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Kyung Ok Kim

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The Dissertation Committee for Kyung Ok Kim Certifies that this is the approved version of the following dissertation:

A Little Bluebird Told Me:
Social Media Conversation Effects on Business Outcomes
– Evidence from the Movie Industry

Committee:

Isabella Cunningham, Supervisor

Gary B. Wilcox

Linda L. Golden

Michael Mackert

Vijay Mahajan

A Little Bluebird Told Me:

Social Media Conversation Effects on Business Outcomes

– Evidence from the Movie Industry

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Kyung Ok Kim, B.Eco.; M.A.; M.A.

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Dedication

I dedicate this work to my family, Young Soon Kim, Soon Hee Kim, Ju Nam Kim, and

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A Little Bluebird Told Me:

Social Media Conversation Effects on Business Outcomes

– Evidence from the Movie Industry

Kyung Ok Kim, Ph.D.

The University of Texas at Austin, 2014

Supervisor: Isabella Cunningham

In this dissertation, I examine how online conversations as electronic word-of-mouth (eWOM) information via social media networks affect business outcomes. Using data from the movie industry, my goal is to show how conversation quantity and quality, defined here as volumes and valence, on social network sites affect important business outcomes such as sales. Using a dynamic simultaneous equation system, I find that social media conversations can be a precursor to and an outcome of sales.

Aggregate data from multiple sources show how social media variables and other key variables—volume, valence, and other information related to movies such as YouTube movie trailer views, ratings, advertising, production budget, number of screens—contribute to box-office and home video sales through eWOM via social media.

Findings highlight that eWOM volume correlates with box-office performance and home video sales: the more positive and strong the conversation, the higher the box office and home video sales. The study extends prior research on WOM and offers insight into how film studios can strategically manage social media to enhance box office and home video revenue.

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CHAPTER I

INTRODUCTION

"There is only one thing in the world worse than being talked about, and that is not being talked about." – Oscar Wilde, *The Picture of Dorian Gray*

Oscar Wilde knew nothing about Facebook or Twitter when he praised the advantages of being talked about more than a hundred years ago, yet the quote resonates with most social media marketers today. As the quote implies, when marketers lose control, negative electronic word-of-mouth (eWOM) can cause reputations to go awry, but positive product or service experiences shared voluntarily on social media can greatly enhance marketing outcomes. Apparently marketers generally perceive that eWOM has a positive net effect on social media. They tend to believe that overall gain through positive eWOM via social media is greater than loss through negative eWOM. Oscar Wilde's quote suggests that he believes when people talk about products or services on Facebook or Twitter, the talk may damage business reputations, but the potential reward of being talked about exceeds the risk. In the end, many businesses strive to increase their online presence, although they know the outcomes can be double-edged.

Unsurprisingly, significant company resources are invested creating eWOM via social network services (SNS) to improve digital environment visibility. Interestingly, messages or conversations can have various controls and impacts on SNS, depending on

whether the SNS message is paid, owned, or earned.

Control media may have trade-offs that affect its outcomes. By the same token, a high level of communication may have unforeseen trade-offs. Marketers significantly control the message when marketing communications delivered through paid and owned media, such as banner ads. Those messages are perceived to be less effective, however, than eWOM in the form of user-generated conversations occurring on earned media. For example, independent consumers' review of products on Facebook or Twitter maybe more effective than paid or owned media.

Although considerable research has examined impacts of WOM via paid and owned media (e.g., Yang & Ghose, 2010; Rutz, Trusoov & Bucklin, 2011), few have examined the role of customer-driven conversations on earned media, despite the potential impacts on business performance. In this dissertation, I aim to address that oversight. Specifically, I ask: How do conversation quantities and qualities, defined here as *volume* and *valence*, through earned media affect business outcomes such as sales? The answers will have important straightforward implications for marketing managers who deal with consumers in the digital era. In particular, this research will show that monitoring consumer interactions on SNS and harnessing their activities to achieve profits are essential in modern marketing.

In Chapter 2 reviews previous research on social media and their effects, including eWOM effects. In Chapter 3 discusses the conceptual framework and hypotheses. Chapter 4 presents the analytical scheme—a dynamic simultaneous equation

system. In Chapter 5 presents the main findings that conversations from earned social media are a new digital form of eWOM and can be both precursor to and outcome of sales based on data from the movie industry. Specifically, aggregated data from multiple sources show how eWOM variables via earned social media and other key variables—volumes, valence, and information related to the movie industry such as YouTube views, ratings, media spending on movie advertising, production budget, number of screens—contribute to box office and home video sales. Finally, Chapter 6 discusses the theoretical and managerial implications of the findings and future research questions.

CHAPTER II

LITERATURE REVIEW

Word of Mouth

Word-of-mouth (WOM) refers to informal and non-commercial communication between individuals exchanging information and sharing evaluations of brands, products and services (Dichter, 1966; Arndt, 1967a). WOM activity has been shown to influence a variety of marketer conditions such as awareness, expectations, perceptions, attitudes, behavioral intentions and behaviors (e.g., Reingen, 1987; Keller, 2007).

WOM presents marketers both with challenges and opportunities by providing to consumers alternative information sources. First, marketers are challenged because they have less control over WOM messages. Simultaneously, WOM presents an opportunity because many believe it is more effective in influencing consumer behavior than traditional advertising delivered on broadcasting and print media for influencing consumer behavior (e.g., Herr et al., 1991).

Consumers view personal sources as more trustworthy (e.g., Dichter, 1966; Murray, 1991), and this heightened credibility enables WOM messages to reach and potentially influence many (e.g., Day, 1971; Brown and Reingen, 1987; Reingen and Kernan, 1986). Additional research has shown that WOM has been found superior to traditional media for influencing the purchase of a new product or service (Arndt, 1967a; Brown and Reingen, 1987; Reingen & Kernan, 1986; Richins, 1983) and in prompting

brand switching (e.g., Katz & Lazarsfeld, 1970; Day, 1971). For example, consumers frequently use WOM as a reliable source when selecting an automotive diagnostic center (e.g., Engel, Balckwell, and Kegerreis, 1969), choosing professional services (e.g., Feldman and Spencer, 1965), movies (e.g., Mizerski, 1982) or travel (Gitelson & Crompton, 1983).

Furthermore, WOM has been found to be especially effective in driving the diffusion of new products and in decision-making process. It is logical, therefore, that presently sophisticated marketers are concern with and strive to increase their social media presence. Modern marketing strategies focus on encouraging consumers to switch from traditional marketing communications channels to new social media environments (e.g., Harrison-Walker, 2001; Liu, 2006; Duan et al., 2008).

A through review of marketing and communication literatures indicates that WOM has been said to be "the most important marketing element that exists" (Alsop, 1984, p.6), "the most powerful force in the marketplace" (Silverman, 1997, p.32), and that "helps consumers identify the products that best match their idiosyncratic usage conditions" (Chen & Xie, 2008, p. 477). Research has also shown that various aspects of WOM shape consumers' attitudes and behaviors. Thus, inducing favorable WOM is an important success factor in the market as well as in the environment dominated by digital media (Godes & Mayzlin, 2004).

Characteristic of WOM

Some marketers nicknamed WOM free advertising. However, contrary to the common definition of advertising: "a paid form of nonpersonal presentation of ideas, goods or services by an identified sponsor" (Alexander, 1964), most WOM tend to be non-paid communications voluntarily spread by independent parties. Nonetheless, these distinguishing characteristics of WOM are being eroded. Some WOM is incentivized and rewarded (i.e., paid), while other WOM is produced electronically (i.e., non-voluntary). Perhaps all that distinguishes WOM from traditional advertising is that WOM is uttered by sources whom receivers assume to be independent of corporate influence (Buttle, 1998). Once this assumption of independence is met, receivers would perceive it as what is traditionally thought as WOM. This study is concerned with defining WOM as an influence on consumer behavior. In other words, what are the important characteristics of WOM that determine its viability and spread in the marketplace? According to existing literature, some known characteristics include volume, valence, and timing. These concepts are explained below.

Volume

Consumers are influenced not just by popularity that legitimatized information of a product or service (e.g., best rating book listed as most popular), but they are also swayed even by popularity information that is deliberately crafted (e.g., worst rated book deliberately listed as the most popular) (Chevalier & Mayzlin, 2006). Thus, it seems that

many consumers accept the face value of WOM information largely based on its popularity (Chevalier & Mayzlin, 2006; Liu, 2006; Khare et al., 2011).

Sometimes falsely, popularity is seen as an indication of the validity of WOM content, and accordingly, consumers find popular WOM difficult to ignore. The WOM literature explains why the volume of WOM—the total amount of WOM interactions (Liu, 2006)— is closely linked with WOM persuasiveness (e.g., Khare et al., 2011). In fact, the volume of WOM may be the single most influential cue on which consumers may readily fall back when judging the reliability of the WOM (Duan et al., 2008).

