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The Main Determinants of Bollywood Movie Box Office Sales

The Indian film industry produces more movies and sells more tickets than any other movie industry, with revenues second only to those of the US film industry. We employ a two-by-two research design using a set of multiple regression analyses for two different countries of destination for Bollywood movies for two dependent variables. By examining data and testing our hypotheses on a sample of 330 films, we identify effects related to brand, product, distribution and consumers on opening week as well as total box office sales both individually and collectively. Our results show that the categories of variables affecting Bollywood opening week sales for both countries are identical in order and importance (distribution, product, brand, consumer variables). For total box office sales they are similar, with the exception of the first category. For the UK it was consumer-related while in the US it was distribution-related, followed then for both countries by product- and brand-related variables. Our results underscore previous findings of Hollywood movies, indicating that movie success factors are global rather than regional or national.

1. Introduction

In the early 1990's, India abandoned socialism for liberalization which opened up the country to the West. The Indian economy subsequently became less regulated and the Indian film industry became more receptive to multinationals and foreign investments. Bollywood, as India's film industry is widely known, expanded globally along with new media technologies such as satellite television and the Internet, which broadened access to movies (Jones *et al.,* 2008). Other factors driving the globalization of the Indian film industry included more mainstream content and the internationalization of financial markets to fund Bollywood film projects. Indian filmmakers have initiated a number of creative and commercial deals with Hollywood production houses, studios and stars. The Indian film industry now ranks as the largest film producing country in the world, producing 1,101films and selling 3.6 billion tickets in 2002, compared to 739 films produced and 2.6 billion tickets sold in the US (Kripalani, 2002). But sales of Indian films did not translate into equally strong revenues, generating only about $2 billion in sales in 2004 (e.g., theatre tickets, DVDs, television) compared to $55 billion in revenue from Hollywood movies (PWC, 2005). Since most sales occur in the domestic Indian market, where ticket prices are low and piracy rates high, revenues are accordingly smaller. Nevertheless, the Indian film industry grew 17 percent on average between 2004 and 2007 and represents about 20 percent in revenue of the entire Indian media and entertainment industry (TV, print, radio, music, animation, gaming). While the Indian numbers are modest compared to US revenues, they compare very favorably with sales of other major film producing countries such as Germany, France and the UK.

Reaching out to audiences beyond India holds promise as a lucrative option for Bollywood. Going global translates into greater sales, higher profit margins and added visibility (Jones *et al.* 2008). Over the last decade, more Bollywood movies, especially the more sophisticated

and higher-budget films, were released in Western markets. The UK and US have become profitable markets for Indian films, generating a large part of total revenues (Eliashberg *et al.*, 2006). *Monsoon Wedding*, for example, earned over $30 million worldwide. More recently, *Slumdog Millionaire*, a mid-budget Bollywood film that won eight Academy Awards in February 2009, had grossed $217 million by March 2009 and total box office sales are expected to exceed $250 million. Given the number and reach of Bollywood movies in different countries today, understanding the main determinants of Indian movie sales in foreign markets is timely and relevant, both from an academic and a business viewpoint. Researchers have thoroughly investigated the determinants of successful Hollywood films in the US (Basuroy *et al.,* 2003; Chang and Ki, 2005; Hennig-Thurau *et al.,* 2001; Hennig-Thurau *et al.,* 2007; King, 2007; Neil *et al.,* 2005; Walls, 2005) as well as US films in Germany (Dewenter and Westermann, 2005), Italy (Waterman and Jayakar, 2000), the UK (Elliott and Simmons, 2008), and even cross country comparison such as the study by Elberse and Eliashberg (2003) comparing box office sales of US films released in France, Germany, Spain, and the UK or the study from Craig *et al.* (2005) of US films released in Australia, UK, Austria, Germany, Argentina, Chile, Mexico, and Spain. However, fewer studies have examined the success factors of non-US films such as Italian films, (Bagella and Bechetti, 1999), German films (Jansen, 2005) and Dutch films (Gemser *et al.,* 2007). The authors know of no study that analyzes success factors of Bollywood films despite the fact that the Indian film industry produces more movies than any other movie industry. We address this research gap and offer new insights into the category of variables influencing box office sales.

The contribution of this paper is twofold. First, we evaluate category of variables influencing opening week as well as total box office sales along with their individual and collective

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influence. We then compare the results of the two dependent variables. Our second major contribution is on one hand to analyze, compare and discuss the results in the UK and the US and on the other hand to compare our results to existing studies to understand the similarities and differences between the determinants of Bollywood compared to Hollywood movies. To test our hypotheses, we employed a two-by-two research design using a set of multiple regression analyses for the two dependent variables in the two countries of destination. For both countries we selected the most successful Indian films released over a 10-year period: 138 films for the UK and 192 films for the US..

