

(Araştırma)

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**CONSUMER ENGAGEMENT on SOCIAL MEDIA:  
ITS DYNAMICS AND IMPACT ON BOX OFFICE SALES**

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**ABSTRACT**

This study investigates the impact of consumer engagement behavior on YouTube and Facebook on movie box office sales and compares them. For this purpose, movies released in February-March 2013 in the USA were selected and panel data were constructed. Engagement measures, namely view, likes, dislikes, and shares of the official movie trailer on YouTube, on the movie's official Facebook page, consumer and critic reviews on IMDB were recorded the release week, four weeks before and after the release week. The results indicated that engagement on a Facebook page has a higher positive effect on box sales compare to engagement on YouTube. While engagement on YouTube was the most effective at the earlier stage of the movie screen, engagement on a Facebook page was the most effective at a later stage of the movie screen. The volume of user and critic reviews, being a large distributor, and higher number of theatres to run the movie were the other prevalent positive performance predictors. Relying on the findings, implications for managers and researchers were discussed.

**Keywords:** Consumer engagement behavior, movie marketing, social media, YouTube, Facebook, IMDB reviews

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## SOSYAL MEDYADA TÜKETİCİ KATILIMI: SİNEMA FİLMİ GİŐE SATIŐLARINDAKİ DİNAMİKLERİ VE ETKİSİ

### ÖZ

Bu çalıőma, Facebook ve YouTubedaki tüketici katılım davranıőının filmin giőe satıőları üzerindeki etkisini araőtırmakta ve bu etkileri karőılaőtırmaktadır. Bu amaçla ABD'de 2013 yılında Őubat-Mart aylarında gösterime giren filmler seçilerek panel verisi oluőturuldu. Filmin YouTubedaki resmi fragmanının ve resmi Facebook sayfasının göröltenme, beğenilme, beğenilmeme ve paylaőma sayısı gibi sosyal medya katılım davranıő verileri, IMDBdeki tüketici ve eleőtirmen eleőtiri verileri, filmin gösterim haftasında, gösterim haftasından dört hafta öncesi ve dört hafta sonrası kaydedildi. Sonuçlar, Facebook sayfasındaki katılımın, YouTubedaki katılımı karőılaőtırıldıđında filmin giőe satıőları üzerinde daha yüksek olumlu bir etkiye sahip olduđunu gösterdi. YouTubedaki katılım davranıőının filmin ilk gösterildiđi haftalarda en etkili olduđu, Facebook sayfasındaki katılım davranıőının, filmin daha sonraki gösterildiđi haftalarda etkili olduđu görölldü. Tüketici ve eleőtirmen kritiklerinin hacmi, filmin büyük bir dađıtımcı firma tarafından dađıtımının ve filmin daha fazla sinema salonunda gösteriminin, filmin giőe satıőları üzerindeki diđer olumlu etkileri olduđu görölldü. Bulgulara dayanarak, sinema sektöründeki yöneticiler ve araőtırmacılar için öneriler verildi.

**Anahtar Kelimeler:** Tüketici katılım davranıőı, sinema filmi pazarlaması, sosyal medya, YouTube, Facebook, IMDB eleştirileri

## 1. Introduction

More than 1.5 billion people around the world have an account on social media platforms, out of which 80 percent of users report to interact with these networks regularly, making social networks a huge repository of active users, which can be tapped by companies to promote their products and services. For instance, 70.8 percent of the Turkish population was found to be active social media users in January 2021<sup>3</sup> which makes a huge opportunity as a potential prospect for companies to reach. Hence, it is no surprise that companies want to understand the ability of these networks to convert social activity into economic performance. As with many industries, movie marketers have also realized the benefits of posting movie trailers on video-sharing sites or other social network sites as a promotion in addition to traditional movie-marketing materials. Potential movie-goers can taste a movie by watching a movie trailer on YouTube or Facebook, get information on the Facebook page of a movie and even share promotion content with their friends. Among YouTube users, 78% of them expressed watching trailers on YouTube influenced their movie choice decision (Google YouTube movie trailers leaderboard: Oscars 2019). The types of social media are varied and contain different formats (Kaplan and Haenlein, 2010). Previous studies have studied only one type of social media platform, a few have studied more than one type in one single study (Smith et al., 2012; Oh et al., 2017) and none of them have compared the effectiveness of multiple social media types overtime for the movie industry to the best of the author's knowledge. Besides, the longitudinal nature of research data can help to understand the effectiveness of social media types over time. Comparison of the effect of multiple social media types on the economic performance of movies can enhance the understanding of variability between social media types and provide managers in creative industries with insights on how to allocate resources across platforms. To date, customer engagement behavior on Facebook and YouTube has not attracted as much research attention as the volume and valence of critics and user reviews on the Internet Movie Database (IMDB). The current study addresses some of these challenges by focusing on platforms that are popular and suitable for movie marketing and promotions, namely YouTube (a content community) and Facebook (a social network), and investigates the effect of consumer engagement on movie sales over time.