The increasing popularity of digital media such as blogs, online forums, online rate-and-review web sites, and other social media now enable thousands of consumers to post frequent reviews of products and services, which are available to many more potential consumers before making purchase decisions (Senecal & Nantel, 2004). Volume of WOM thus has become an important factor in determining the transfer of WOM information. This, in turn, influences other WOM-relevant characteristics and ultimately may result in business outcomes.

Valence

Valence captures the nature of WOM message—whether they are positive, negative or neutral (Liu, 2006). Positive WOM usually reflects pleasant, vivid, or novel product experiences of users in the form of recommendations to others. Contrastingly, negative WOM usually consists of product denigration, unpleasant product experiences,

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rumors, and complaints.

From a marketer's perspective, WOM can be seen as either a positive or a negative marketing factor in its simplest form. Positive WOM occurs when consumers utter good news testimonials and endorsements desired by the company. Negative WOM is the opposite; that is, it occurs when consumers voice negative comments and opinions about the company.

It is worth noting that what is negative from a corporate viewpoint may be regarded as extremely positive from a consumer viewpoint (Basuroy et al., 2003). Chevalier and Mayzlin (2006) show that valence, as measuring average stars of book reviews, is relevant to online sales at Amazon.com. Basuroy et al. (2003) show that negative WOM hurts box office performance in the movie industry. However, File et al. (1994) contend that management efforts can affect both the valence and the volume of post-purchase WOM. Duan et al. (2008) show the WOM valence affects the WOM volume, which in turn lead to higher business outcome (e.g., box office performance). The literature overall suggests that management has a certain degree of control over the frequency and direction of post-purchase WOM. This research is concerned with the effects of eWOM valence on marketing outcomes such as box office sales and DVD sales of feature films.

Timing

Dichter (1966) states that there are two types of WOM: pre-decision and post-

decision. WOM can operate as an important source of pre-purchase information—namely, input WOM, as consumers obtain WOM from third parties during the pre-purchase process. Contrastingly, consumers may also utter WOM after the purchase or consumption experience—namely, output WOM, as consumers share their post-purchase WOM with third parties (File et al., 1994).

Output WOM has been used to evaluate post-purchase communication that is based on affective responses, satisfaction and equity perceptions (Westbrook, 1987; Swan & Oliver, 1989; Anderson & Sullivan, 1993; Rust & Zahorik, 1993; Brown et al., 2005). Consumer satisfaction has been shown to be associated with post-purchase WOM: positive WOM and dissatisfaction with negative WOM (Singh & Pandya, 1991; Swan & Oliver, 1989; Herr et al., 1991; Heckman & Guskey, 1998; Reynolds & Beatty, 1999; Brown et al., 2005; Homburg et al, 2005).

Consumers frequently use pre-purchase communication (i.e., input WOM) to reduce their risk as well as to obtain information regarding the product or service in question (Bansal & Voyer, 2000). Perceived risk is inherent in many purchase situations, particularly of services that are often invisible and therefore impossible to trial (Berry, 1980; Zeithaml, 1981; Zeithaml et al., 1985; Sweeney et al., 2008). This invisibility, along with their intangibility, heterogeneity, perishability and inseparability, leads to high-risk perceptions in the context of service purchasing behavior (Zeithaml, 1981; Murray, 1991; Mitchell & Greatorex, 1993). Arndt (1967b) remarks that, "the higher the word of mouth activity, the higher the perceived risk" (p.31). Therefore, the timing and

the quantity of WOM activity are both important factors in determining consumers'
perceived pre-purchase risk.

The associations between input WOM and output WOM and their role in
affecting customers' purchase process would be pronounced if the data are analyzed
within a realistic timeline in an intangible product context. Thus, in this dissertation I
analyze a data set derived from the movie industry and focus on the critical two-week
time period—presently defined as one week prior to and one week after the feature film
opening date—to examine the effects of input and output WOM on consumers decision
making, such as box office sales and DVD sales.

eWOM: Electronic Word of Mouth

While WOM has traditionally been studied from the perspective of face-to-face
communication (Bansal & Voyer, 2000; Brown and Reingen, 1987), the wide acceptance
and use of the Internet for publicizing feedback and recommendations on products and
services has broadened the reach of WOM (e.g., Dellarocas, 2003; Senecal and Nantel,
2004; Liu, 2006). The SNS explosion has sparked an interest in re-examining eWOM
effects in the digital age.

Research indicates that eWOM on earned media may generate greater empathy,
credibility, and relevance through various digital vehicles such as websites, blogs, text
message, Facebook, and Twitter than information generated by the company itself (i.e.
owned media) because eWOM on these vehicles are primarily based on personal

experience and stories (Bickart & Schindler, 2001).

To improve the in-depth understanding of the eWOM mechanism, I identify several salient differences between traditional WOM and eWOM. Generally, traditional WOM has been conceptualized and explored as interpersonal informational exchange between individuals familiar to each other (Brown & Reingen, 1987). An implicit assumption is that the receiver has inherent belief in the value of the WOM provider's information, either due to perceived similarities between the senders and the receivers (Gilly et al., 1998) or perceived product or service category knowledge (Bansal & Voyer, 2000). In the online context, there is typically no familiarity between senders and receivers of eWOM.

Most traditional WOM is sought and received from individuals known and trusted by the receiver, such as family and friends (Brown & Reingen, 1987; Bansal & Voyer, 2000; Gupta & Harris, 2010), or perceived experts in the field (Bone, 1995). However, weak-tie sources are utilized as well, particularly if these sources are believed to be knowledgeable (Brown & Reingen, 1987; Duhan et al., 1997; Gilly et al., 1998). Therefore for purposes of this research, which it is understood that eWOM does not necessarily identify senders as experts, its effects can be considered similar to those elicited by traditional WOM.

Further, consumers tend to seek traditional WOM information more for products that have experience attributes (King & Balasubramanian, 1994). Such results have also been reported in eWOM usage behavior, both in self-reported survey (Bei et al., 2004)

and in experimental online research demonstration consumers are more willing to accept eWOM for products that are better evaluated through experience (Senecal & Nantel, 2004).

These results collectively indicate that although eWOM is typically generated by individuals who are strangers and for whom there is no indication of distinguishing expertise about the product category at hand, there is evidence to suggests that such eWOM is often utilized as salient product related information, particularly if experience with the product is a valuable evaluative cue. The ease of eWOM generation and dissemination has raised questions about the extent and boundary conditions associated with the use of such information. Further, given that overall information search and dissemination costs are lower online than offline (Bakos, 1991), it is more likely that consumers in online buying environments are simultaneously exposed to an abundance of both eWOM and extensive objective product information. The characteristics of traditional and online WOM contexts warrant further investigation into the extent and manner of eWOM usage.

Social Network Sites (SNS): Digital Media Vehicles for eWOM

To better understand the digital environment, marketers have distinguished unique characteristics among different types of media: whether they are paid, owned, or earned (Corcoran, 2009; Stephen, 2013). Marketing communication effort through paid media refers to company-financed and generated media activity. The extant literature has

identified and measured marketing communication effects on targeting and segmentation through paid media (e.g., Yang and Ghose, 2010; Rutz and Bucklin, 2011). Similarly, marketing communication efforts via owned media refer to company-generated, controlled, and utilized media activity for reaching prospective audiences. In the digital environment, owned media eWOM include Facebook updates, Twitter Tweets, and other online activities.

In this dissertation, I focus on electronic conversations via earned media; that is, eWOM activities that are not directly company-generated. My interest is in independent entities such as customers or journalists who provide movie reviews or new product reviews (i.e. new feature films or DVSs) to generate eWOM through earned media, including viral and buzz WOM (e.g., Chen, Fay, & Wang, 2011).

Specifically, conversations in earned social media as a digital form of WOM have attracted marketers as an important viral marketing channel. Whereas the brand-related messages communicated via paid and owned media are generally positive, the brand-related conversation taking place in earned media can be either positive or negative because consumers, not marketers, create, share, and control the conversations. In this light, the positivity and negativity (valence) of the conversations generated by potential, actual, or former customers about a product or a brand become critical in understanding marketing consequences. My analysis includes the effect of eWOM valence. Table 1 summarizes the characteristics and examples of the three SNS media.

Table 1. Types of Media: Paid, Owned, and Earned Media

Types	Definitions	Examples
Paid	Company/brand-generated media activity	• Facebook-promoted posts • Facebook ads • LinkedIn sponsored updates • Promoted Tweets • Google AdWords
Owned	Company/brand-generated media activity in channels it controls	• Brand blog • Branded social channels: Facebook, Twitter, YouTube, Instagram, SlideShare, etc. • Branded apps
Earned	Non-company/brand-generated media activity by other entities such as customers or journalists	• User-generated content: o Facebook likes, comments, shares o Retweets, mentions, hashtag use o Online ratings and reviews

eWOM Effects on Marketing Outcomes

WOM is a highly credible form of marketing information (Hung and Li, 2007). Godes and Mayzlin (2004) claim that WOM may serve as a leading indicator of a product's success. Similarly, eWOM effects on marketing outcomes via earned social media—an electronic form of publicity—have received prominent attention as an extended research topic in the WOM literature under the rubric of eWOM.