2. Literature Review

2.1. Main Determinants of Movies

Almost all existing studies use total domestic box office sales as a dependent variable (Basuroy *et al.,* 2003; Chang and Ki, 2005; Hennig-Thurau *et al.,* 2007; Litman, 1982; Litman, 1983; Ravid, 1999; Wyatt, 1999). Few studies use domestic and worldwide box office sales together (Litman and Ahn, 1998). Using worldwide box office sales causes some inconsistencies because it includes uncontrolled country-level variables such as political, legal and cultural factors that could affect box office performance (Oh, 2001). Some studies have used a film's opening week sales as a dependent variable (Elberse and Eliashberg, 2003) and other have used opening week sales also as an independent variable since they believe that the early box office performance of a film (i.e. opening week) has a strong influence on a film's overall sales (DeVany and Walls, 2002; Walls, 2005). According to this assumption, audiences are more inclined to see a film once they know that many other people have seen it. This has been confirmed by several empirical studies such as those by Elberse and Eliashberg (2003) or Hennig-Thurau *et al.* (2007). For our study, we selected opening week sales as well as total box office sales as dependent variables in order to compare the results.

The majority of studies in the literature use common variables such as genre (Chang and Ki, 2005; DeVany and Walls, 2002; Litman, 1982; Litman, 1983; Litman and Kohl, 1989; Simonoff and Sparrow, 2000; Wallace *et al.,*1993; Walls, 2005; Zuckerman and Kim, 2003), MPAA rating (Basuroy *et al.,*2003; Chang and Ki, 2005; Hennig-Thurau *et al.,*2007; Litman, 1982; Litman, 1983; Litman and Kohl, 1989; Ravid, 1999; Sochay, 1994; Sawhney and Eliashberg, 1996; Sharda and Dursun, 2002; Walls, 2005), star or director power (Basuroy *et al.,* 2003; Chang and Ki, 2005; Elberse, 2007; Elberse and Eliashberg, 2003; Hennig-Thurau *et al.,*2007; Litman, 1982; Litman and Kohl, 1989; Ravid, 1999; Soichay, 1994; Walls, 2005; Zuckerman and Kim, 2003), season of release (Basuroy *et al.,*2003; Chang and Ki, 2005; Elberse and Eliashberg, 2003; Litman, 1982; Litman, 1983; Litman and Kohl, 1989; Sharda and Dursun, 2002; Simonoff and Sparrow, 2000; Walls, 2005; Zuckerman and Kim, 2003), and number of screens (Basuroy *et al.,*2003; Chang and Ki, 2005; Chen, 2002; Elberse and Eliashberg, 2003; Hennig-Thurau *et al.,*2006; Litman and Kohl, 1989; Sharda and Dursun, 2002; Sochay, 1994; Zuckerman and Kim, 2003). Some studies also use distribution power as a predictor of box office sales (Chang and Ki, 2005; Chen, 2002; Shugan and Swait, 2000). A few studies have used audience review (Basuroy *et al.,*2003; Chang and Ki, 2005; Elberse and Eliashberg, 2003; Liu, 2006; Hennig-Thurau *et al.,*2007; Dellarocas *et al.*, 2007; Duan, Gu and Whinston, 2008).

Previous studies have used four variables but the required information either was not at all or mostly not available for the Indian films selected for our study. Therefore, we could not use those variables. The first variable is sequel films (e.g. Lehman and Weinberg, 2000), also it should be noted that some researchers did not find significant effects at the box office (Basuroy *et al.,* 2003). For another variable, budget, Hennig-Thurau *et al.* (2006) and Elberse and Eliashberg (2003) found that production budgets play a relatively small role in movies'

financial success. For the third variable - film criticism in the media - studies show contradictory results. Sawhney and Eliashberg (1996) and Eliashberg and Shugan (1997) found a positive relationship while Ravid (1999) and Reinstein and Snyder (2005) maintain that film critics are not effective predictors of box office sales. For the fourth variable - number of prior awards received by participants in the current film (Dodds and Holbrook, 1988) - studies by Basuroy *et al.* (2003) and Simonoff and Sparrow (2000) showed that this variable has no relevance to a film's total performance. Besides, awards are usually decided after a movie is released and thus have no effect on early sales (Chang and Ki, 2005).

2.2. Categorizing Independent Variables

This study adopts the experience goods property model suggested by Reddy *et al.* (1998) and Chang and Ki (2005), with some modifications. As a concept, the experience goods property model is closely related to a movie audience's decision-making. Movies are experienced goods as the consumption experience is an end in itself (Reddy *et al.,* 1998) and consumers do not know the value of a movie until they experience it (Shapiro and Varian, 1999). Unlike the study of Reddy *et al.* (1998), our study uses variables related to brand and distribution. And unlike Chang and Ki (2005), our study uses opening week box office sales also as an independent variable to predict total box office sales. Moreover, previous researchers mostly adopted independent variables without categorizing them. Such categorization can help to generate new variables based on guidelines from the process (Chang and Ki, 2005). Few researchers have categorized independent variables based on marketing characteristics of movies. Litman and Ahn (1998) grouped their independent variables into production stage, distribution stage, and exhibition stage. Reddy *et al.* (1998) grouped them into information sources and objective features while Hennig-Thurau *et al.* (2006) grouped the independent variables into two categories, studio actions and movie quality. Chang and Ki (2005) divided

variables into brand-related, objective features, information source and distribution-related variables.

