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The impact of electronic word-of-mouth in the distribution of digital goods

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Abstract

The rapid proliferation of social media networks has presented a platform of opportunities for the distribution of digital products and related applications. This is commonly known as word-of-mouth or viral marketing and intuitively fits the requirements of digital goods in that consumption, authentication and opinions are communal. In this short paper, we point out the efficacy of the phenomenon of electronic word-of-mouth (eWoM) in digital markets. More specifically, we use a model that encapsulates our understanding of how eWoM impacts economic and social activities that influence co-consumption. An empirical study of a typical example of digital products – music albums – was conducted to test the fundamental premises of our framework and derive qualitative findings. Drawing on the results, we attempt to refine a prescriptive framework for eWoM in general. This is part of an on-going study of the distribution channels for digital media and how they may be effectively designed. Given the proliferation of the Internet and the complementary nature of social networks, we believe that context sensitive eWoM is a key aspect of digital distribution.

Keywords

Social media; Web 2.0; Blogs; Online communities

Introduction and Background

The 'wisdom of the crowd', often captured by word-of-mouth (WOM) sharing of opinions and comments, is apparently more exploitable than the traditional print and conversational opinion sharing paradigm ([Armellini & Villanueva](#), 2006; [Herr et al.](#), 1991). In this paper, we report the provisional results of a study on the efficacy of electronic WOM (eWOM) in the distribution of digital goods (e.g., content that may be consumed via networked, electronic devices. By eWOM, we generally refer to relevant opinion sharing by members of a social media community among themselves and prospective others ([Dellarocas](#), 2003; [Dellarocas et al.](#), 2007). It is of particular interest to the study of digital markets when this wisdom is about hedonistic and utilitarian products, brands and services. It has also been shown that eWOM in virtual communities does replace to some extent the traditional commercial sources such as the sales force or product brochures ([Jepsen](#), 2006). Though not synonymous, social media uses eWOM as a tool for disseminating such experiential knowledge. Hence the exploitable and monetizable aspects of eWOM are research topics worthy of scholarly investigation (cf. [Bughin et al.](#), 2010; [Chevalier & Mayzlin](#), 2006; [Godes & Mayzlin](#), 2004; [Hogan et al.](#), 2004; [Hennig-Thurau et al.](#), 2004; [Mudambi & Schuff](#), 2010).

The popularity of a current bestseller on social networks¹ heralds the arrival of this phenomenon into the everyday lives of the masses. While privacy in the age of open networking is a major issue, more salient is the emergence of the phenomenon of collecting and analyzing suggestions, recommendations, opinions and comments and disseminating them. This has emerged as a major growth phenomenon. Figure 1 depicts the rise of social media in the context of the proliferation of the Internet, fast networks,

powerful mobile devices and rich web 2.0 content. The vast success of platforms and products such as Facebook, MySpace, Friendster, (and now Google+), epinion.com, and foursquare substantiates the impact of eWOM and suggests its role in the monetization of brands.