Advertising professionals have long recognized that opinion spreaders play an important role in shaping and expediting information dissemination (Goldenberg, Libai, and Muller, 2001), product judgments (Herr, Kardes, & Kim, 1991), consumer satisfaction repurchase intentions (Davidow, 2003), and customer lifetime value (Hogan, Lemon, & Libai, 2004). eWOM is generally considered highly influential (Bickart &

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Schindler 2001; Cheong & Morrison, 2008; Hung & Li, 2007) because it has credibility as an active form of processing in which consumers evaluate the reliability of the source and its independence from marketers' interests.

This line of reasoning suggests that customers will bypass marketer-influenced signals like branding and, instead, rely directly on unfiltered eWOM from other customers. As a leading indicator, eWOM measurement would be important for market research. Therefore, eWOM on earned social media is a valuable vehicle for both information seekers and providers. Consequently, eWOM on earned social media will embody customers' perspectives on brands, and customers will use those perspectives in seeking and selecting products.

Hence, when marketers build digital media strategies, they must understand eWOM effects, both in terms of source credibility and message configuration, particularly positive and negative sentiments expressed in conversations posted on various SNS venues. In this study, I consider two dimensions of eWOM activities: eWOM volume or the amount of eWOM disseminated, and eWOM valence or the sentiment carried in eWOM information.

Although measuring eWOM volume is relatively straightforward by observing the number of postings or tweets, measuring eWOM valence is somewhat more challenging. My research adopts a commonly used approach to classify eWOM valence, categorizing its user ratings and contents as positive, neutral, or negative.

While WOM volume has been shown to be positively associated with product

sales, WOM valence and sales have an often-mixed relationship (Liu, 2006). Much extant research on media publicity effects centers on how negative publicity influences business outcomes such as sales and customer demand (e.g., Eliashberg & Shugan, 1997; Ahluwalia et al., 2000; Berger et al., 2010). Positive and negative eWOM are similar behaviors, but they have opposite effects on brand purchase (East & Lomax, 2008). Satisfaction generates positive viral; dissatisfaction yields negative viral, which in turn might affect repurchase intentions (Gruen et al., 2006).

Customers' positive eWOM is relevant to their brand purchases observed through sales performance (e.g., East & Lomax, 2008; Mangold et al., 1999). Similarly, customers' negative eWOM is relevant to their retention performance such as service disconnections. Following this framework, I examine the effects of eWOM via earned social media on business outcomes. Based on aggregated data from the U.S. movie industry, I focus my analysis on two business outcome metrics: box office sales and DVD sales.

eWOM Effects in the Movie Industry

eWOM can play a particularly important role for experiential products or services because their consumption is intangible, so consumers cannot try them out before purchasing them (Berry, 1980; Zeithaml, 1981; Zeithaml et al., 1985; Mahajan et al., 1984). In other words, particularly for consumers considering products or services that are subjective in quality, eWOM is seen as a highly credible information source because

the message sender, usually independent of the organization providing the product, seemingly will not gain from advocating the product or service (Silverman, 2001). Thus, eWOM may play a particularly significant role for new products or services of high credence qualities, such as entertainment products, vacation packages, and professional and financial services (Mahajan et al., 1984; Liu, 2006). eWOM appears to be important for entertainment goods (Forrester Research, 2000; Godes & Mayzlin, 2004). Particularly in the movie industry, eWOM may play significant roles because awareness must be built and consumers need information when deciding whether to consume a movie they do not know well. In this study, I therefore have three major objectives:

(1)   to identify the various receiver outcomes that follow eWOM conversations on earned social media about experiential products and intangible services,

(2)   to identify the factors likely to enhance chances receivers will act on eWOM,

(3)   to develop a conceptual model that relates to consumers' experiences when receiving eWOM.

The movie industry provides a good context for testing eWOM effects via earned social media for two primary reasons (Liu, 2006). First, movies are a product of popular culture and generate wide public attention through trendy television shows (e.g., The Tonight Show Starring Jimmy Fallon) and newspaper reports on the Internet (e.g., Yahoo

Movie, Rotten Tomatoes). Such readily accessible mass-mediation processes influence and form consumer opinions (Chaffee, 1982): mass-mediated publicities may prompt interpersonal communication about movies and subsequently impact consumer choices. Second, movies are experiential products; audiences cannot judge a movie's quality before seeing it. The more difficult it is to evaluate a product, the more information consumers will pursue through WOM (Harrison-Walker, 2004; Rogers, 1983).

Several studies on eWOM effects, particularly in the movie industry context, have found a eWOM measurement to be a key predictor of box office revenue. Liu (2006), examining the relationships between eWOM from movie websites and box office revenue on a weekly basis, found that eWOM volume is the most significant predictor of weekly revenue, but eWOM valence is not significantly correlated with box office revenue. Contrastingly, Dellarocas et al. (2007) examined the effect of online reviews to forecast movie revenue and found that average user valence ratings are a better predictor of future movie revenue than other variables. In the analysis reported in the following chapter, I aim to reconcile these conflicting findings.

To help put the intended contribution of this dissertation in context, I briefly review previous empirical research on the effectiveness of WOM/eWOM. Researchers have used a variety of means to capture, infer, or measure WOM. Table 2 outlines findings for the effect of WOM on marketing outcomes, particularly focus on the movie industry.

Table 2. Previous Empirical Research Related to WOM in the Movie Industry

Author(s)	Data Sources of WOM	Variables Considered								Key Findings
		Volume	Valence	Rating	Produc-tion-budget	Screen	MKTG Cost	Genre	Talent	
Mahajan, Muller & Kerin (1984)	Survey	O	O	O			O			• Negative WOM was a significant predictor of attendance
Eliashberg & Shugan (1997)	*Variety* magazine	O	O			O				• Critics were predictors. Positive reviews encourage higher box office revenues
Neelamegham & Chintagunta (1999)	*Variety* magazine			O		O		O	O	• The number of screens is the most important influence on viewership
Basuroy, Chatterjee, & Ravid (2003)	*Baseline Services* in California & *Variety* magazine	O	O	O	O					• Both positive & negative reviews were significant predictor of box office revenues • Negative reviews hurt more than positive reviews
Dellarocas, Awad & Zhang (2004)	Online ratings through a survey			O						• The high correlation between online ratings gathered through IMDV & offline ratings through the survey

Table 2 (continued)

Liu (2006)	*movies.yahoo.com*	O	O	O	O	O		• eWOM offers significant explanatory power for box office revenue, especially in the early weeks after a movie opens
Dellarocas, Zhang & Awad (2007)	Movies			O	O		O	• Online movie ratings can be used a proxy for WOM
Duan, Gu & Whinston (2008)	Movies	O		O	O		O	• The rating of online user reviews has no significant impact on box office revenues
This Study	SNS: Twitter, forums, blogs, & news	O	O	O	O	O	O	

CHAPTER III

CONCEPTUALIZATION AND HYPOTHESES

In this chapter, I review the key concepts on WOM effectiveness and develop hypotheses to guide the empirical analyses presented in Chapter 4. Figure 1 presents a conceptual framework that integrates eWOM via earned social media into other previously identified factors known to influence ticket and DVD sales (Elberse & Eliashberg, 2003; Lehmann & Weinberg, 2000; Liu, 2006).

The first part of the framework specifies that a range of marketing and publicity activities—such as movie trailers, critical reviews, and production budgets—shape the eWOM prerelease phase which in turn influences box office revenue. Once the movie is released, eWOM's postrelease phase starts to build, which in turn influences video sales. Figure 1 illustrates this conceptualization by specifying the hypothesized relationships among the key variables.

To test this conceptualization, I propose two sets of hypotheses at the end of this chapter. The first set considers eWOM influence on movie box office sales; the second set considers eWOM influence on home video sales.

Hypotheses Regarding eWOM Volume and Valence

Prior research highlights that eWOM has two primary roles in influencing business outcomes (e.g., Liu, 2006). First, eWOM spread increases consumer awareness.

Second, eWOM valence—whether positive or negative—influences consumer evaluation and ultimate purchase decisions. eWOM volume and valence are among the most-studied attributes (e.g., Mahajan et al., 1984; Mizerski, 1982; Neelamegham & Chintagunta, 1999). Volume measures the total amount of WOM interactions. Valence captures the nature of WOM message (i.e., whether they are positive or negative).

One reason for the growing attention to eWOM volume stems from its close connection with consumer awareness. Marketing researchers have long recognized that consumer awareness is the first step in forming positive attitudes and ultimately purchase decisions, so awareness is often seen as an important marketing objective (Bettman, 1979; Lilien et al, 1992). For example, when products are discussed actively, and when the discussion is dispersed across communities, consumers are more likely to be informed about the products and more likely to buy them (Godes & Mayzlin, 2004). A reaffirmation and extension of those findings showed that improvement in volume and valence in a book review led to increased sales (Chevalier & Mayzlin, 2006). More relevant to the current research, eWOM volume and valence are closely associated with product sales in the movie industry (e.g., Liu, 2006; Dellarocas et al., 2007).