Based on the discussion above, we categorize the independent variables into four mutually exclusive categories: variables related to product, brand, distribution and consumers. Product-related variables pertain to the category and genre of a film and cannot be influenced by the audience. Brand-related variables refer to the reputation of the actors or stars and the director and are strongly related to the "product." Distribution-related variables include not only the timing or season the film is released but the number of screens and the marketing power of the film's studio or distribution companies. Consumer-related variables play a role once the film is released and reflect consumer behavior in terms of opening week sales and audience reviews. The following section introduces the proposed research model illustrated in Figure 1 along with the underlying hypotheses for each category of variables.

3. Hypotheses

3.1. Product-Related Variables

Genre and MPAA (Motion Picture Association of America) ratings have been identified as factors influencing box office sales. Recent studies reported mixed results. Walls (2005) found no individual genre classification significant while Chang and Ki (2005) found drama to be noteworthy and Zuckerman and Kim (2003) identified crime as significant for Hollywood films. Many Bollywood films, called masala films from the Hindustani word for a spice mixture, appear to be a mixture of genres. But many belong to specific, easily recognizable genres and we expect that romance, drama, musical and family films will have a significant positive influence on box office sales. We therefore state the following hypotheses:

H1a: Genre category influences opening week box office sales.

H1b: Genre category influences total box office sales.

Previous research found mixed results for the impact of MPAA ratings on box office revenue. Chang and Ki (2005) found R and PG-13 ratings significant in lowering total box office revenues while Walls (2005) found G and PG ratings associated with higher box office revenues. Other studies could not empirically support these findings (Litman and Ahn, 1998). Since MPAA ratings pertain to genre, we expect to find that G- and PG-rated films will have a significant positive influence on box office sales. Thus the following hypotheses will be tested:

H2a: MPAA rating influences opening week box office sales.

H2b: MPAA rating influences total box office sales.

3.2. Brand-Related Variables

Star and director power are strong determinants of box office sales. As with Hollywood films, Bollywood producers believe star power influences a film's performance or box office sales. By using leading stars in their films, they create "brand equity for materials, components, and parts that are necessarily contained within other branded products" (Chang and Ki, 2005, p. 251). Also this relationship is not absolute since some studies (Basuroy *et al.,* 2003; DeVany and Walls, 1999; Litman, 1982; Litman, 1983) have found no impact of star power on box office sales, many researchers have found that films with popular stars perform better at the box office (Elberse, 2007; Elberse and Eliashberg, 2003; Sawhney and Eliashberg, 1996; Sochay, 1994; Walls, 2005). We expect that star power play an important role in influencing box office sales and state the following hypotheses:

H3a: The greater the star power, the higher opening week box office sales.

H3b: The greater the star power, the higher total box office sales.

Director power and star power both measures the power of a brand association of a movie. Research has generally shown no empirical evidence to support the impact of a director on the success of a film (Chang and Ki, 2005; Elberse and Eliashberg, 2003; Hennig-Thurau *et al.,* 2007; Litman, 1982; Ravid, 1999; Sochay, 1994) although a few studies have found significant results (Litman and Kohl, 1989; Wyatt, 1991). We believe that as with star power, director's power play an important role in influencing box office sales and state the following hypotheses:

> *H4a: The greater the director power, the higher opening week box office sales.*

> *H4b: The greater the director power, the higher total box office sales.*

3.3.   Distribution-Related Variables

Many studies show a significant relationship between a film's release time and its box office performance. For instance, Krider and Weinberg (1998), Chang and Ki (2005) as well as Hennig-Thurau *et al.* (2007) also Litman and Kohl (1989), Sochay (1994), or Wyatt (1991) show that movies released in the summer or during the Christmas season (Litman, 1982; Sochay, 1994; Wyatt, 1991) have significantly higher box office revenues despite more competition in peak seasons. We expect that the season of release influences box office sales and state the following hypotheses:

> *H5a: Seasonality influences opening week box office sales.*

> *H5b: Seasonality influences total box office sales.*

The number of screens where the movie is shown affects box office sales and several studies showed significant results (DeVany and Walls, 2002; Hennig-Thurau *et al.,* 2007). Chang and Ki's (2005) study showed a significant relationship between the number of screens during opening week and total box office sales, but their results imply that a large number of screens during opening week do not guarantee success at the box office. We expect that the

number of screens have a positive and significant influence on box office sales and state the following hypotheses:

H6a: The greater the number of screens, the higher opening week box office sales.

H6b: The greater the number of screens, the higher total box office sales.

Few studies measured the relationship between the marketing power of a distributor and box office sales but generally found it insignificant (Chen, 2002; Shugan and Swait, 2000). Nevertheless, for Bollywood films, we expect that the marketing power of the distributors have a positive and significant influence on box office sales:

H7a: The greater the distributor power, the higher opening week box office sales.

H7b: The greater the distributor power, the higher total box office sales.