Social media is found to be the most popular way to engage consumers. For example, 78% of marketers report using social media to enhance customer engagement<sup>4</sup>. This seems obvious because engagement has been associated with a positive effect on relationship building, loyalty, and sales (Nobre and Silva, 2014). Considering the prominence of social media and consumer engagement, as well as their potential to influence economic performance, there are already some studies looking at the relationship between consumer engagement and economic performance;

<sup>3</sup> <https://datareportal.com/reports/digital-2021-turkey?rq=turkey>

<sup>4</sup> <https://www.adweek.com/performance-marketing/social-marketing-objectives/>

however, results have been conflicting (de Oliveira Santini et al., 2020). Scholars have been divided in their opinion on the suitability of social media to be the right platform for engagement (Brodie et al., 2013; Valck et al., 2009). Moreover, past researches have taken into account one platform for analysis (Archer-Brown et al., 2017), whereas, most businesses employ more than one social media for promotion. Hence, a cumulative perspective is lacking. For example, Facebook is most of the time considered to be a social networking platform, whereas Twitter characterizes itself as a microblog; Instagram specializes in photo-sharing, YouTube is about media sharing, and Snapchat is all about stories. This study tries to profoundly understand online consumer engagement concerning its association with box office revenue, by studying social media activity related to movies. This research uses platforms that are most used for movie promotion, namely YouTube and Facebook, and also IMDB as a product-specific platform that specializes in social review, to measure engagement effects.

The movie industry is a sizable and critical part of the entertainment world. That is why the movie industry is preferred to study and the results can be applied to other creative industries. Besides, movies are of great interest among discussions on social media and social media is used commonly to reach a large audience.

This paper is structured as follows. First, it reviews prior literature on social media and consumer engagement. Second, research context and social media platforms were introduced. Third, hypotheses were formulated and discussed. Fourth, it presents the methodology and the model and reports the results. This follows discussions and conclusions on research findings, implications for theory and practice, limitations, and future research.

## **2. Literature Review**

### **2.1 Social Media Platforms**

Social media platforms, such as Facebook, Twitter, and YouTube, have been identified to help improve organizational productivity throughout the value, and are the new way to communicate, build a reputation and promote a firm (Becker et al., 2013). Unlike traditional communication mediums like television and radio, social media platforms are consumer-centric in nature. Consumers have control over the content published, as well as timing and frequency are consumer dependent (Vollmer and Precourt, 2008). They have also provided them with immediate access to information, allowing them to search for information about purchasing decisions (Vollmer and Precourt, 2008). For this reason, marketers use social networking sites to increase brand awareness and brand liking, promote customer engagement and loyalty, inspire consumer word-of-mouth communication about the brand, and potentially drive traffic to online and offline brand locations (Ashley and Tuten, 2015).

While the most used social media platform was found to be YouTube with 94.5% among Turkish internet users between the age 16 to 64 in January 2021, the remaining important ones were Instagram with 89.5%, WhatsApp with 87.5%, Facebook with 79%, and Twitter with 72.5% (digital-2021- Turkey).

## **2.2. Consumer Engagement**

According to Doorn et al. (2010), consumer engagement refers to behaviors that go beyond transactions and may be specifically defined as a customer's behavioral manifestations that have a brand or firm focus, beyond purchase, resulting from motivational drivers. Simply put, consumer engagement relates to consumer involvement and interactivity, two factors that reflect a consumer's interest in a brand, firm, or product (Abdul-Ghani et al., 2011). This engagement is usually dependent on consumer needs, motives, and goals, emphasizing the importance of a marketing strategy that identifies and fulfills these needs, motivations, or goals (Doorn et al., 2010).

Extant literature has associated customer loyalty (Brodie et al., 2013), customer satisfaction (Challagalla et al., 2009), and high levels of word of mouth (Cheung et al., 2011) with high levels of consumer engagement. Engaged consumers participate on social media. Participation may be passive involving simply consuming the social content, or active including behaviors like bookmarking, blogging, referring, liking, clicking, subscribing, submitting, sharing, or purchasing (Hutton and Fosdick, 2011). Previous studies have also distinguished between two types of online consumer engagement: social and conventional (Braojos-Gomez et al., 2015).

Although consumer engagement is a complex construct, owing to its dependence on the cognitive and emotional states of consumers (Doorn et al., 2010), the behavioral measures of engagement make it a suitable proxy for users' level of engagement (Oh et al., 2017). It can be hence be used to predict the economic performance of firms (Doorn et al., 2010).

## **2.3. Consumer Engagement on Social Media Platforms**

Social media is characterized by digital content and network-based interactions that are created and maintained by people in the form of user-generated content (Agnihotri et al, 2012). Applications facilitating this kind of information sharing help in effective communication and relationship building (Agnihotri et al, 2012; Hennig-Thurau et al., 2010; Laroche et al., 2012). They represent an increasingly important way for companies to communicate with attractive audience segments (Murrough, 2009). Social media allows managers to increase organizational productivity, and help them build relationships with consumers (Braojos-Gomez et al., 2015).

Consumer engagement on social media involves a variety of activities: passive consumption of content, participation in content, and/or interaction with content (Heinonen, 2011). Social media platforms are knowledge-sharing platforms for both users and organizations: knowledge derived from effective learning and shared perspectives (Lindblom and Tikkanen, 2010). To encourage knowledge transfer effectively, social media should support interaction among users in a friendly atmosphere, as in traditional social networks, and be able to bring about an improvement in organizational procedures to satisfy consumers (Palacios-Marques et al., 2012).

Consumer engagement on social media can be categorized as consumption of information, participation in social interaction, and community development, and production of self-expression and self-actualization (Heinonen, 2011; Shao, 2009). This assumes that any passive behavior related to consuming content on social media platforms is referred to as consumption; following or liking a page or an account is considered to be participative behavior and commenting or sharing can be related to production. Consumers often involve a joint combination of these categories while using social media, hence it is hard to distinguish the effect of different activities (Shao, 2009).