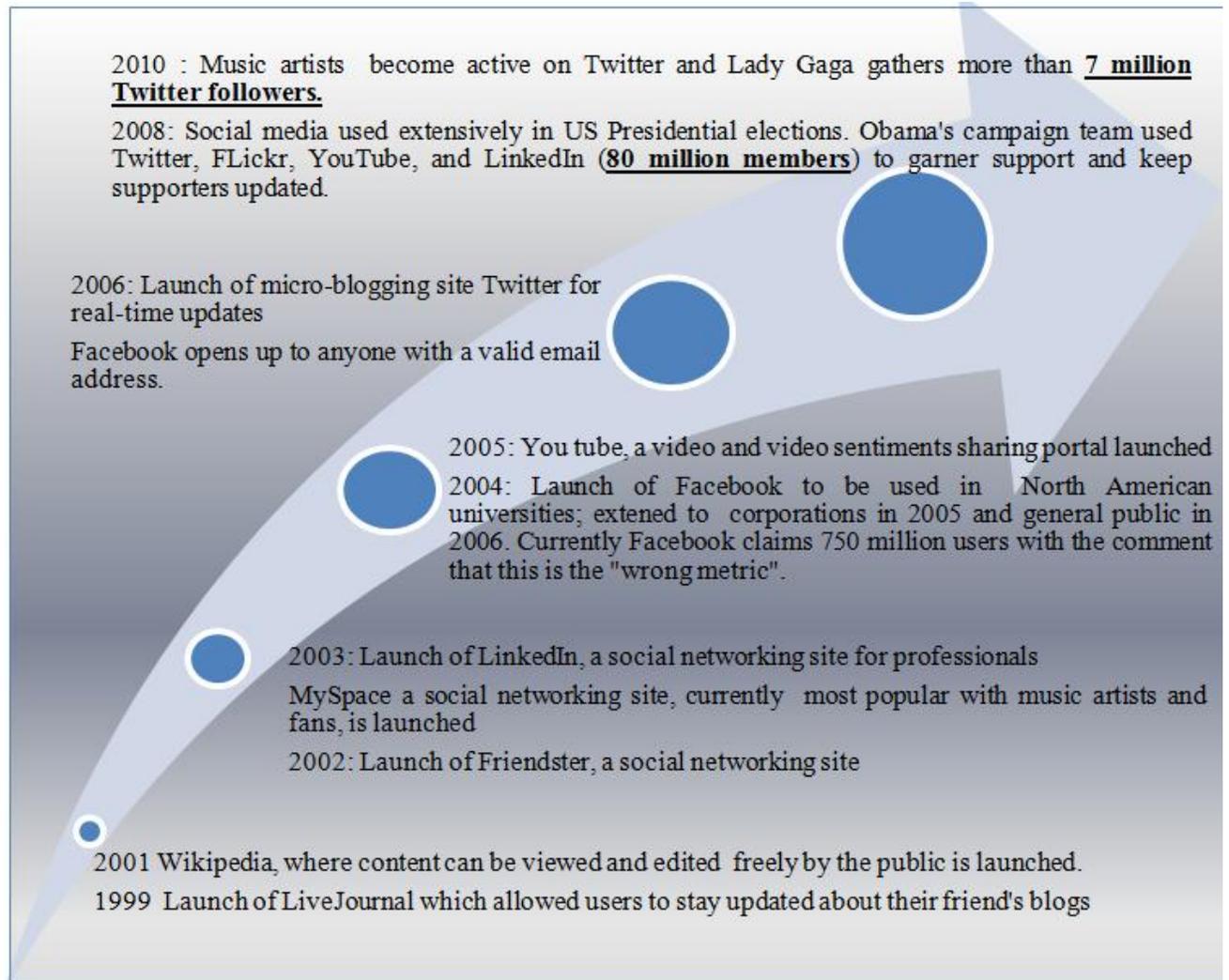


Figure 1. The Rise and Rise of Social Media

As seen from Figure 1, the rise of social media as a preferred platform for WOM is as much due to the phenomenon of the Internet and Web 2.0 as it is due to the accompanying launch of new blogging and wiki services.

The Word of Mouth Marketing Association (WOMMA) has categorised WOM into 2 types: Organic – when customers who are satisfied with a product or service voluntarily become its advocates; and Amplified – when marketers launch campaigns to increase WOM activity in new or existing communities (WOMMA, 2004). Alternatively, [Bughin et al.](#) (2010) specify 3 types: *experiential* (from a consumer's direct experience with a product or service, largely when that experience deviates from expectation), *consequential* (when consumers directly exposed to traditional marketing campaigns pass on messages about them or brands they publicize) and *intentional* (when marketers use celebrity endorsements to trigger positive buzz for product launches). In either case, the impact of WOM is the ability of any one word-of-mouth recommendation or dissuasion to change behavior and reflects what is said, who says it, and where it is said. In other words, context is key.

It has been previously reported that in the face-to-face WOM, 1 person is capable of affecting the attitude and behavior of approximately 2 other people ([Burson-Marsteller](#), 2005). However, in eWOM 1 person can affect the behavior of 8 other people. Understandably so, given the pervasiveness of e-communities, these online influencers have been termed 'e-fluentials'.

eWOM has hence not only *empowered consumers*, but also added *value to economic activity* ([Fiona](#), 2005). It has been reported that consumer-created information has had a clear impact on sales of

beverages, electronic goods and other items ([Hennig-Thurau et al., 2004](#); [Dellarocas et al., 2007](#); [Godes & Mayzlin, 2004](#)).