3.4. Consumer-Related Variables

Audience review or word-of-mouth (Chang and Ki, 2005) is one of the least studied variables in movie success. Since it reflects the degree of preference by moviegoers, it might function as an influencer, but it has only recently been tested by researchers (Chang and Ki, 2005; Liu, 2006; Dellarocas *et al.*, 2007; Duan, Gu and Whinston, 2008). Chang and Ki (2005) published one of the first studies that used audience reviews as an independent variable. Liu (2006) studied word-of-mouth and box office revenue on a weekly basis by extending the earlier models of Eliashberg and Shugan (1997) and Basuroy *et al.* (2003). Dellarocas, Awad, and Zhang (2007) used another way to study word-of-mouth in forecasting Hollywood movie box office sales. All the studies confirmed that online review metrics are significant predictors of movie box office sales. We therefore state the following hypotheses:

H8a: The better the audience review, the higher opening week box office sales.

H8b: The better the audience review, the higher total box office sales.

The second consumer-related variable, opening week box office sales, according to some studies has a positive and significant influence on total box office sales (DeVany and Walls, 2002; Walls, 2005). We also expect that opening week sales has a significant and positive influence and therefore state the following hypothesis.

H9: The higher opening week box office sales are, the higher total box office sales. Figure 1 illustrates the main category of variables for opening week (Figure 1a) as well as total box office sales (Figure 1b) with the underlying hypotheses discussed above. By distinguishing between opening week and total sales, we hypothesize in our research model that while the producer's marketing mix influences opening week success, consumers may have a greater impact thereafter.

Insert Figure 1 here

4. Method

4.1. Data

The films used for this study were selected from the International Business Overview Standard website (IBOS). IBOS, founded in 2002, is India's first online news service on the business of cinema and related media metrics (IBOS, 2008). Also founded in 2002, IBOS provides data for films released starting in the mid 1970s also detailed sales figures are provided only since the late 1990s. We selected all Indian films released in the UK and US from 1997 to 2007 for which opening week and total box office sales were available. This resulted in a total of 138 films for the UK and 192 films for the US, with a combined total of 330 Bollywood movies.

4.2.   Measurement

This study focuses on *TOTAL* box office sales in the UK and US, two of the largest Bollywood destinations. We also use *OPENING WEEK* box office sales as a dependent variable and as an independent variable. Both figures come from the IBOS website and are measured in US dollars.

The first product-related variable was *GENRE*. Like the studies of DeVany and Walls (2002), Zuckerman and Kim (2003), and Walls (2005), this study uses categorical genres coded by the Internet Movie Database (IMDB). About 90 percent of the films selected for this study came from 10 genre categories. For simplification, we grouped all the remaining films into "other". The genre categories used are: romance, comedy, drama, family, thriller, crime, mystery, musical, adventure, action, and "other".

Another product-related variable is the *RATING* from the Motion Picture Association of America (MPAA). We used the following film ratings: G, PG, PG-13, R, NC-17, and NR, as most other studies do (Chang and Ki, 2005; Elberse and Eliashberg, 2003; Walls, 2005).

For brand-related variables, the first is *STAR POWER*. We revise the technique used by Reddy *et al.* (1998) and Chang and Ki (2005) by taking the total number of movies the main actor has appeared in during his or her film career. By examining star power longitudinally or cumulatively, this method captures the "brand power" of the actor. We identified the main actor by using the first name listed on IMDB for each film. The total number of films the actor has appeared in during his/her career came from a list generated on IBOS.

For the second brand-related variable, *DIRECTOR POWER*, we use the same approach as Chang and Ki (2005) to measure the power of the director by taking the total number of movies s/he has directed in his/her career.

The first distribution-related variable was the timing or *SEASON* the film was released. Researchers use different definitions for this variable. Hennig-Thurau *et al.* (2007) categorize the summer season as June through August while Simonoff and Sparrow (2000) define it as the period between Memorial Day (end of May) and Labor Day (beginning of September). We adopt the method used by Chang and Ki (2005) which uses four seasons: Christmas (November-December), Summer (May-August), Easter (March-April), and other (the remaining months). Each film in the sample was assigned a season based on its release date.

Another distribution-related variable is the total number of *SCREENS* where the film was shown. This measure has also been used by DeVany and Walls (2002) and Hennig-Thurau *et al.* (2007) in their studies.

Finally, this study adopts an exploratory method to measure *DISTRIBUTION POWER*, similar to the method used by Chang and Ki (2005). We calculate the marketing power of the distributor by counting the number of movies released during the period assessed. Many films had more than one distributor and we took this into account. We included the top 10 distributors, who produced most of the films: Eros, Yash Raj, Ad Labs, Shemaroo Video Pvt. Ltd., Spark Worldwide, B4U Entertainment, EuroVideo, STAR TV, Video Sound, Digital Entertainment, and others. Other distributors were combined into a collective "other" category.

For the final category of variables on consumers, we selected *AUDIENCE REVIEW*. Adopting the method used by Chang and Ki (2005), we took film ratings from the IMDB website, where they are rated on a scale from 0 to 10, with 10 the highest and 0 the lowest. Although the demographic profile of visitors to this film portal may differ from that of an

actual audience, the evaluations can function as a good proxy for the word-of-mouth effect (Chang and Ki, 2005).

The second consumer-related variable we chose was the *OPENING WEEK* box office sales, with figures taken from the IBOS and measured in US dollars.