Most studies in trying to understand this construct have used surveys to measure online consumer engagement, instead of behavioral data. Extant literature has studied the relationship between social media and consumer engagement on awareness and business outcomes. The results have confirmed that consumer engagement increased movie performance (Oh et al., 2017). However, the relative effectiveness of social media platforms and their time effects are still needed for further research.

### 3. Research Context: Movie Industry

Movies are associated with keen consumer interest and are followed by a significant segment of the population. Since movie theatres were closed worldwide as a result of the covid-19 pandemic in 2020-2021, 2019 movie industry statistics are more representative to understand the recent size of this industry. The total number of movie tickets sold in Turkey was recorded as 59556000 in 2019<sup>5</sup>. While the US consumers spent over \$11.32 billion on a movie ticket in 2019<sup>6</sup>, Turkish moviegoers spent 980 million Turkish liras (approximate \$114 million) in 2019. Turkey was listed as the twenty-second country in rank in terms of total worldwide box office sales<sup>7</sup> and the size of movie industry revenues is increasing. Movie marketing executives are always trying to predict box office performances from various activities undertaken for promotion, and social media is now one of the popular platforms in the marketing communication mix (Oh et al., 2017).

<sup>5</sup> <https://boxofficeturkiye.com/yillik>

<sup>6</sup> Statistista.com

<sup>7</sup> <https://www.the-numbers.com/movies/production-countries/#tab=territory>

Consumers interact with movies on social media platforms, namely Facebook, YouTube, and IMDB. These platforms were chosen for popularity in general, and are particularly associated with movie performance in terms of their ability to share multimedia content, or being movie-specific in nature. The brief information is given below:

### ***YouTube***

YouTube is currently the world's largest video-sharing platform and even the second most used search engine after Google. It allows users to create profiles (channels), view, share, and upload videos, and comment on them. Most videos on YouTube are publicly accessible without a subscription to a particular channel or account. Commenting, however, is only allowed to people registered with YouTube. It is a popular social media platform known for its ability to influence consumer purchasing decisions, being a visual media, and so is highly relevant to the context of this study.

### ***Facebook***

Facebook is a social media platform with more than 2.7 billion active monthly users, making it a platform with the most active users worldwide<sup>8</sup>. It allows users to create profiles, groups and pages, as well as join groups, like pages, share content, and comment on it. Firms can also use the platform for similar purposes as well as advertising and promotion. These features provide a conducive environment for information sharing, and increasing customer lifetime value for businesses (Oh et al., 2017).

### ***IMDB (Internet Movie Database)***

IMDB is the world's largest, most popular, and authoritative database for information about movies, TV shows, and celebrities. It has an audience of more than 250 million unique monthly visitors. Consumers seek movie release dates, showtimes, ticketing, trailers, critic and user reviews, recommendations, photo galleries, entertainment news, quotes, trivia, box-office data, editorial feature sections, and watch lists on the website. While accounts are restricted to celebrities, users can rate, review, and recommend movies by logging in via other social media platform accounts (IMDB, 2017).

## **4. Hypotheses Development**

Previous studies have taken different approaches to explain consumer engagement. Doorn et al. (2010) proposed five dimensions: valence, form/modality, scope, impact, and consumer goals. Vivek et al. (2012) presented a three-dimensional view of consumer engagement: conscious attention, enthused participation, and social connection. Furthermore, Gambetti et al. (2012) introduced experien-

<sup>8</sup> <https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/>

tial and social dimensions to the traditional cognitive, emotional, and conative consumer engagement dimensions. The experiential dimension comprises corporeal, physical, and multisensory elements of consumer-brand encounter, whereas, the social dimension comprises interaction, dialogue participation, co-creation, and sharing of brand-related contents, emphasizing on the openness of the brand towards consumers. Braojos-Gomez et al. (2015) proposed social and conventional engagement as types of online consumer engagement, based on information technology capabilities and customer service performance.

Calder et al. (2009) advised two dimensions of consumer engagement, namely personal and social-interactive. While personal engagement includes the user's stimulation and inspiration through interaction with the content, social-interactive engagement involves socialization and participation among people. They are both intrinsically and extrinsically motivated (Calder et al., 2009).

The model by Calder et al (2009) presents a good fit for the analyses at hand and following similar studies on social media engagement, this paper also adopts it (Oh et al., 2017). The social media platforms being examined can easily adapt to the model, and hence can be analyzed for both personal and interactive engagement. Personal consumer engagement is intrinsically motivated and reflects user experiences. Most studies have called this kind of engagement as passive, but Calder et al. (2009) define it as not only the consumption of content but also participatory activities that are based on individual motivations, rather than collaborative community-based drivers.

The social media platforms used in the study provide various tactics to consumers to personally engage with movies: they can view, like, dislike, rate movies, and share with others. Views, likes, shares, or comments provides an accurate way of estimating user interest both on YouTube and Facebook page. Engagement levels were ordered by public expressiveness, from more private to more public as some views, likes, comments/shares, and external postings (Aldous et al., 2019). External postings represent spreading content through public sharing into other public networks or platforms. Movie trailers are mostly promoted through social media before up to one year ahead of the movie release date to create interest and to look for more information about the movie. When movies are released, studios might create multiple versions of a movie trailer with changing times and themes. There are discussions on whether a trailer should be "vague and teasing" or "not a narrative" (Finsterwalder et al., 2012). As a form of advertising, trailers give a chance to already pretest elements of the service (Finsterwalder et al., 2012). Previous research indicated that when Facebook users "like" a product or service, they spend five times more compared to those who do not "like" (Hollis, 2011). Facebook page likes were indicated to have a positive causal effect on offline customer behavior (Mochon et al., 2017). Movie trailers also were proven to influence box office sales positively (Du et al., 2008; Epstein, 2005; Gong et al., 2011; Hennig-Thurau et al., 2006). When WOM engagement in social media increases, commitment