But a closer study shows that the phenomenon of WOM is neither recent nor novel. In his best-seller, 'The Tipping Point', [Malcom Gladwell](#) (2000) had developed the idea of a thought epidemic and its transmission by the combined efforts of mavens (connoisseurs of knowledge, ideas and thought), salesmen (those who believe in a cause and persuade others to do the same) and connectors (people who have access to a vast network of other people). [Gladwell](#) concludes that WOM epidemics are functions of these three types of people, the "infectious" message being transmitted, and the operating context. Putting these together, we note that Web 2.0 and social networks have lowered the bar for a WOM epidemic to occur by allowing continuous interaction between these 3 pillars of social epidemic and the consumers. Hence, according to Gladwell, a tipping point at which a new product either takes off, crossing the threshold or fails can be reached more easily than ever before. The likelihood of success or failure may be captured by the combined strength of mavens, salesmen and connectors in terms of their Dunbar's number². It could be that social media is helping the masses maintain a huge number of weak ties.

Other recent studies have also supported the connection between online reviews and purchasing behaviors ([Mudambi & Schuff, 2010](#); [Chevalier & Mayzlin, 2006](#)). In a study of six different kind of products on [Amazon.com](#), It was found that the interplay of three factors- review depth, review extremity, and product type can make the product reviews helpful for experience and search goods ([Mudambi & Schuff, 2010](#)). With such a background, an exploration of eWOM at work is a logical next step to our research.

eWOM at Work

Compared to traditional WOM, eWOM has unprecedented scalability, speed of diffusion, persistence and measurability ([Dellarocas, 2003](#)). With the availability of interactive online tools over the Internet, user led innovation has inevitably touched new heights ([Pralhad & Krishnan, 2008](#)). From websites, to forums, and tweets, many-to-many communication is the dominant mode of socializing and has become the "new email", in the words of Facebook's founder.

Most importantly, some of these social media platforms are being used to provide end user feedback on experience goods and promote user-centric design and innovation. Particularly when the benefit of collective wisdom is capable of over-riding expert critiques or a lack of exposure ([Armellini & Villanueva, 2006](#)). A recent study by [Bughin et al. \(2010\)](#) reported that the 2 kinds of products where eWOM is most effective are: i) unique products which have a unique look and feel, user experience, or functionality; and ii) the products which are readily visible. eWOM commands a greater importance when the products are hedonic and expensive – whose consumption is governed by an affective experience ([Dhar & Wertenbroch, 2000](#)). In such experiential products, consumer feedback and experience is all the more important since the product attributes are abstract. This feedback serves as an uncertainty reducing element in the consumer decision making process. The positive effect of virtual communities on consumer decision making has also been studied earlier ([Valck et al., 2009](#)).