5. Models and Results

We conducted a set of multiple regression analyses for each country for the two dependent variables (opening week and total box office sales). The first set takes opening week box office as the dependent variable while the second set takes total sales as the dependent variable. We derive the following equations for the determinants of opening week box office sales

> *(1) OPENING WEEK = b_0 + b_1GENRE + b_2RATING + b_3STAR_POWER +*
>
> *b_4DIRECTOR_POWER + b_5SEASON + b_6SCREENS + b_7DISTRIBUTION_POWER*
>
> *+ b_8REVIEW + ε*

The following equation applies for the main determinants of the total box office sales.

> *(2) TOTAL = b_0 + b_1GENRE + b_2RATING + b_3STAR_POWER +*
>
> *b_4DIRECTOR_POWER + b_5SEASON + b_6SCREENS + b_7DISTRIBUTION_POWER*
>
> *+ b_8REVIEW + b_9 FIRST_WEEK + ε*

5.1. Descriptive Statistics

Average opening week sales of Indian movies released in the UK total about $270,000, with an average total box office of about $970,000 compared to $214,000 in the US for opening week and total box office sales of about $757,000. For both countries, the results indicate that the opening week accounts for about one third (28%) of total sales. Also

the absolute values in dollars for Hollywood is in the millions compared to less than a million for Bollywood films, the same proportion in percentage between opening week and total box office sales has been observed by Chang and Ki (2005).

Many films belonged to several genres. Drama (UK: 65%; US: 60%) and romance (UK: 52%; US: 49%) were the dominant ones from our sample, followed by comedy (UK: 34%; US: 32%), musical (UK: 28%; US: 23%) and action movies (UK: 22%; US: 23). For both countries, the large percentage of films in the drama and romance categories is not surprising since Bollywood films are known for their romance and melodramatic story lines. However, it was interesting to learn that the majority of films in this sample were not classified as musicals even though music and dance are an important aspect of Bollywood films. Table 1a and Table 1b show descriptive statistics for the UK and the US, which tend to be quite similar:

Insert Table 1a and Table 1b here

5.2. Regression Models and Results

The first set of regression models analyze individually the explanatory power of independent variables related to product (model 1), brand (model 2), distribution (model 3) and consumers (model 4). We then ran a full regression model (model 5) that includes all four categories of independent variables to assess their collective influence on opening week box office sales in the UK (Table 2a) and in the US (Table 3a). We used the same approach for the second dependent variable, total box office sales, for the UK (Table 2b) and the US (Table 3b). Using this multiple model and country approach, we were able to discern the impact on product, brand, distribution, and consumers individually and then collectively for both countries and the two dependent variables. The tables below illustrate only the significant

independent variables for the regression models for the two countries (*UK*: Table 2a and 2b; *US*: Table 3a and 3b) and two dependent variables chosen.

Insert Table 2a and Table 2b here

Insert Table 3a and Table 3b here

In order to check for possible multicollinearity among the independent variables, we calculates the VIF of all regression models. A VIF value greater than 10 indicates potential multicollinearity problems (Hair *et al.,* 1998). Since the highest VIF value in our models is 4.1 for the UK regression models and 4.6 for the US regression models, both are substantially below the cutoff threshold, and we ruled out concern for unreliable estimates due to multicollinearity. We also checked for the normality of variables and conducted normal probability plots for all regression models. The data in all models appear to be within close range of the 45 degree line (and can be provided upon request from authors) which suggests normally-distributed residual error.

Results of Individual Regression Models (model 1-4)

We first examine the individual regression models for both countries to assess the individual explanation power of each category of variables. For both countries we found identical results for the main category of variables influencing opening week sales. For both countries we found distribution-related (adjusted r-square UK: 48.3%; US: 34.4%), followed by product-related (adjusted r-square UK: 25.7%; US: 17.3%), brand-related (adjusted r-square UK: 2.7%; US: 4.4%) and consumer-related variables (adjusted r-square UK: 0.2%; US: 2.3%). But in looking at the main categories of variables influencing total box office sales, we get very similar with the exception of the first category of variables. For the UK, consumer-

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related variables (adjusted r-square UK: 89%; US: 11.9%) while distribution-related variables were first for the US (adjusted r-square UK: 35.7%; US: 75.9%). For both countries product-related variables (adjusted r-square UK: 27.1%; US: 25.3%) and then brand-related variables (adjusted r-square UK: 3.5%; US: 4.3%) followed.

Results of Full Regression Models (model 5)

The main objective of this paper is to identify the determinants of opening week and total box office sales of Bollywood movies released in the UK and the US. Overall, the results are very similar for both countries. By conducting the full regression models (model 5) for the two countries and two dependent variables, we were able to determine the collective contribution of each category of variables. The proposed research model seems to adequately assess and predict not only opening week sales (adjusted r-square UK: 59.9%; US: 64.7%) but total box office sales (adjusted r-square UK: 88.2%; US: 87). Table 4 summarizes the various hypotheses stated previously and whether the full model (model 5) for the two countries and two dependent variables rejects or accepts the hypotheses.