to a product or service rises (Sashi, 2012). The recent research on movie trailers proved that the prospect of liking a movie increase when moviegoers' perception of the understanding of the movie from the trailer increase (Archer-Brown et al., 2017). In this study, the authors conducted a survey and indicated that liking a movie and understanding a trailer influence purchase intention of a movie through WOM intention. However, their study did not use any behavioral data like this paper and measured only intentions and used only the pre-release period. Overall, personal consumer engagement on YouTube and Facebook has a positive effect on movie box office performance; however, the effect is very likely the highest for Facebook. While YouTube is the only video hosting platform, Facebook is a "video also" sharing platform. Video view is counted after 30 seconds of a person has watched it on YouTube and just after 3 seconds on Facebook. When consumers open YouTube and watch a movie trailer video, they are mentally ready to watch video content, but this is not the case on Facebook. Facebook users give attention to a video on Facebook only when they see a catchy headline, description, or thumbnail, or many of their friends share the same content or like. Users on Facebook can share content with their friends and also are exposed to what friends like or share. The provision of relevant advice is higher between strong ties compare to weak ties; because strong ties imply more familiarity with one another's needs and preferences (Chung and Tsai, 2009). Since Facebook share indicates higher engagement than likes or views (Aldous et al., 2019), Facebook pages exposed to more targeted audience and social influence of friends' likes (i.e., strong ties) on Facebook is higher compare to strangers' likes (i.e., weak ties) on YouTube, the effect of Facebook engagement on box office sales will very likely higher effect on movie performance than of YouTube engagement one. Thus,

*H1: The effect of Facebook engagement on box office sales is greater than the effect of YouTube engagement on box office sales.*

### **Time Effect and Engagement on YouTube and Facebook**

Movies have a short product life and follow predictable exponential patterns similar to books (Moe and Fader, 2001; Sawhney and Eliashberg, 1996). Box sales and volume of consumer ratings are the greatest immediately after launch and later quickly level off dramatically. Thus, the product life cycle is important when data is collected. Consumer engagement and movie sales will be the highest at earlier weeks and levels off in a few weeks after. Different stages after a movie release influence differently movie success. For instance, the very early stage after a movie launch determines movie performance mostly (De Vany and Walls, 1996; Eliashberg and Shugan, 1997; Munoz, 2003).

People that are obsessed with movies are called cinephiles. They will usually watch it on the opening week no matter what the movie is. Early moviegoers might more likely to watch the movie trailer on YouTube before pre-release. As a result, first-week sales are mostly high and later moviegoers will be discouraged

from watching it because of more concrete and accurate information about the movie. Early moviegoers are different than non-early moviegoers. Early moviegoers might be cinephiles which can be classified as opinion leaders or influencers, late moviegoers can be classified as consumers who are the late majority, cautious in making a decision, and might rely on their network to see the movie (Rogers, 1995). That is why late moviegoers are more probably decide to see the movie after seeing Facebook shares or likes of their friends. Thus, Facebook engagement might have a higher influence on box office sales in the late period compare to YouTube engagement.

*H2. The effect of consumer engagement on Facebook has a greater effect on box office sales of a new movie in the late period (week 4) of a movie screening than in the early period (week 1).*

*H3. The effect of consumer engagement at YouTube has a greater effect on box office sales of a new movie in the early period (week 1) of a movie screening than in the late period (week 4).*

## **5. Methodology**

Thirty-four movies were selected to be released in the USA between February-March 2013 (see Appendix A1). Weekly word-of-mouth data of the official movie trailer on YouTube and an official Facebook page was collected four weeks before the release of a movie. Similarly, weekly post-launch word-of-mouth was collected for the release week, and four weeks after the release week. As movies only run-on average for four weeks in the theatre, five weeks period after release was thought to be sufficient. Box Office Mojo and The-Numbers websites were used to obtain detailed information for movie revenues and movie-specific variables, namely box office revenues, number of theatre screens, movie stars, genre, sequel, distributor, and awards.

The dependent variable is weekly movie gross box office revenue obtained from Box Office Mojo. This was the measure for a movie's economic performance, and has been used in previous literature (Duan et al., 2008a,b; Reinstein and Snyder, 2005; Rui et al., 2013; Eliashberg and Shugan, 1997; Basuroy et al., 2003).

The main explanatory variables which are the research interest of this study are weekly YouTube engagement and sentiment, Facebook engagement and sentiment, the volume of critic and user reviews at IMDB, user rating at IMDB.

For each movie, the number of views, likes, dislikes of its official trailer from YouTube were collected manually. There were no shares for official trailers on YouTube. The same was done for "likes" and "shares" of the movie's Facebook page, along with the user and critic ratings on IMDB. YouTube views represent the number of views of a movie trailer and indicate the popularity and consumption of the movie trailer (Susarla et al., 2012). YouTube likes is another personal

engagement measure representing the number of likes a movie trailer has gathered on YouTube. YouTube dislikes is another personal engagement measure representing the number of dislikes a movie trailer has gathered. The sum of these was the measure of YouTube engagement and it is a measure of consumers' intrinsic motivation to connect with the movie. Facebook likes are known to be a key social media driver and are considered to be an effective tactic to determine user interest. They are an indication of approval and represent support as a consequence of existing connection or experience with the movie. Consumers share Facebook movie content that they get pleasure out of sharing. Sharing is a way to communicate their feelings about the movie with the click of a button.