Figure 1. Conceptual Framework
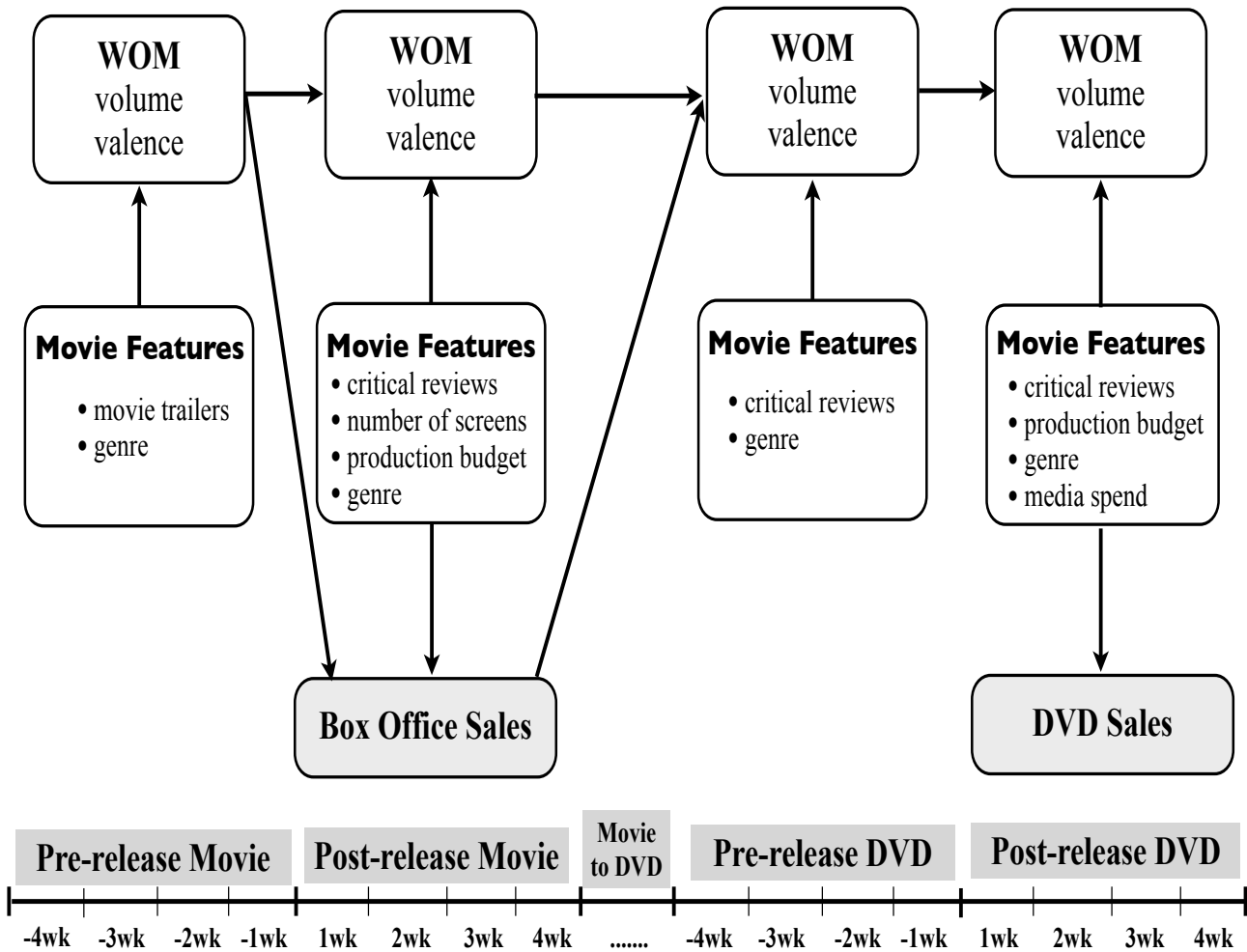
Although the literature has considered the awareness effect of WOM in a general sense, in this research I focus on the characteristics of eWOM spread in the form of earned SNS conversations. Figure 1 shows the conceptual frame work to develop this study specifically how eWOM volume and valence can influence box office revenue and home video sales, most occurring immediately before, during, and immediately after two

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critical events—a theatrical movie release and street DVD release. Because social media network sites are widely varying and available, eWOM volume may play the most crucial role in contributing to sales via consumer awareness. The greater the eWOM volume, the more likely consumers will have heard about the movie. Greater awareness generates greater sales performance. Building on this rationale, I derived the following hypotheses:

H1a: eWOM volume will peak around the theatrical release date, steeply increase immediately before the date, and steeply decrease immediately after the date.

H1b: eWOM volume will peak around the street release date for DVD, steeply increase immediately before the date, and steeply decrease immediately after the date.

H2a: eWOM volume will be positively related to box office sales.

H2b: eWOM volume will be positively related to DVD sales.

eWOM valence may influence consumer attitudes though positive or negative content. Although eWOM influences product evaluation—positive eWOM enhances and negative eWOM reduces attitude—eWOM valence has an ambiguous role. Regarding movie selection, the link between attitude and behavior is further weakened because movie-going often occurs impulsively (Liu, 2006). As such, I derived the following hypotheses to test the relationship between eWOM valence and sales performance:

H3a: eWOM valence will be positively related to box office sales.

H3b: eWOM valence will be positively related to DVD sales.

Hypotheses Regarding Market Dynamics

Godes and Mayzlin (2004) highlighted that consumers' purchase experience in period t will affect her decision to talk about a movie as well as her consumption decision in period $t+1$. Aligned with movie industry managerial practices (Figure 1), my model distinguishes between 1) prerelease and postrelease weeks for theatrical releases and 2) prerelease and postrelease weeks for DVD releases, also called street releases. When initial box office sales data become available after a movie is released, eWOM dynamics are likely to change; the factors affecting the prerelease phase are likely to have diminished roles accordingly.

Figure 1 includes six potential eWOM antecedents that the literature has previously identified: number of screens (e.g. Neelamegham & Chintagunta, 1999), production budget (e.g. Basuroy et al., 2003), critical reviews (e.g. Liu, 2006), movie trailer views, and marketing budget (e.g. Dellarocas et al., 2007). To test if eWOM has an influence above and beyond the previously identified antecedents, in the current model I incorporate eWOM into a model that includes the number of screens, production budget, critical reviews, media expenditure, and movie trailer views as explanatory variables (e.g., Basuroy et al., 2003; Liu, 2006). As such, I derived the following hypotheses:

H4a: The number of screens will be positively related to box office sales.

H4b: The number of screens will be positively related to DVD sales.

H5a: The production budget will be positively related to box office sales.

H5b: The production budget will be positively related to DVD sales.

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H6a: The critical reviews will be positively related to box office sales.

H6b: The critical reviews will be positively related to DVD sales.

H7: The media expenditure for home video release will be positively related to DVD sales.

H8: Movie trailer views will be positively related to box office sales.

H9: Box office sales will be positively related to DVD sales.

Chapter 3 is a description of the research methodology used. A discussion for each variable in this dissertation as well as quantitative model from their analysis is provided.

CHAPTER IV

METHODOLOGY

Methodologies for Measuring WOM

Traditional attempts to measure WOM have been based on inference, surveys, and controlled experiments. For example, Bass (1969) and those who have extended his model typically use aggregated sales data to infer the model's coefficient of internal influence, which, is used as a proxy measure for WOM activities. As another example, Reingen et al. (1984) conduct a survey of the members of a sorority in which they compare brand preference congruity between women that lived in the same house and those that did not. They find that those that lived together had more congruent brand preferences than those that did not. The study then infers that those that lived together had more opportunities for interactions and thus, that WOM communication was more prevalent.

Surveys remain the most popular method to study WOM, largely because individuals can be asked directly about their communication habits; yet their error then lies in the self-reporting of behavior. Several well-known studies, such as Bowman and Narayandas (2001), Brown and Reingen (1987), Reingen and Kernan (1986), and Richins (1983), base their analyses on proprietary surveys designed to test a specific hypothesis related to WOM.

Laboratory experiments are another popular method for inferring properties of

WOM (e.g. Borgida & Nisbett, 1977; Herr et al., 1991). The issue with experiments is the extent to which properties identified in a controlled setting generalize to larger, real-world settings.

The advent of the digital technique provides another alternative to measure WOM: from a range of data sets available online, researches now can directly track traces of WOM conversations via online discussion groups, online review forums, and other forms of user-generated online content. Although sound methodological principles for analyzing such data are still in the process of being established, researchers now have a better access to, and gather large amounts of data from such online data sources.

Previous research has investigated unstructured online discussion forums and online product reviews and has used volume and valence when analyzing consumer postings (See Table 2). The theory behind the WOM volume is that the more consumers discuss a product, the higher the chance that other consumers will become aware of it. The theory behind the WOM valence, or consumer attitude, is that positive opinions will encourage other consumers to adopt a product whereas negative opinions will discourage them. Table 3 outlines findings for the empirical research regarding WOM in the movie industry.