Insert Table 4 here

Where Chang and Ki (2005) found drama and Zuckerman and Kim (2003) identified crime films as significant genres for Hollywood movies, our results show that for Bollywood movies in the UK romance (G_romance) and family (G_family) and in the US drama (G_drama) generated more total box office sales than other genres. Moreover, in the US, adventure (G_advent) films and "other" (G_other) in the UK had fewer box offices sales. Genre, we conclude, does somewhat influence Bollywood box office sales. This partially supports hypotheses *H1a* and *H1b*.

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The hypotheses related to MPAA ratings (*H2a* and *H2b*) were partially accepted for both countries. For the US and the UK, films rated PG 13 (R_PG_13) and in the UK in addition also the films rated G (R_G) and PG (R_PG) had higher opening box office sales than other films. Litman and Ahna (1998) and Walls (2005) also found G and PG ratings associated with higher box office revenues. Interestingly, in terms of total box office sales, films rated R (R_R) generated less revenue than any other type of rated films. Chang and Ki (2005) also found the R ratings significant in lowering total box office revenues.

Our study could find no evidence that either star power (*H3a* and *H3b*) or director power (*H4a* and *H4b*) had a significant effect on opening week or total box office sales. This supports the findings of previous studies (Chang and Ki, 2005; DeVany and Walls, 1999; Elberse and Eliashberg, 2003; Hennig-Thurau *et al.,* 2007). Interestingly, in looking at all individual regression models for both countries (model 1-4), director power had a significant negative coefficient.

For the hypotheses related to the impact of seasonality (*H5a* and *H5b*) on box office sales, we found mixed results and cannot draw meaningful conclusions. For both countries, films with the highest average total box office sales were released in either October or November, consistent with the findings of Krider and Weinberg (1998), Litman and Ahn (1998), Basuroy *et al.,*(2003) and Hennig-Thurau *et al.,* (2007).

Our hypotheses on the influence of number of screens on opening week sales (*H6a*) and on total box office sales (*H6b*) provided clear empirical evidence that this is a significant factor. The full regression models for both countries supported this hypothesis. This result supports previous findings on Hollywood movies studies (DeVany and Walls, 2002; Hennig-Thurau *et al.,* 2007).

Most researchers found distributor power an insignificant factor in affecting total box office revenue (Chang and Ki, 2005; Chen and Startz, 2002; Shugan and Swait, 2000). Our hypotheses on distribution power (*H7a* and *H7b*) were partially accepted. Films produced and distributed by the company Yash Raj were more successful in first week sales in the UK and US. They were also more successful in terms of total box office sales in the UK.

The hypotheses related to audience review (*H8a* and *H8b*) were not supported at all, indicating that there is no word-of-mouth effect for Bollywood movies released in the UK nor the US. Our last hypotheses (*H9*) found that opening week box office sales are significant predictors of total box office sales, in line with findings from previous studies (DeVany and Walls, 2002; Foutz and Kadiyali, 2003; Walls, 2005).

6. Conclusion

This paper investigated the main determinants of Bollywood movie box office sales, using a dataset of the 330 most successful Indian films released over a 10-year period (1997-2007) in the UK (138 films) and the US (192 films), two of the largest countries of destination for Indian films. For each country we ran for a set of multiple regression analyses for the two dependent variables to assess the individual and collective explanation power of four categories of independent variables. We compared results from the two dependent variables (opening week and total box office sales) and the two countries (UK and US). Five key findings emerged from our analyses:

(1) The proposed research model seems to adequately evaluate and predict not only opening week sales (adjusted r-square UK: 59.9%; US: 64.7%) but specifically total box office sales of Bollywood movies (adjusted r-square UK: 88.2%; US: 87%). This result is less intriguing

than reporting any testing of new hypotheses, but our results show that the success factors of box office sales are global rather than regional or national.

(2) For the product-related variables, we show that genre has an impact on box office sales. In the UK, romance and family movies and, in the US, dramas generated more total box office sales than any other genres. In the UK, "other" movies and in the US adventure films generated the smallest box offices sales. Country-genre congruence may be a factor in evaluating films (D'Astous *et al.,* 2007) and future research could investigate this further. MPAA ratings also act as predictors of box office sales. For the US and the UK, films rated PG 13 and in the UK films also rated G and PG had higher opening week box office sales. This is similar to the results of studies by Litman and Ahna (1998) and Walls (2005). Interestingly, films rated R had the lowest box office sales of any genre, which supports Chang and Ki's (2005) findings.

(3) For the brand-related variables, our study could find no evidence that either star power or director power had a significant effect on opening week or total box office sales. This supports the findings from previous studies about Hollywood movies (Chang and Ki, 2005; DeVany and Walls, 1999; Elberse and Eliashberg, 2003; Hennig-Thurau *et al.,* 2007). In the case of director's power, we even found in the individual regression models that it had a negative coefficient. Future research should investigate the relationship between director's power and opening week as well as total box office sales further.

(4) For the distribution-related variables for seasonality and distributor power we obtained mixed results and could draw no meaningful conclusion. Future research could investigate how seasonality or distributor's power affects Bollywood opening week or total box office sales. However, we did find clear empirical evidence that the number of screens influences opening and total sales in both countries.