IMDB user rating represents user rating on the largest global movie database website. According to the definition based on extant literature (Calder et al., 2009), this counts as user interest in the movie before it has been released and may have an effect on box office performance. The rating is done on a scale of one to ten. Prior research claimed that IMDB users are mostly "elitist" and expert consumers on movies because they have a stronger engagement with motion pictures (Henig-Thurau et al., 2012).

To control for exogenous factors, certain control variables were introduced in the model, as derived from the extant literature. The number of theatres a movie showcased was controlled. More screens are associated with significant production and marketing budgets, a well-known cast, and good distribution, and vice versa (Oh et al., 2017). This variable is introduced as a control to accommodate for confounding factors that relate to the difference between high budget and low budget movies. This is because high-budget movies are associated with high levels of social media platform activity, as well as high gross revenues, as compared to low-budget ones. The size of movies' distributors has also been controlled: Distributor variable represents a dummy variable with value 1 if the distributor is big –up to 10th ranking's position with market shares larger than 1.63%– and 0 otherwise. Based on the *Market Share for Each Distributor 1995-2021* report published by The Numbers<sup>9</sup>, Walt Disney is the biggest distributor with a market share of 16.91%. The genre represents the types of movies as categorized by The-Numbers. Forbes<sup>10</sup> listed 1400 actors and their star power which was measured using their box-office performance, their popularity, and their media exposure. This variable has one to ten cumulative scores for each actor. For this paper, actors and actresses which act in the selected movie and had at least a score of 5 was considered and coded as 1 (powerful) and the remaining as 0 (not powerful). The variables and definitions are listed in Table 1.

<sup>9</sup> <https://www.the-numbers.com/market/distributors>

<sup>10</sup> <http://star-currency.forbes.com/celebrity-list/>

**Table 1.** Variables and Explanations

<b>Variables</b>	<b>Explanation</b>
Gross box office revenue (BoxSales)	weekly box office revenue
YouTube engagement (YT_engage)	Sum of likes, dislikes, views of the official trailer at YouTube (weekly)
YouTube sentiment (YT_sentiment)	Percentage of the number of likes divided by sum of likes, dislikes, views of an official trailer
Facebook engagement (FB_engage)	Sum of likes and shares at Facebook(weekly)
The user rating at IMDB (user rating)	Average user rating of a movie at IMDB (weekly) (10-point rating)
User volume at IMDB (UserVolume)	The volume of user engagement at IMDB. Sum of positive, neutral, negative comments (weekly)
Critic Volume at IMDB (Critic Volume)	The volume of critic rating at IMDB. Number of critic rating
Number of Theaters (Theater)	The number of theatres a movie was showcased in the opening week
Star Power	Star power > 5 was coded as 1(powerful), otherwise 0
Awards	Number of awards that movie has won
Distributor	Distributor: 1: Large 0: Small
Sequel	A movie is a sequel if it is a successor of an already released movie. It can have two values "Yes" and "No".

## Research Model

The data is panel data consists of thirty-four movies and five observations per movie (movie-week level). Star power, awards, distributor, and sequel variables are movie-specific and do not change over time. YouTube and Facebook engagement, IMDB critic and user volume, and user rating change over time. Since prior WOM was proven to influence current sales, we used the lagged versions of time-varying predictors. Time effects were controlled with a dummy variable of the week that a movie screened. The reference week dummy was the release week (week 0). The standardized versions of variables were used in analyses for three reasons: 1) Most of the variables are in different units, 2) to be able to compare the relative importance of variables easily and 3) to test interaction effects easily. STATA 14 was used to obtain panel regression results.

Panel regression model equation (1) was indicated below. T indicates weeks ( $t = 0, 1, \dots, 4$ ) and  $i$  indicates movies ( $i = 1, \dots, 34$ ).

$$\text{BoxSales}_{it} = \beta_0 + \beta_1 \text{YTengagement}_{it-1} + \beta_2 \text{YTSentiment}_{it-1} + \beta_3 \text{FBengagement}_{it-1} + \beta_4 \text{FBsentiment}_{it-1} + \beta_5 \text{IMDBVolumeCritic}_{it-1} + \beta_6 \text{IMDBVolumeUser}_{it-1} + \beta_7 \text{IMDBValenceUser}_{it-1} + \beta_8 \text{Distributor}_i + \beta_9 \text{Awards}_i + \beta_{10} \text{StarPower}_i + \beta_{10} \text{Sequel}_i + \beta_{11} \text{Theater}_i + \beta_{10} \text{Drama}_i + \beta_{11} \text{DWeek1}_{it} + \beta_{12} \text{DWeek2}_{it} + \beta_{13} \text{DWeek3}_{it} + \beta_{14} \text{DWeek4}_{it} + \epsilon_{ij} \tag{1}$$

### 6. Results

Table 2 presents descriptive statistics and Table 3 indicates the correlations among key explanatory variables. The order of correlations with box sales was Facebook engagement (0.74), YouTube engagement (0.73), the volume of user reviews (0.72), number of theatres (0.72), distributor (0.66), the volume of critics (0.56), star power (0.42), and YouTube sentiment (-0.21).