Table 3. Previous Empirical Methodology for the Movie Industry

Author(s)	Method	Data
Litman (1983)	Multiple regression	Movies, 1972-1978
Mahajan, Muller & Kerin (1984)	Diffusion models	Movies, 1983
Wallace, Seigerman & Holbrook (1993)	Multiple regression	Movie rental
Sawhney & Eliashberg (1996)	Forecasting model Generalized gamma	Movies, 1990-1991
Eliashberg & Shugan (1997)	Multiple regression	Movies, 1991-1992
Holbrook (1999)	Multiple regression	Movies, pre-1986
Neelamegham & Chintagunta (1999)	Bayesian model	
Basuroy, Chatterijee & Ravid (2003)	Multiple regression	Movies, 1991-1993
Elberse & Eliashberg (2003)	Demand/supply model	Movies, 1999
Dellarocas, Awad & Zhang (2004)	Modified Bass model	Movies, 1994-1996
Reinstein & Snyder (2005)	Differences-in-differences	Movies, early 1990s
Zhang & Dellarocas (2006)	Multiple regression	Movies, 2003-2004
Liu (2006)	Multiple regression	Movies, 2002
Duan, Gu & Whinston (2008)	Simultaneous system	Movies, 2003-2004
Kamakura&Basuroy (2007)	Diffusion model	Movies, 1997-2001

Source modified from: Zhu & Zhang, 2010, p. 134.

Description of the Data and Variables

Movies for the analyses were chosen based on domestic box office sales grossing more than $30M from 2010 to 2011. The movies were then matched with eWOM volumes, valence, box office information, and home video sales data. The complete dataset includes 170 movies with theater release dates between July 2010 and August

2012. All movies in the sample had nationwide, multiple screen releases from their opening day.

Dellarocas et al. (2004) provide evidence that online ratings can be considered as a useful proxy for WOM about products. That line of previous studies supports an assumption in this dissertation that WOM through SNS can be considered as a useful proxy for eWOM about movies. The eWOM data were collected from a publicly available source: Radian 6 (www.radian6.com), a reliable source of aggregated WOM information that tracks conversations across several SNS such as blogs, forms, news, and Twitter. Such eWOM conversations provide a real-time picture of how products, consumers, and brands are covered on earned SNS sites.

The social network sites included in the current data set are noteworthy in that they are open to the general public; individuals can freely join or leave the sites and use them as a virtual venue for discussion. Compared with previous studies that derived eWOM data from single websites such as Yahoo Movies (e.g., Liu, 2006; Duan, Gu, and Whinston, 2008; Chintagunta, Gopinath, and Venkataraman, 2010), I use eWOM data gathered from a wide range of social network sites for a comprehensive view of how movie watchers think, feel, and behave in real time in a real world context. In addition, because the data came from multiple SNS, potential biases regarding the demographic composition of visitors to specific websites are reduced.

I archived and indexed numerically the eWOM data by the dates they were posted. The prerelease period is from the date the first eWOM message about a movie is posted

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to the date of the official movie release. In essence, the data from the prerelease period captures the accumulation of eWOM up to the movie opening date. Next, to temporarily match the volume and valence data with the box office data and DVD sales data, all data points were constructed for the eight-week period, from Week 1 to Week 8—the release date falling between Week 4 (prerelease) and Week 5 (postrelease).

The volume of eWOM (*volume*) was totaled based on the weekly frequency of posts from blogs, forums, news, and Twitter for each movie. Following Liu (2006), the valence of eWOM was computed using Radian 6's automated sentiment analysis tool, which classifies sentiments of SNS postings into three categories: positive, neutral, and negative. As a result, I obtained the percentages of positive eWOM (*pos_valence*) and the percentage of negative eWOM (*neg_valence*) for each movie. Because *pos_valence* and *neg_valence* (-.899, $p < .0001$) were highly correlated, rather than combining them into a single estimation, I entered positive and negative valences separately.

Average critic review ratings for each movie (*critic*) came from Rotten Tomatoes (www.rottentomatoes.com). Domestic home video sales (*DVD*) and advertising dollars (*advertising*) came from the Nielsen Company. Additional information about the movies, including box office gross revenue (*Boxoffice*), production budget (*production*), and number of screens for each movie (*screen*), was obtained from a popular movie website, Mojo (www.moviemojo.com).

The complete dataset comprised the list of movies (N=170) with *volume* and v*alence* of eWOM from several social network sites such as blogs, forums, news, and

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Twitter, review critics, production budgets, numbers of screens, and advertising expenditures. The empirical models were constructed to predict box office revenues of the 170 movies for eight weeks—for the first four weeks preceding the release date (i.e., pre-theatrical release) and second four weeks following the release date (i.e., post-theatrical release). I constructed a similar data set for home video sales; that is, eight-week data were split by the DVD release date into the pre-street release phase and post-street release phase for each movie title (N=170). Table 4 summarizes the description of the key variables used in the analysis.

Table 4. List of Variables, Descriptions, and Sources

Variable	Descriptions	Data Source
$Boxoffice_{it}$	Box office revenue for movie i	www.boxofficemojo.com
DVD_{it}	Home video revenue for movie i	Nielsen
$volume_{it}$	Total volume of conversation for movie i in week t	www.radian6.com
$pos\_valence_{it}$	Percentage of positive eWOM for movie i in week t	www.radian6.com
$neg\_valence_{it}$	Percentage of negative eWOM for movie i in week t	www.radian6.com
$YouTube_i$	Trailer views on YouTube for movie i	YouTube
$Critic_i$	Critic rating of movie i	www.rottentomatoes.com
$screen_i$	Number of screens for movie i	www.boxofficemojo.com
$production_i$	Production budget for movie i	www.boxofficemojo.com
$advertising_i$	Media spending to promote DVD for movie i	Nielsen AdViews

Figure 2. Average Weekly Volume of eWOM for Movie Release
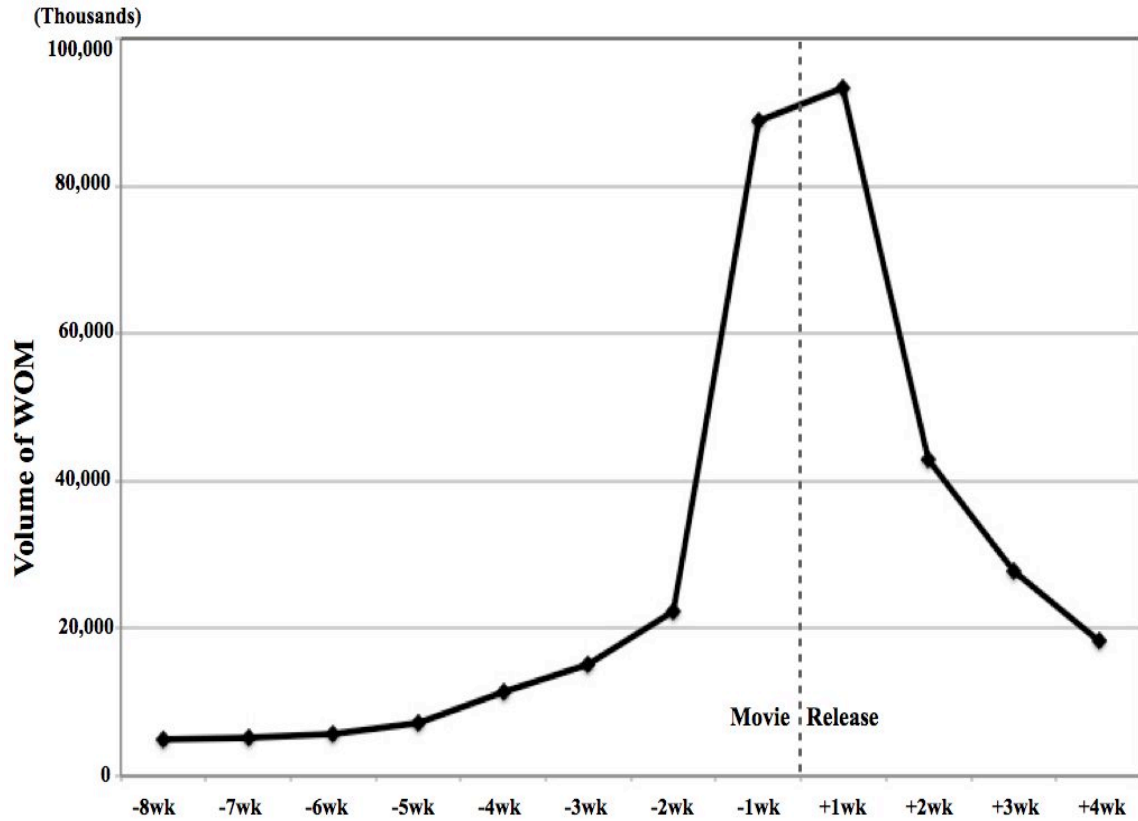
For most movies in the pool, *volume* of eWOM soared during the critical two-week period—the preceding and following week of the opening date—and dropped significantly afterward. Figure 2 reveals that the weekly average volume of eWOM is most active during the prior week and the opening week, and then gradually decreases.