(5) For consumer-related variables we found that audience review does not affect sales. However, we found clear evidence that opening week sales are significant predictors of total box office sales which supports the findings of previous studies (DeVany and Walls, 2002; Foutz and Kadiyali, 2003; Walls, 2005).

Moreover, the explained variance of our results is higher for total sales but lower for opening week sales. Understanding more about the main determinants of opening week sales would certainly help us learn more about total box office sales. These findings may be useful for writers, production companies, and movie distribution companies as well as related industries using movie content such as toys, games, and movie rentals to predict which Bollywood movies might be successful in the US and the UK. Our study is also timely and relevant for academics as it adds to theory-building where we show that the main determinants of Bollywood movies are similar to those for movies released by Hollywood. Our study makes the point that movie determinants are global rather than regional or national.

This article has some limitations. First, we use only box office sales of Indian films released in the UK and US. Further studies should investigate other emerging market film industries. Second, some variables were used in previous studies (sequel, production budget, film critics, and awards) but we could not use them in this study because information was incomplete. Third, since we used only the first actor for star power, further studies could investigate the second and third most important actors and assess their importance to box office sales. Fourth, our variable audience review captured all reviews of the entire duration the film was released till the date we assessed it for our study. Also Liu (2006) showed that word-of-mouth activities occurred most often during the prerelease and opening week periods, it is still a limitation of our study. Moreover, future studies could investigate audience review over time and assess its short and long term effect on box office sales as well as DVD sales

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and video rentals for example. Future research could also consider financial success in terms

not only of box office sales but from additional revenues generated from video sales and

rentals, product placement, merchandise, pay-per-view, cable television, and network

television as well as from related industries such as toys, games and licensing.

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Table 1a: Descriptive Statistics - Bollywood Films in UK

Genre (multiple responses)		**Distributon Company (multiple responses)**	
Romance	52%	Eros Entertainment	29%
Comedy	34%	Yash Raj Films	19%
Drama	65%	Ad Labs Entertainment	2%
Family	9%	Video Pvt. Ltd.	4%
Thriller	17%	Spark Worldwide	2%
Crime	11%	B4U Entertainment	10%
Mystery	4%	Eurovideo	5%
Musical	28%	Star TV	4%
Adventure	7%	Video Sound	6%
Action	22%	Digital Entertainment	4%
Other	15%	Other	71%
MPAA Rating (one response)		**Season Released (one response)**	
Rating *G*	11%	Easter	13%
Rating *PG*	63%	Summer	45%
Rating *PG-13*	12%	Christmas	17%
Rating *R*	7%	Other	25%
Not Rated	7%		

Table 1b: Descriptive Statistics – Bollywood Films in the US

Genre (multiple responses)		**Distributon Company (multiple responses)**	
Romance	49%	Eros Entertainment	34%
Comedy	32%	Yash Raj Films	15%
Drama	60%	Ad Labs Entertainment	2%
Family	8%	Video Pvt. Ltd.	4%
Thriller	16%	Spark Worldwide	2%
Crime	11%	B4U Entertainment	13%
Mystery	4%	Eurovideo	4%
Musical	23%	Star TV	4%
Adventure	6%	Video Sound	6%
Action	23%	Digital Entertainment	5%
Other	14%	Other	64%
MPAA Rating (one response)		**Season Released (one response)**	
Rating *G*	10%	Easter	14%
Rating *PG*	63%	Summer	41%
Rating *PG-13*	12%	Christmas	19%
Rating *R*	6%	Other	27%
Not Rated	8%		

Table 2a: Regression Models for UK Opening Week Sales (significant variables only)

Model specifications Variables	Model 1 Product	Model 2 Brand	Model 3 Distribution	Model 4 Consumer	Model 5 Full
G_Other					-.254 ***
R_G	.202 **				.199 *
R_PG	.257 ***				.216 **
R_PG_13	.291 ***				.367 ***
R_12 (UK)	.191 **				
R_15 (UK)	-.140 *				
P_Director		-.215 **			
D_Yash_Raj			.247 ***		.281 ***
D_Other					.171 *
Screens			.629 ***		.572 ***
R-square (%)	36.0%	4.8%	53.3%	0.9%	75.7%
Adjusted R-square (%)	25.7%	2.7%	48.3%	0.2%	59.9%
F-Statistics	3.497	2.211	10.543	1.302	4.799
Highest VIF	1.763	1.000	1.441	1.000	3.023
N	138	90	134	138	90

Dependent variable = (1) OPENING WEEK

*** Estimate is significant at the 0.01 level (2-tailed).

** Estimate is significant at the 0.05 level (2-tailed).

* Estimate is significant at the 0.10 level (2-tailed).