**Table 2.** Descriptive statistics

Variables	Mean	SD	Min	Max
Box office sales	2.27e+07	4.05e+07	2653	2.15e+08
YouTube likes	2213.1	2745.8	0	12317
YouTube dislikes	158.9	222.6	0	1334
YouTube views	732639	909646.1	0	3560418
YouTube engagement	735010.9	912225.3	0	3566211
YouTube sentiment	0.0046	0.0039	0.0011	0.0234
Facebook likes	135417.8	257186.1	0	1272697
Facebook shares	32773.8	86731.5	0	541693
Facebook engagement	167202.3	332629.5	0	1745938
Facebook sentiment	0.8486	.1144	0.4920	1
User volume	30.8	49.96	0	303
User rating	6.01	1.7	0	8.1
Critic volume	82.2	80.0	0	412
Number of theatres	1104.9	1353.3	1	4065

**Table 3.** Correlation Among Key Explanatory Variables.

Correlations	1	2	3	4	5	6	7
1 BoxOffice	1						
2 YT_engage	0.73*	1					
3 YT_sentiment	-0.21*	-0.29*	1				
4 FB_sentiment	-0.12	-0.10	-0.05	1			
5 FB_engage	0.74*	0.68*	-0.18*	-0.23*	1		
6 UserVolume	0.72*	0.52*	-0.09	0.01	0.39*	1	

7	UserRating	0.14	0.09	0.19*	-0.01	0.06	0.27*	1
8	CriticVolume	0.56*	0.35*	-0.13	0.16*	0.31*	0.81*	0.42*
9	StarPower	0.42*	0.30*	-0.17*	-0.12	0.28*	0.24*	0.11
10	Sequel	0.14	0.19*	-0.14	0.12	-0.11	0.12	-0.08
11	Awards	-0.12	-0.14	0.10	0.38*	-0.01	-0.05	0.21*
12	Theater	0.72*	0.68*	-0.25*	-0.12	0.59*	0.32*	-0.21*
13	Distributor	0.66*	0.60*	-0.22*	-0.15	0.54*	0.34*	0.00

Notes. \* 0.05, \*\* 0.01, \*\*\*0.001 significance level

	8	9	10	11	12	13
8 CriticVolume	1					
9 StarPower	0.33*	1				
10 Sequel	0.07	0.05	1			
11 Awards	0.17*	-0.20*	-0.06	1		
12 Theater	0.15	0.45*	0.27*	-0.22*	1	
13 Distributor	0.32*	0.46*	0.18*	-0.09	0.66*	1

The results of four panel regression models were presented in Table 4. Model 0 includes only control variables. Model 1 includes the main effects of YouTube engagement and sentiment, Facebook engagement and sentiment, IMDB user volume, critic volume, and user rating. Model 2 includes the time effects of YouTube and Model 3 includes the time effects of Facebook. All the average variance inflation factors are less than 10 in all models, so multicollinearity is not an issue in analysis.

First, gross box office sales regressed on control variables (Model 0). Movies distributed by large distributors have significantly higher box office sales than the one by small distributors ( $b = 1.249, p < 0.001$ ). Number of theatres have a marginal positive effect on box office sales ( $b = 0.136, p < 0.10$ ). Besides, there was a significant increase in box office sales in four weeks compare to opening week sales as expected. Model 1 includes all main effects and control variables as explanatory variables. The random-effect model was tested with Breusch and Pagan LM test in STATA for Model 1. If the LM statistic is not significant, there is no significant heterogeneity between movies, and ordinary least squares (OLS) can be used. The effect was significant ( $\chi^2 = 85.72, p < 0.001$ ), indicating sig-

nificant differences across movies. We also compare models fits with fixed (H1 in Hausman test) and random effects (H0 in Hausman test) and use the Hausman test to decide between two. Hausman test indicated that the preferred model is random effect as we expected ( $\chi^2 = 9.27$ ,  $p = 0.23$ ). Being a large distributor (vs small one) ( $b = 0.433$ ,  $p < 0.001$ ), number of theatres that the movie screened ( $b = 0.236$ ,  $p < 0.001$ ), Facebook engagement ( $b = 0.212$ ,  $p < 0.01$ ), volume of user reviews at IMDB ( $b = 0.176$ ,  $p < 0.001$ ), YouTube engagement ( $b = 0.155$ ,  $p < 0.05$ ), volume of critic reviews at IMDB ( $b = 0.136$ ,  $p < 0.01$ ) influenced positively box office sales respectively. The effect of Facebook engagement on box office sales was significantly higher than the effect of YouTube engagement ( $\chi^2 = 23.37$ ,  $p < 0.001$ ), confirming H1. Additionally, being in week 1 influenced positively box office performance compare to the others. There were no significant effects of YouTube and Facebook sentiment, user ratings, star power, awards, and sequel predictors.

The effect of YouTube when the week is first and fourth one compare to the opening week (Model 2) was indicated that the interaction effects between YouTube engagement and week 1 ( $b = 0.125$ ,  $p < 0.05$ ) and week 4 ( $b = 0.095$ ,  $p < 0.05$ ), were both significant and positive. Thus, the effect of YouTube engagement was significantly higher in the early stage (week 1) than the later stage (week 4) compared to the movie release week (week 0) ( $\chi^2 = 16.37$ ,  $p < 0.01$ ). Besides, the main effects of Facebook engagement, the volume of critic reviews, the volume of user reviews, and theatres were still significant strongly in Model 3. The effect of Facebook when the week is first and fourth one compare to the opening week (Model 3) was illustrated that the interaction effects between Facebook engagement and week 4 ( $b = 0.137$ ,  $p < 0.01$ ) was significant and positive but not the interaction effect between Facebook engagement and week 1. Thus, Facebook engagement at the late stage of the movie screen has a higher effect on box sales compare to the release week (week 0).