Such a pattern is very similar to home video sales for most movies, indicating that the eWOM process takes place instantly and immediately before the home videos are

released (see Figure 3). eWOM volume peaks around the theatrical/DVD release date, steeply increase immediately before the date, and steeply decrease immediately after the date. Therefore, supporting H1a and H1b (see Figure 2 and Figure 3).

Figure 3. Average Weekly Volume of eWOM for DVD Release
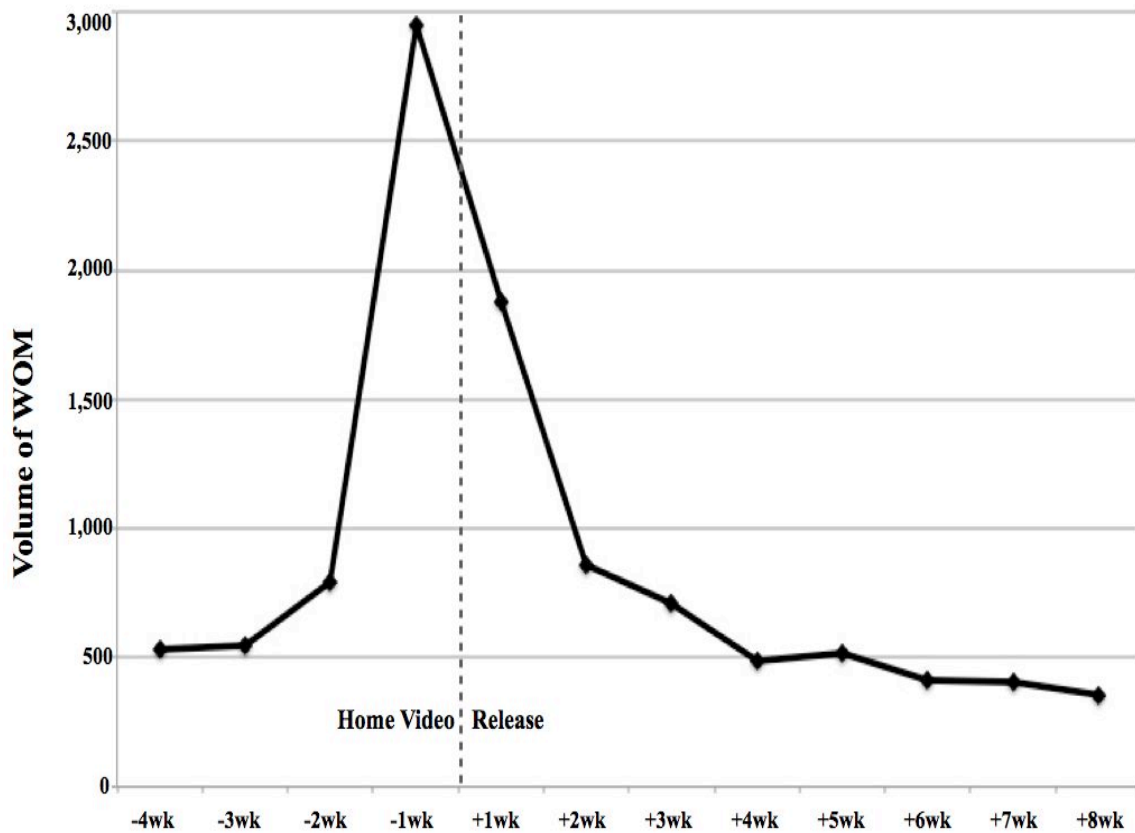
Therefore, eWOM becomes very active in the prerelease period for both movies in theaters and home videos. This finding directly supports the general hypothesis that WOM is a key indicator for sales performance in the movie industry. It also implies that

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anticipation of the upcoming release, rather than the actual movie-watching experience, is the main thrust of eWOM conversations on earned social network sites. This finding is interesting because consumers assume that eWOM is credible because it comes from movie watchers reporting their first-hand experiences. The data, however, are inconsistent with this belief. Instead SNS buzz exerts its utmost influence on movie watchers' decision making before the movie is released—before direct experience is available on SNS. Considering that eWOM's influence is largely anticipation-driven rather than experience-driven, we can reasonably speculate that marketers are strongly behind the seeding and fueling of eWOM.

Empirical Model Specification

My development of the empirical model was guided by the question: What are the main drivers of box office revenue and home video sales? I constructed two empirical models: the box office equation used box office revenue as the dependent variable; the DVD equation used home video sales as the dependent variable. I controlled for several idiosyncratic factors that the literature has identified as influencing revenue and WOM: production budget, advertising, screens, and others (Basuroy et al., 2003; Elberse & Eliashberg, 2003; Liu, 2006; Duan et al., 2008). The log-linear formulation presented is consistent with the conceptual framework described in Figure 1, where box office sales and DVD sales can be viewed as a series of conditional probabilities. A log transformation converts the relationship into a linear form for empirical estimation.

Moreover, log transformation smooths the distribution of variables in the linear regression, and the estimated coefficient of the log-linear form directly reflects the elasticity of independent and dependent variables. To examine eWOM effects, I estimated the following models:

Box Office Revenue Equation:

$$\log(Boxoffice)_{it} = \alpha_0 \log(volume)_{it} + \sum_{j=1}^{J} \alpha_1 \log(volume)_{i,t\text{-}j}$$

$$+ \alpha_2\,(pos\_valence)_{it} + \sum_{j=1}^{J} \alpha_3 (pos\_valence)_{i,t\text{-}j}$$

$$+ \alpha_4 \log(YouTube)_i + \alpha_5\,(critic)_i + \alpha_6\,(screen)_i + \alpha_7 \log(production)_i + \varepsilon_{it}$$

Home Video Sales Equation:

$$\log(DVD)_{it} = b_0 \log(volume)_{it} + \sum_{j=1}^{J} b_1 \log(volume)_{i,t\text{-}j}$$

$$+ b_2\,(pos\_valence)_{it} + \sum_{j=1}^{J} b_3 (pos\_valence)_{i,t\text{-}j}$$

$$+ b_4 \log(YouTube)_i + b_5\,(critic)_i + b_6\,(screen)_i$$

$$+ b_7 \log(production)_i + b_8 \log(advertising)_1 + \varepsilon_{it}$$

for each week separately ($t = 1, 2, …,8$), where i indexes the movies ($i = 1, 2, …, 170$). The covariates include the number of views for movie trailers (*YouTube*), critical reviews (*critic*), number of screens (*screen*), production budget (*production*), and media spend for home video titles (*advertising*). These two specifications are similar to other work (Eliashberg and Shugan, 1997; Elberse and Eliashberg, 2003; Liu, 2006), but my model

contains the terms of eWOM measured via SNS conversations with DVD sales as an additional dependent variable. The following chapter presents the research results and in addition, a full discussion of the findings is provided.

CHAPTER V

FINDINGS AND DISCUSSIONS

The ordinary least square (OLS) procedure (e.g., Eliashberg and Shugan, 1997; Basuroy et al., 2003; Liu, 2006) was used to simultaneously estimate the effects of eWOM conversations and other movie features on sales performance.

For the box office equation, eWOM volume ($volume_{it}$) was a significant predictor for box office sales, supporting H2a. The coefficient was 0.236, significant at the 0.05 level. The coefficients of the lagged terms, eWOM volume in four weeks ($volume_{i,t-4}$) and a week ($volume_{i,t-1}$) before theatrical release, were 0.136 and 0.165 respectively, also positive and statistically significant. Also, eWOM volume in the first week following the movie release ($volume_{i,t+1}$) was statistically significant with a coefficient of 0.02 at the 0.05 level.

Given the log-linear formation, the coefficients suggested that every 10% increase in eWOM volume in the one-week-prerelease would increase box office revenue by 1.65%. Every 10% increase in eWOM volume in the opening week would increase box office revenue by 2.36%, and that increase in the one-week-postrelease would influence box office revenue by 0.2% (see Figure 4).