Table 1b: Regression Models for UK Total Sales (significant variables only)

Model specifications Variables	Model 1 Product	Model 2 Brand	Model 3 Distribution	Model 4 Consumer	Model 5 Full
G_Romance					.128 *
G_Family	.141 *				.137 ***
R_G	.313 ***				
R_PG	.187 **				
R_PG_13	.159 *				
R_R					-.145 ***
R_12 (UK)	.287 **				
P_Director		-.232 **			
Season					-.114 **
D_Yash_Raj			.300 ***		.130 **
D_Ad_Labs					-.089 *
D_Other			.143 *		.206 ***
Screens			.455 ***		.170 **
Review				.071 **	
Week_UK_D				.934 ***	.926 ***
R-square (%)	37.2%	5.7%	42.0%	89.1%	93.0%
Adjusted R-square (%)	27.1%	3.5%	35.7%	89.0%	88.2%
F-Statistics	3.681	.078	6.683	552.420	19.497
Highest VIF	1.763	1.000	1.441	1.010	4.111
N	138	90	134	138	90

Dependent variable = (1) TOTAL BOX OFFICE SALES

*** Estimate is significant at the 0.01 level (2-tailed).

** Estimate is significant at the 0.05 level (2-tailed).

* Estimate is significant at the 0.10 level (2-tailed).

Table 3a: Regression Models for US Opening Week Box Office Sales (significant variables only)

Model specifications Variables	Model 1 Product	Model 2 Brand	Model 3 Distribution	Model 4 Consumer	Model 5 Full
R_PG	.283 ***				
R_PG_13	.207 **				.249 **
R_R	.133 *				
P_Director		-.233 **			
Season			.135 *		.177 **
D_Yash_Raj			.249 ***		.201 **
D_Other			-.218 **		
D_Vid_Pvld					.226 **
D_Digi_Ent					.173 **
Screens			.681 ***		.781 ***
Review				.173 **	
R-Square (%)	27.0%	6.5%	41.6%	3.0%	79.0%
Adjusted R-square (%)	17.3%	4.4%	34.4%	2.3%	64.7%
F-Statistics	2.793	3.084	5.754	4.179	5.525
Highest VIF	1.529	1.001	1.787	1.000	2.846
N	137	91	118	137	79

Dependent variable = (1) OPENING WEEK

*** Estimate is significant at the 0.01 level (2-tailed).

** Estimate is significant at the 0.05 level (2-tailed).

* Estimate is significant at the 0.10 level (2-tailed).

Table 3b: Regression Models for US Total Box Office Sales (significant variables only)

Model specifications Variables	Model 1 Product	Model 2 Brand	Model 3 Distribution	Model 4 Consumer	Model 5 Full
G_Drama	.119 *				.086 *
G_Advent					-.112 **
R_G	.296 ***				
R_PG_13	.226 ***				
R_R	.231 ***				-.080 *
P_Star		.173 **			
P_Director		-.194 **			
D_Other					.180 ***
Screens			.912 ***		.485 **
Review				.174 **	
Week_US				.278 ***	.866 ***
R-Square (%)	56.2%	5.7%	77.9%	12.8%	90.8%
Adjusted R-square (%)	25.3%	4.3%	75.9%	11.9%	87.0%
F-Statistics	5.028 **	3.980 **	39.332 ***	13.887 ***	23.421 ***
Highest VIF	1.516	1.023	1.048	1.494	4.592
N	174	133	158	191	111

Dependent variable = (1) TOTAL BOX OFFICE SALES
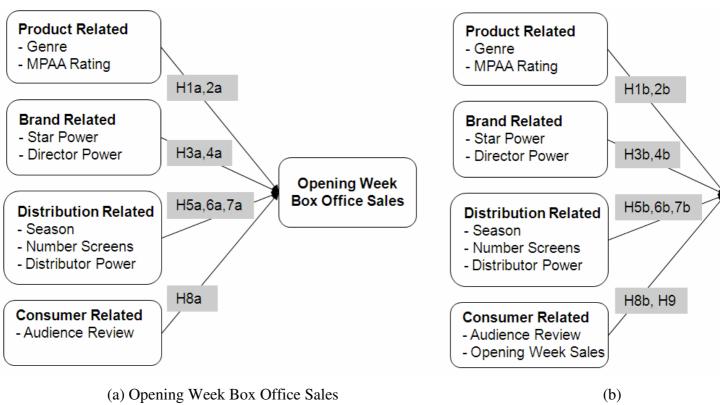
*** Estimate is significant at the 0.01 level (2-tailed).

** Estimate is significant at the 0.05 level (2-tailed).

* Estimate is significant at the 0.10 level (2-tailed).

Table 4: Hypotheses Results

Hypotheses	UK - Week (a)	UK - Total (b)	US - Week (a)	US - Total (b)
H1 Genre → Sales	partially accepted	partially accepted	rejected	partially accepted
H2 MPAA rating → Sales	partially accepted	partially accepted	partially accepted	partially accepted
H3 Star Power → Sales	rejected	rejected	rejected	rejected
H4 Dir. Power → Sales	rejected	rejected	rejected	rejected
H5 Season → Sales	rejected	accepted	accepted	rejected
H6 Screens → Sales	accepted	accepted	accepted	accepted
H7 Dist. Power → Sales	partially accepted	partially accepted	partially accepted	partially accepted
H8 Aud. Review → Sales	rejected	rejected	rejected	rejected
H9 Opening Week → Sales	n/a	accepted	n/a	accepted

Figure 1: Research Model

(a) Opening Week Box Office Sales
Total Box Office Sales

(b)