Movies' performance and social media engagement impacts might differ with the genre. As an additional analysis, genre dummies (drama, action, comedy, and horror as a reference genre category) were included in Model 0 (control) and Model 1 (main effects), and models were analyzed again. There were no significant effects of any genre dummies. To inspect whether genre makes a difference in the effect of YouTube and Facebook engagement on box sales, the interaction terms were examined for each genre. Only the effect of Facebook engagement on box sales was significant positive for action movies compared to horror movies ( $b = 0.255$ ,  $p < 0.05$ ); however, not the effect of YouTube engagement on box sales for action movies ( $b = 0.095$ ,  $p = 0.46$ ).

**Table 4.** Results of Panel Regression Models

Variable	M0	M1	M2	M3
StarPower	0.221	0.061	0.052	0.045
Sequel	0.035	0.062	0.071	0.113
Awards	-0.009	-0.038	-0.036	-0.038
Theater	0.136	0.236***	0.251***	0.260***
Distributor	1.249***	0.433*	0.426*	0.396*
week1	0.188*	0.166**	0.175***	0.162**
week2	0.331***	0.067	0.069	0.066
week3	0.431***	0.011	0.023	0.027
week4	0.502***	0.019	0.016	0.043
YT_engagement		0.155*	0.087	0.112
YT_sentiment		0.048	0.041	0.042
FB_sentiment		0.023	0.016	0.014
FB_engagement		0.212**	0.222***	0.219***
UserVolume		0.176***	.185***	0.174***
UserRating		0.021	0.028	0.038
CriticVolume		0.136**	0.133**	0.131**
YT_engageXweek1			0.125*	
YT_engageXweek4			0.095*	
FB_engageXweek1				0.075
FB_engageXweek4				0.137**
Constant	-0.648***	-0.290**	-0.294**	-0.287**
N <sup>a</sup>	161	153	153	153
R-within	0.2203	0.7009	0.7276	0.7199
R-between	0.5953	0.8641	0.866	0.8731
R-overall	0.5537	0.8641	0.8613	0.8655
Average VIF	1.55	2.61	2.60	2.53
Chi-square	88.98***	441.98***	484.54***	513.87***

Notes. \* 0.05, \*\* 0.01, \*\*\*0.001 significance level

<sup>a</sup>. For a few movies, there were no showings for more than 2-3 weeks.

## 7. Discussion

Considering the growing number of people who are connected through social media platforms, YouTube and Facebook are new mediums in which prospective moviegoers can get information about a movie. Movie studios can get an insight into a movie's popularity in advance of release with these platforms. The goal of



this study is to expand the existing literature on movie success and to contribute to the effects of consumer engagement to official movie trailers on YouTube and the official Facebook page of a movie. This study offers insight into the effectiveness of how film studios and movie advertisers can strategically manage movie advertising on social media to increase box office revenues

Moviegoers' engagement on YouTube and Facebook positively influences box-office sales. The effect of Facebook engagement on box sales is larger than the YouTube engagement. While the effect of YouTube engagement on box sales decreases over time, the effect of Facebook engagement increases over time. So, it is very likely that official trailers on YouTube are the primary information source for moviegoers who are early adopters. Facebook page of a movie is relevant for late adopters of a movie. The volume of user reviews on IMDB influenced box sales more than the volume of critics, confirming previous studies (Rosario et al., 2016). Findings indicated that user ratings did not influence box office sales which are in line with Duan et al. (2008a). Since the volume of critics and user reviews are indicators of popularity, it seems that the popularity of a movie guides moviegoers to go to a movie. The box office sales were influenced the most by distributor power and the number of theatres. The order of importance effects among remaining predictors was engagement on Facebook, the volume of user reviews, engagement on YouTube, and the volume of critic reviews. As previous research indicated (De Vany and Walls, 1996; Eliashberg and Shugan, 1997), first-week sales are a significant indicator of movie performance (Munoz, 2003). Awards, sequel, and star power did not influence box office performance in the current study despite the effect sign was positive. Since award nominations are released after the movie launch, longer periods would probably need to have significant effects. Alternatively, awards measure could be constructed by the number of awards the cast and crew of the film have been nominated for and/or won in past films, not the current one. Insignificant effects of the sequel might be caused by the presence of only two movies as a sequel in the sample. Star power was claimed to be a not reliable predictor of movie sales (Simonton, 2009). Films employing well-known stars were found to have slightly more sales compare to not well-known stars (Ravid, 1999).

### ***Theoretical implications***

Understanding of the effects of consumer engagement on social media platforms on new product success was extended to the movie industry with this study. This study contributes to two streams of research: Consumer engagement on social media platforms and movie marketing. Existing literature on social media has focused mostly on one type of social networking site, except a few (Oh et al., 2017). This study extended the study by Oh et al. (2017) using a longitudinal study and explain further the temporal relationship between YouTube and Facebook. Many studies on the impact of eWOM on box-office sales have considered online review websites (i.e., IMDB) which is mostly text-based (Baek et al., 2014; Chang and

Ki, 2005; Dellarocas et al., 2007; Duan et al., 2008b; Liu, 2006; Rui et al., 2013), YouTube engagement was underresearched area compare to Twitter or Facebook.

Two different social networking sites, namely YouTube and Facebook, were considered simultaneously in this study, and comparisons were made with broadly investigated influence factors, namely user and critic reviews. Moreover, using behavioral and longitudinal data, time effects of consumers' social media engagement effects were investigated jointly with other influence factors, namely user and critic reviews to provide more insight.