**Figure 4. Volume of WOM for Movie Release:
One-Week-Prerelease vs. One-Week-Postrelease**
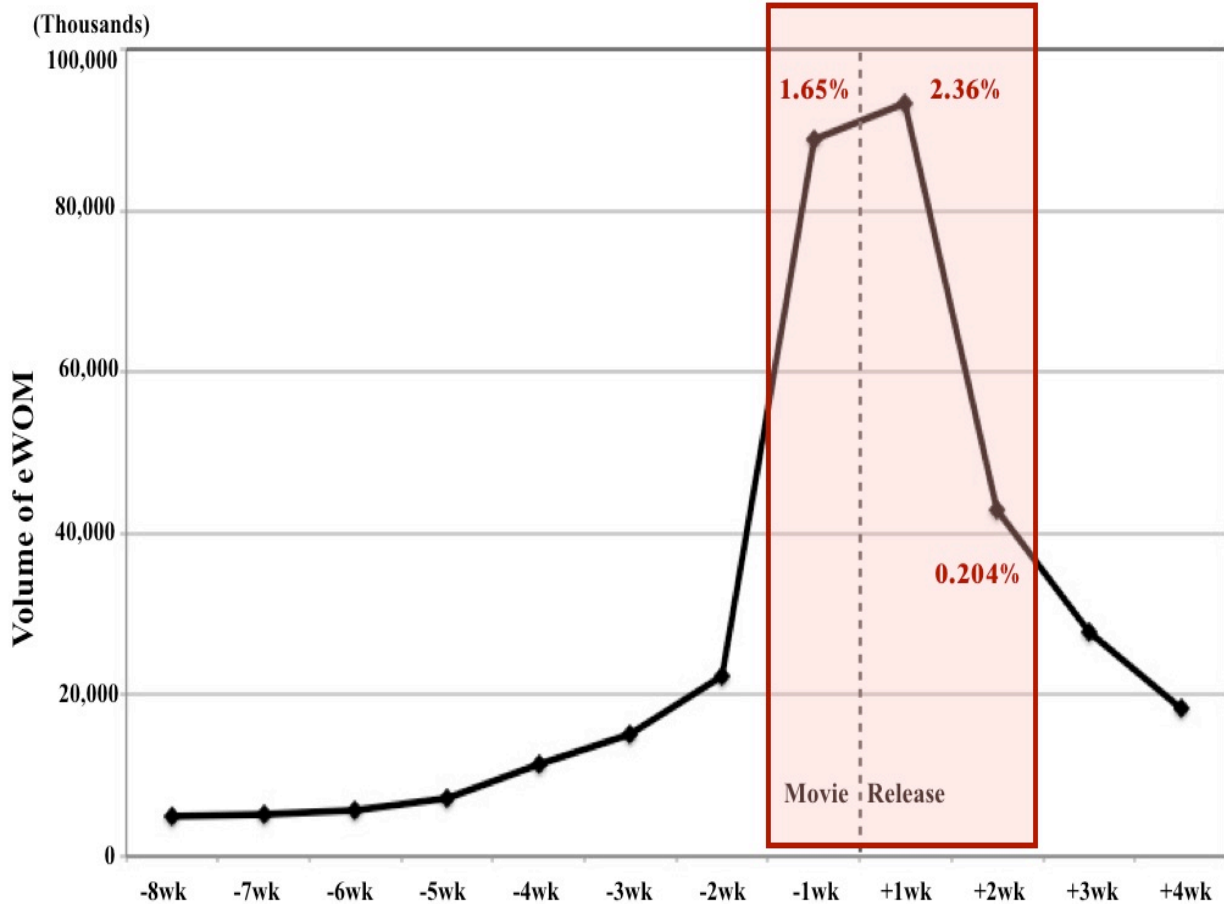
For the DVD revenue equation, the results were similar: eWOM volume ($volume_{it}$) was positively related to DVD sales, supporting H2b. The coefficient was 0.008, significant at the 0.05 level. The coefficients of the lagged terms, eWOM volume in one-week-pre-street-release ($volume_{i,t-1}$) and one-week-post-street-release ($volume_{i,t+1}$) were 0.06 and 0.004 respectively, also positive and statistically significant (see Figure 5).

Figure 5. Volume of WOM for DVD Release:
One-Week-Prerelease vs. One-Week-Postrelease
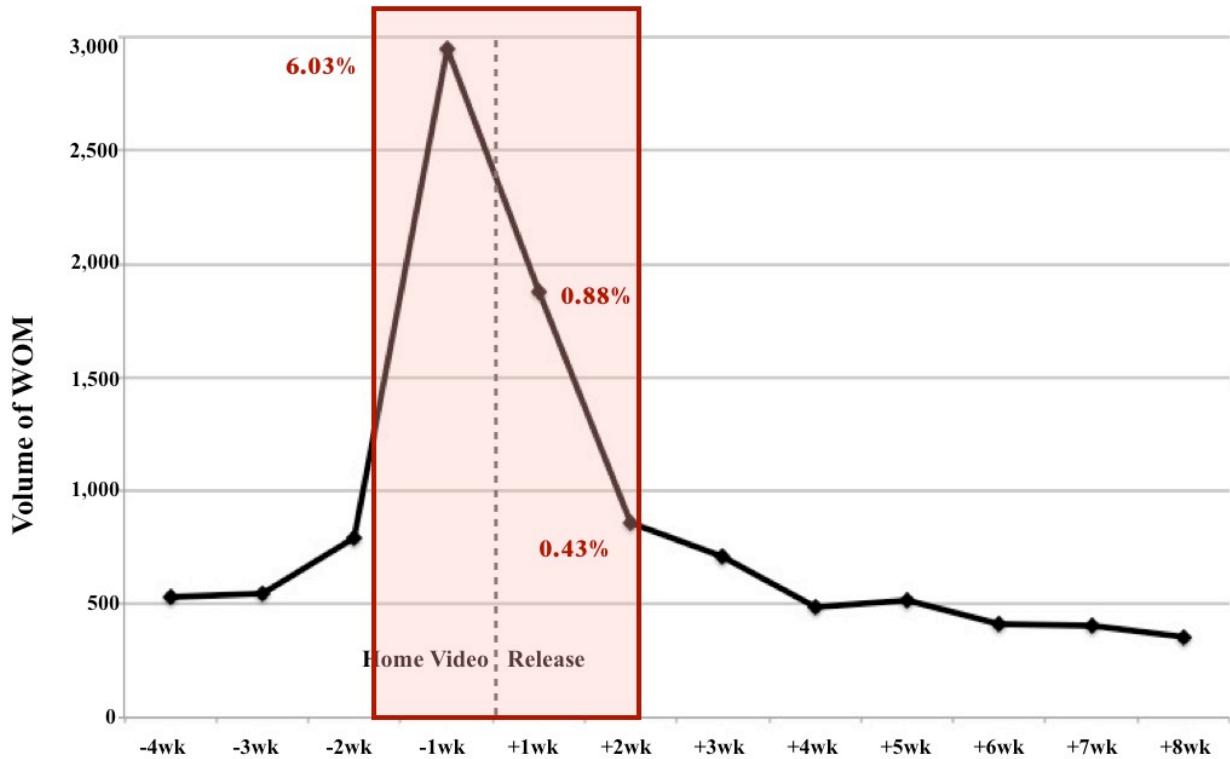
The magnitude of influence of eWOM volume significantly increased as the theatrical release grew closer, and the street release then slightly diminished right after the movie and DVD were released.

However, although eWOM valence with two weeks lagged terms ($pos\_valence_{i,t-4}$, $pos\_valence_{i,t-3}$) were statistically significant, time-series changes in eWOM valence did not directly influence box office sales. Thus, H3 was partially supported: eWOM valence is positively related to box office sales. Somewhat contrastingly, eWOM valence in the

DVD revenue equation did not show statistical significance. Thus H3b was not supported.

These findings may suggest that customers do not blindly follow SNS posts, and they

may not be easily manipulated by the buzz that aims to change eWOM valence (see

Table 5).

Table 5. Full OLS Estimation Results for Sales Performance

Box Office as Dependent Variable		DVD Sales as Dependent Variable	
Predictors	**Coefficient**	**Predictors**	**Coefficient**
$\log (volume)_{i,t-4}$	1.36e-01*	$\log (volume)_{i,t-4}$	-1.69e-02
$\log (volume)_{i,t-3}$	-1.92e-01*	$\log (volume)_{i,t-3}$	-6.12e-02
$\log (volume)_{i,t-2}$	-6.52e-02	$\log (volume)_{i,t-2}$	-3.34e-02
$\log (volume)_{i,t-1}$	1.65e-01*	$\log (volume)_{i,t-1}$	6.03e-01*
$\log (volume)_{it}$	2.36e-01*	$\log (volume)_{it}$	8.84e-02*
$\log (volume)_{i,t+1}$	2.04e-02*	$\log (volume)_{i,t+1}$	4.36e-02*
$\log (volume)_{i,t+2}$	1.68e-03	$\log (volume)_{i,t+2}$	-0.87e-02
$\log (volume)_{i,t+3}$	-1.68e-01	$\log (volume)_{i,t+3}$	-1.97e-02
$pos\_valence_{i,t-4}$	4.16e-03*	$pos\_valence_{i,t-4}$	-0.12e-02
$pos\_valence_{i,t-3}$	-3.92e-03*	$pos\_valence_{i,t-3}$	0.12e-02
$pos\_valence_{i,t-2}$	1.47e-03	$pos\_valence_{i,t-2}$	0.17e-02
$pos\_valence_{i,t-1}$	-5.08e-04	$pos\_valence_{i,t-1}$	-0.25e-03
$pos\_valence_{it}$	1.64e-03	$pos\_valence_{it}$	-0.13e-02
$pos\_valence_{i,t+1}$	-6.30e-04	$pos\_valence_{i,t+1}$	0.88e-03
$pos\_valence_{i,t+2}$	-1.56e-03	$pos\_valence_{i,t+2}$	0.12e-02
$pos\_valence_{i,t+3}$	-2.96e-04	$pos\_valence_{i,t+3}$	-0.13e-02
$critic_i$	1.77e-01*	$critic_i$	1.01e-02
$\log (screen)_i$	1.22e-04*	$\log (Boxoffice)_i$	8.97e-01*
$\log (production)_i$	1.32e-01*	$\log (production)_i$	1.51e-01*
$\log (YouTube)_i$	5.13e-02	$\log (mediaspend)_i$	1.13e-01*
	$R^2 = 0.6057$		$R^2 = 0.8349$

On the other hand, users' critic ratings were positively associated with box office sales and DVD sales, therefore, supporting H6a and H6b—the critical reviews are positively related to box office sales/DVD sales. Yet, the findings do not necessarily mean that eWOM valence via earned social media has no value to consumers. Most eWOM valence was mixed with positive and negative sentiments, which might have created confusion among moviegoers (see Table 5).

