as important as expected. Only *sequel1* was significant throughout the three models. Contrary to our expectations, neither brand power of actors nor directors was strong enough to affect the box office success of movies. However, it is too early to conclude that superstars are not important factors to the financial success of movies. It will be necessary to develop a more elaborate methodology to measure the brand power of actors or directors. According to Wallace et al. (1993), the brand power of many superstars is not constant. Some superstars steadily lose attractiveness over their entire career, whereas others gain more brand power as they participate in more films. Occasionally, the powers follow

TABLE 5
Regression of Screen (Unstandardized Coefficients)

<i>Independent Variable</i>	<i>Screen</i>
Sequel1	260.640*
Sequel2	-143.065*
Actor1	1.592**
Director2	-20.487**
Budget	20.066**
Genre (drama)	-212.987*
Genre (horror)	441.482**
MPAA R	-206.722**
Critics' rating	-1128.276**
Distributor	30.156**
Release (Christmas)	189.636*
Release (Easter)	-233.584*
<i>N</i>	431
<i>R</i> ²	.563
Adjusted <i>R</i> ²	.550
<i>F</i>	(12, 418) 44.859
Probability > <i>F</i>	.000

p* < .05. *p* < .01.

nonmonotonic patterns of recovery or falling. This study did not consider these different patterns. Moreover, this study calculated brand powers of only one leading actor per movie. We believe that if the brand power of more than two superstars per movie is considered, the effect of actors might be higher.

In the case of objective features, budget was significant in all three models. Regarding the use of production budget for box office prediction, however, one theoretical issue needs to be addressed: how audiences recognize and psychologically process the information of production costs; that is, whether big budget is an important factor for audiences in choosing a movie. How can an audience know how big a budget was spent on producing a movie? Or, how does an audience interpret the information that a movie was produced with a big budget? It should be noted that there is little in the literature that adopts the psychological approach in dealing with this issue.

Although this study found genre (*drama*) and some MPAA ratings such as *PG* and *R* to be significant, both variables also provide methodological or theoretical challenges. In the case of genre, we argue that the use of the dummy variable cannot address the multigenre trend. Also, the match between a certain genre and a certain period needs to be more deeply investigated. For example, Litman and Ahn (1998) found that family genre movies have a high probability of success during the Christmas season. Regarding the effect of MPAA ratings, more refined theorization is required. The existing explanation is that, compared with R-rated movies, G, PG, or PG-13 movies have more potential audience, which leads to greater box office success. A detailed observation of the result of this study, however, provokes some questions: Why was only PG significant, whereas G and PG-13, which are assumed to have a similar scope of potential audience, were not?

Evaluations by third parties are perceived to be objective so that they may be more efficient in terms of persuasive effects than other information sources such as advertisements. This research showed that the evaluations of both critics and audiences were closely related to the total box office. However, in the case of the model with *first, critics' rating* was not significant. This result can be cautiously interpreted as verification that evaluation by a critic could be a predictor rather than an influencer.⁶

As expected, the distribution-related variables were generally significant. In the case of release periods, however, some methodological revision is required because the categorization is based on rough assumption and not on an actual market

⁶We used the term "cautiously" because there might be alternative explanations. An anonymous reviewer suggested that "since critical reviews are often published to coincide with movie openings and percolate through the popular press thereafter, they may not influence the first week's gross but would influence subsequent performance as audience members access the information." We admit that this alternative explanation is also plausible. Unfortunately, these competing explanations cannot be empirically tested based on the given data set.

calculation. For example, early December is regarded as having a relatively small potential audience, whereas late December is regarded as a hot movie season because of Christmas (Basuroy et al., 2003). The method used by this study was sufficient to capture these subtle differences.

Despite some limitations, this study showed that a new approach predicting the success of movies based on information seeking behaviors of potential moviegoers might be successfully developed. The model fits of suggested equations were relatively high and several independent variables were found to be significant. We stress that integrating both economic and psychological approaches could offer a more powerful prediction. These two approaches have been developed and used separately since their introductions. This study, however, demonstrated the potential integration of these two approaches by re-interpreting the variables of economic approaches based on the psychological approach (e.g., information seeking inclination of potential moviegoers).

Managerial Implications

Using the independent variables, this study explained approximately 60% of variances, which was higher than that found in most previous research (in the case of the regression model with *total* as the dependent variable). In particular, this study adopted variables that field practitioners can apply as practical predictors. That is, awards and competitive forces, which have been empirically supported by the literature, were not used in this research because it is practically impossible for practitioners to obtain these data prior to the release of a movie. Therefore, this study showed that a significant amount of movie success could be predicted using only obtainable practical variables.

Although this study omitted awards and competitive forces in the prediction models, it adopted a new independent variable—audience rating. Some may argue that audience evaluation is not obtainable before release. However, it is a common practice for movie studios to provide advance screenings for critics or test audiences prior to formal release. Through these advance screenings, practitioners may obtain similar data. That is, it is more practical to use audience rating rather than to run a prediction regression without it.

This study also showed that both regression models with first-week box office (*first*) and total box office (*total*) as the dependent variables could be successfully estimated, and the model fits of the two models were similar to each other. The number of significant predictors in the case of *first* model was, however, far less than that in the case of *total* model (6 and 11, respectively). This result confirms a common belief that first release week performance can be more easily estimated than total performance. In addition, it can be said that the *total* model can be more accurately estimated if additional independent variables, which can be obtained after release such as *competitive force*, are put into the equation. Finally, it is implied

that strategy practitioners need to prepare multiple models that can be used for predicting different dependent variables at different time periods.

Suggestions for Future Research

Additional predictors can be developed by reflecting the experience good property of movies. For example, in the case of sequels from other media, a new variable can determine the type of media on which a movie is based and the market performance in the previous media market (e.g., number of novels sold in the book market).

As explained earlier, more refined methodologies for measuring independent variables are required. The dummy variables used in this study should be transformed into interval variables. For example, release periods can be coded more elaborately by reflecting the actual measurement of market demand during a certain period.

Furthermore, although this research provided two box office prediction equations corresponding to each time frame, more equations will be needed for each stage of movie production. For example, in every stage, including preproduction, production, postproduction, prerelease, and postrelease, practitioners need to predict box office success utilizing different combinations of predictors.

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