### ***Practical Implications***

This study confirms that engagement on YouTube and Facebook increases new product sales. Managers should incorporate social media presence for their products in their marketing strategies. They should select the right platforms for a movie promotion at the different lifecycle of a movie. While official trailer videos on YouTube have a greater effect at an early stage in the product life cycle for a movie, Facebook page content has a greater effect at a later stage in the product life cycle. So, official trailer videos on YouTube are effective tools to increase movie awareness and to create interest. Before the movie release or release week, YouTube is a better outlet for a movie advertisement. However, Facebook is a suitable outlet for a movie promotion at a later stage of a movie screen. Engaging Facebook page content can prolong the lifetime of a movie. Retargeted advertising of a movie can be done for consumers who check the Facebook page of a movie if the number of moviegoers starts to decrease to give a push to sales. Additionally, the volume of user and critic reviews are still the major indicators of a movie's performance.

Despite the research data covers the movies from 2013, the findings on the role of YouTube and Facebook in the different life cycles of a movie are still very likely valid. The digital world is very dynamic and social media behaviors are changing. For instance, while Facebook has started attracting an older audience, the younger generations tend to prefer Instagram nowadays. Currently, users can only post a video to Instagram if it is between 3 to 60 seconds long. However, standard movie trailer videos take 2-3 minutes. If movie trailers can be designed shorter and eye-catching in the future, using the right hashtags, by targeting the right audience either relying on age groups or a movie genre, Instagram can be an alternative media channel to reach younger moviegoers at the pre-release period to create buzz for the opening week.

### ***Limitations and future research***

Although current research contributes to an improved understanding of the effects of social media engagement related to new products on social media platforms

for creative industries, some limitations should also be acknowledged. This study should be repeated with recent movie data of a longer period. One of the limitations of this study was the measurement of YouTube and Facebook sentiment which were calculated as the percentage of likes over engagement. Alternative better measures of sentiment can be used in future studies, perhaps using text sentiment analyses of comments. Genre effects can be further investigated with larger data. Future research can investigate the effectiveness of engagement on movie performance on new popular social platforms and compare them. Finally, comments and valence of comments to official trailers on YouTube or Facebook pages can be additionally investigated for a better picture for movie promotion advertising.

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**Appendix.****Table A1.** Movie List and Characteristics

Movie	Release date in USA	Genre	MPAA rating	Survival weeks	Distributor Large (1) Small (0)	Sequel Yes (1)
21 and Over	01-03-2013	Comedy	R	11	Relativity media (0)	0
A place at the Table	01-03-2013	Drama	PG	11	Magnolia (0)	0
ABC' s death	08-03-2013	Action		4	Magnolia (0)	0
Admission	22-03-2013	Comedy	PG13	11	Focus Features (0)	0
Beyond the Hills	08-03-2013	Drama		7	IFC films (0)	0
Bless the Ultima	22-02-2013	Drama	PG13	7	Arenas Entertainment (0)	0
Dark Skies	22-03-2013	Horror	PG13	13	Dimension Films (0)	0
Dead man down	08-03-2013	Action	R	6	FilmDistrict(0)	0
From Up on Poppy Hill	15-03-2013	Drama	PG	14	GKIDS (0)	0
G.I. Joe: Re-taliation	22-03-2013	Action	PG13	17	Paramount pictures (1)	1
Gimme the Loot	22-03-2021	Drama		8	IFC films (0)	0
Ginger & Rosa	13-03-2013	Drama	PG13	12	A24(0)	0
Hava Nagila	22-03-2013	Drama		36	International Film Circuit (0)	0
Inescapable	22-02-2013	Drama	R	2	IFC Films (0)	0
Jack the Giant Slaye	01-03-2013	Action	PG13	15	Warner Bros (1)	0
Kai Poche	22-02-2013	Drama		10	UTV Motion pictures (0)	0
Koch	01-02-2013	Drama		16	Zeitgeist Films (0)	0
Love and Honor	22-03-2013	Drama	PG13	3	IFC Films (0)	0
No Place on Earth	05-04-2013	Drama	PG13	18	Magnolia (0) Pictures	0
Olympus has Fallen	22-03-2013	Action	R	16	FilmDistrict (0)	0
Oz: The Great and Powerful	08-03-2013	Action	PG	19	Walt Disney (1)	0
Phantom	01-03-2013	Action	R	2	RCR Distribution (0)	0
Reality	15-03-2013	Drama	R	8	Oscilloscope (0)	0
Snitch	22-02-2013	Drama	PG13	14	Lionsgate (1)	0

Starbuck	22-03-2013	Comedy	R	9	eOne Entertainment (0)	0
Stoker	01-03-2013	Drama	R	10	Fox Searchlight Pictures (0)	0
The Call	15-03-2013	Action	R	13	TriStar Pictures (0)	0
The Croods	22-03-2013	Action	PG	26	Twentieth Century Fox (1)	0
The Host	29-03-2013	Action	PG13	9	Open Road Films (II) (0)	0
The Incredible Burt	15-03-2013	Comedy	PG13	8	WarnerBros (1)	0
The Last Exorcism II	01-03-2013	Action	PG13	5	CBS Films (0)	1
The Place Beyond the Pines	29-03-2013	Action	R	13	Focus features (0)	0
The Silence	08-03-2013	Drama		31	International Film Circuit (0)	0
Tyler Perry's Temptation	29-03-2013	Drama	PG13	9	Lionsgate (1)	0