Other features of the movie industry were positively related to box office revenue: the more screens, the higher the box office sales, supporting H4a and H4b; the higher the production budget, the higher the box office sales, supporting H5a. Production budget also positively influenced DVD sales, supporting H5b, as well as media spending on DVD titles, supporting H7. Movie trailer views on YouTube were positively related to box office sales, supporting H8. Box office sales were an important predictor for DVD sales, supporting H9. A 10% increase in box office revenue translated to an increase of 8.9% in DVD sales. Variables in the equation—eWOM volume, eWOM valence, and other movie feature predictors—explained 60% of the variance of the box office and DVD revenue and explained 83% of the variance of the DVD sales (see Table 5 and Table 6).

Table 6. Summary of Findings

Hypothesis		Result
H1: Timing of eWOM Volume		
H1a	eWOM volume will peak around the theatrical release date, steeply increase immediately before the date, and steeply decrease immediately after the date.	*Accepted*
H1b	eWOM volume will peak around the street release data for DVD, steeply increase immediately before the date, and steeply decrease immediately after the date	*Accepted*
H2: Higher eWOM Volume, Higher Business Outcomes		
H2a	eWOM volume will be positively related to box office sales	*Accepted*
H2b	eWOM volume will be positively related to DVD sales	*Accepted*
H3: Positive eWOM Valence, Higher Business Outcomes		
H3a	eWOM valence will be positively related to box office sales	*Partially Accepted*
H3b	eWOM valence will be positively related to DVD sales	*Rejected*
H4: Higher the Number of Screens, Higher Business Outcomes		
H4a	The number of screens will be positively related to box office sales	*Accepted*
H4b	The number of screens will be positively related to DVD sales	*Accepted*
H5: Higher the Production Budget, Higher Business Outcomes		
H5a	The production budget will be positively related to box office sales	*Accepted*
H5b	The production budget will be positively related to DVD sales	*Accepted*
H6: Positive Critical Reviews, Higher Business Outcomes		
H6a	The critical reviews will be positively related to box office sales	*Accepted*
H6b	The critical reviews will be positively related to DVD sales	*Accepted*
H7: Higher Media Expenditure, Higher DVD Sales		*Accepted*
H8: Higher Movie Trailer Reviews, Box Office Sales		*Accepted*
H9: Higher Box Office Sales, Higher DVD Sales		*Accepted*

CHAPTER VI

DISCUSSION AND IMPLICATIONS

In this study, a dynamic simultaneous equation system was developed in order to capture eWOM's relationship with product sales through earned social media. Using data from the movie industry, I establish two equation models—box office revenue model and DVD revenue model. This study shows that eWOM volume and valence are positively associated with product sales. The findings strongly support the value of eWOM via SNS and validate the assertion that eWOM volume and valence are significant sales predictors.

The findings I report in this dissertation extend previous research (e.g., Eliashberg and Shugan, 1997; Liu, 2006) by disentangling two important aspects of eWOM conversations—volume and valence—and showing how both can be utilized to predict tangible business outcomes in the movie industry. Although previous research has mainly focused on a single source of eWOM for studying volume and valence impacts on box office revenues (e.g., Yahoo Movie), this study significantly expands the eWOM literature by encompassing a wide range of mainstream social media channels such as blogs, forums, news, and Twitter. My comprehensive approach more completely explains the roles different forms of eWOM conversations play through earned social media.

For box office and DVD sales, I find strong indications that eWOM volume becomes drastically active for the critical two-week period that includes the opening and prior weeks. This instantaneous buzz tends to be ephemeral, however, plummeting

immediately after the theatrical/street release. The rapid escalation and de-escalation trend coincides as marketing and PR activities heighten during the same period. That observation indicates that SNS buzz on earned media may come from social media marketers who ignite and feed the buzz in the preceding week to raise excitement levels. We can make that assumption because actual experience-based SNS conversations are not yet available. Thus all pre-release eWOM is expectation-driven—except for critic reviews deeply intertwined with the marketing/PR activities.

After the theatrical release, however, eWOM's nature and dynamics are likely to change completely. Once experience-driven reviews flood into SNS, post-release eWOM will be a deterministic force. In less than a week, expectation-driven eWOM will quickly lose its influence and post-release experience-driven eWOM will dominate. Broadly, pre-release and post-release eWOM together seem to virtually judge the movie "thumbs up or thumbs down," polarizing its success or failure. eWOM on earned social media appears to shorten the win/lose judgment cycle, ejecting bad movies faster while lengthening the life of good movies in theaters. This accelerated valuation process then assists in marketing/managerial decision making regarding the following pre-release eWOM for the DVD release. The data I report indirectly support this argument: box office sales alone account for 10 percent of DVD sales. Future research might look more closely into the causal dynamics of this chain of events.

Relatedly, the finding that eWOM volume significantly explains box office revenue and DVD sales aligns with theorization explaining that eWOM substantially

informs and impacts consumer awareness. However, the findings also suggest that eWOM volume and valence may play different roles in influencing sales. Increased eWOM volume may increase short-term outcomes, but pre-release eWOM valence is likely to exert a stronger long-term influence. My analyses fail to fully address that point, but pre- and post-release eWOM could be analyzed separately to clarify the question.

The results of this study show how actual eWOM information specifically through earned SNS can be included to enhance the performance of a prediction model. An important managerial implication of these findings is that eWOM can be a useful measure to predict box office and DVD sales. Good forecasts help theaters better plan screening capacity and potentially optimize profits.

A caveat is that I do not isolate marketer-generated eWOM communications from user-generated communications. Speculation inspires many potential users to discuss products, so it would be helpful to discover how marketer-generated eWOM and user-generated eWOM interact in shaping overall perceptions and valuations of products or services. Indeed, many seemingly earned eWOM conversations are disguised, paid communications, but we cannot know whether marketers deliberately plant eWOM or whether the eWOM is user-speculation. This uncertainty may create another conceptual layer between purely earned eWOM and marketer-aided eWOM, so that eWOM from unknown sources will make consumers more vigilant. Such skepticism has inspired new businesses; several paid eWOM services, such as Angie's List, are based on skepticism regarding source authenticity and credibility of untrustworthy eWOM. Movie marketers

should be aware that eWOM on earned social media has varied levels of trustworthiness.

In this sense, future research should consider the degree of marketers' control over eWOM on earned social media. Once experience-driven eWOM gains its full momentum, marketers may lose much eWOM control, but during eWOM's initial stage, marketers and advertisers retain a fair degree of command. Here I report data that are largely consistent with the general convention that good movies win and bad movies lose eventually, but pre-release eWOM volume and valence may be more malleable compared with post-release eWOM. Given that prospective moviegoers employ many heuristics, such as production budget or directors' and actors' reputations to gauge an upcoming movie's entertainment value, eWOM might include obvious cues such as production budgets to make highly skeptical users more receptive to earned social media.

In my analysis, I focus on statistical correlations between variables and use the relationships to infer how eWOM may influence both box office and DVD sales. Although the correlations provide interesting insights and useful managerial implications, future research might investigate the degree of causality.

From Twitter to Facebook, recent changes in the eWOM communication environment and adoption of SNS as a new venue for WOM exchanges have been responsible for the accelerated spread of information. However, while these new vehicles of digital communications have been diversified, the basic dynamics of how WOM has spread among interested consumers has not changed much. In this dissertation, I demonstrate the consumers, in old and new media alike, use the credibility of the source

and the popularity of the opinion as significant heuristics in making their purchase decisions. For the credibility, I chose earned social media as a context of the study; for the popularity, I examined the volume of valence of eWOM and their impact on tangible business outcomes—box office and DVD sales in the movie industry. I hope that knowledge gained from this dissertation will help marketers develop a better understanding of how eWOM works in a multitude of social network sites. In the long run, the findings will pave the road for information sharing mechanisms by which marketers and consumers can freely exchange their anticipations and experiences regarding their consumption behaviors. This will then hopefully benefit both marketers and consumers by nurturing more efficient and effective eWOM environment.

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