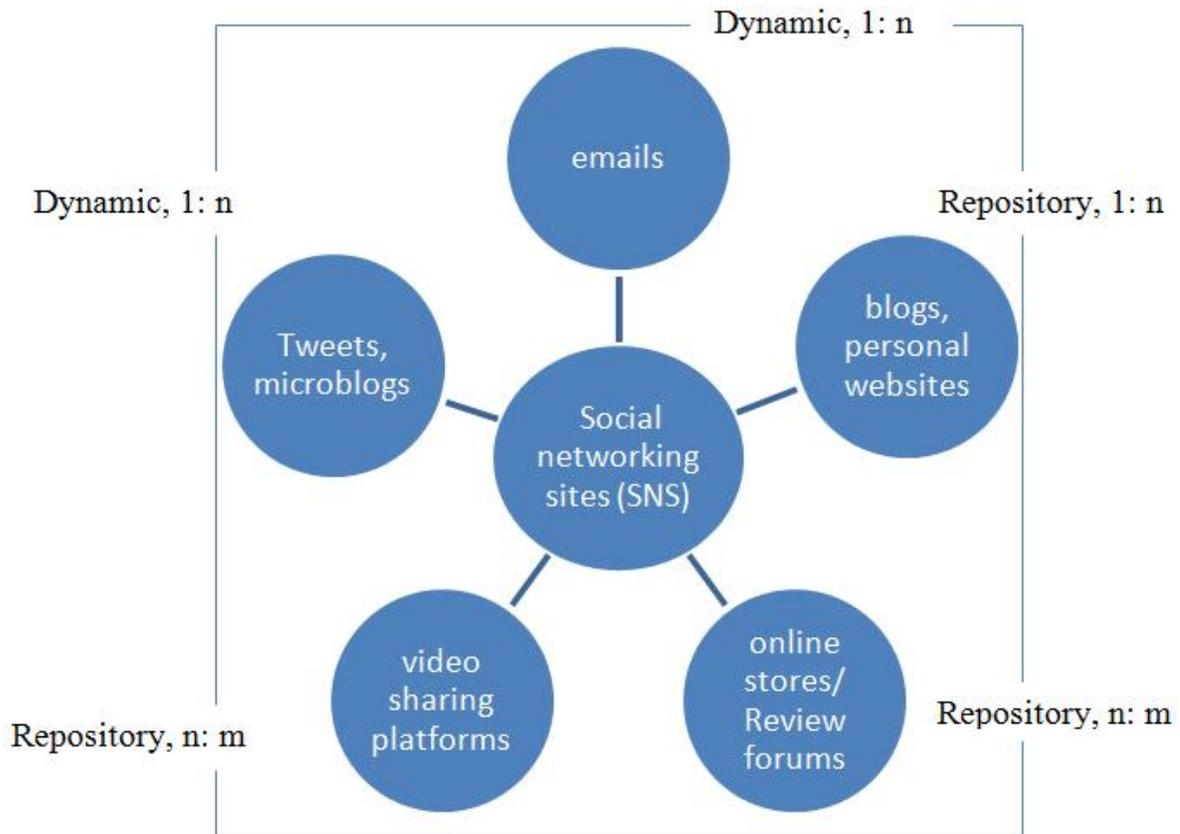


Figure 2. Types of eWOM channels

With such a diversity of ideas and concepts, WOMMA has taken a step towards standardising the WOM terminology. The WOM episode, as defined by WOMMA² (WOMMA, 2005), does not really happen by itself, most times (Dye, 2001). The buzz about a brand is often a well-thought strategy using grassroots marketing, and 'influentials' (Burson-Marsteller, 2005). Deciding on what to measure, in a sea of dispersed eWOM channels, as shown in Figure 2, is a challenging task. Moreover, due to the nature of the existing systems – dynamic and repository (Arnelini & Villanueva, 2006), it is difficult to arrive at a causal relationship between eWOM and sales. The eWOM phenomenon is a *product focused phenomenon rather than a brand focused one*. Hence, the consideration of Customer Long Term Value (CLV – the lifetime revenues that accrue from a given customer) (Hogan et al., 2004) like in traditional WOM is minimal.

eWOM is looked at by firms primarily for three objectives, the realization of which translates into retaining and acquiring brand equity:

- *Increased sales* of existing or newly launched products by an inexpensive means of customer acquisition or retention.
- *Improving* the Customer Satisfaction Index (CSI – an often subjective rating on a given product, service or brand), by allowing managers to understand why people complain and what they suggest to improve the service.
- *Ideas* for new Product development, where people make suggestions on new products

Similarly, Bughin et al. (2010) suggest a metric for assessing WOM equity as the product of the average sales impact of a brand and the number of eWOM messages.

It is worth noting that 'Dispersion' among the audience, has been found to be one of the key metrics for the success of eWOM (Godes & Mayzlin, 2004). Dispersion indicates the extent to which the product or service is discussed in a heterogeneous population. More importantly, eWOM is a consequence as well as an antecedent to consumer actions.

Summing up, it is clear that researchers and practitioners agree that there are a number of eWOM components which in turn produce various outcomes. It is therefore imperative that a model be developed that would facilitate the empirical effectiveness of eWOM. This is the discussion in the following section.

Empirical study of Music Albums

Figure 3 depicts a typical eWOM episode, where objects of different classes interact and this interaction leads to an outcome class. Our premise is that eWOM may be considered as an uncertainty reducing element in the consumer's decision making process. Since eWOM is an antecedent as well as a consequence of the consumers' actions it is shown as being affected by the Outcome objects and impacting the Actions objects. In the Actions Class, the Creation object refers to creating a blog, or uploading the video. Creation is most effective when done by mavens (Gladwell, 2000). Distribution refers to making a blog or comment public or sharing it in the network or rating it. Distribution is most effective when done by connectors or salesmen (Gladwell, 2000) Receipt was taken as the act of viewing a video/ blog/ comment/ post or listen to a song.

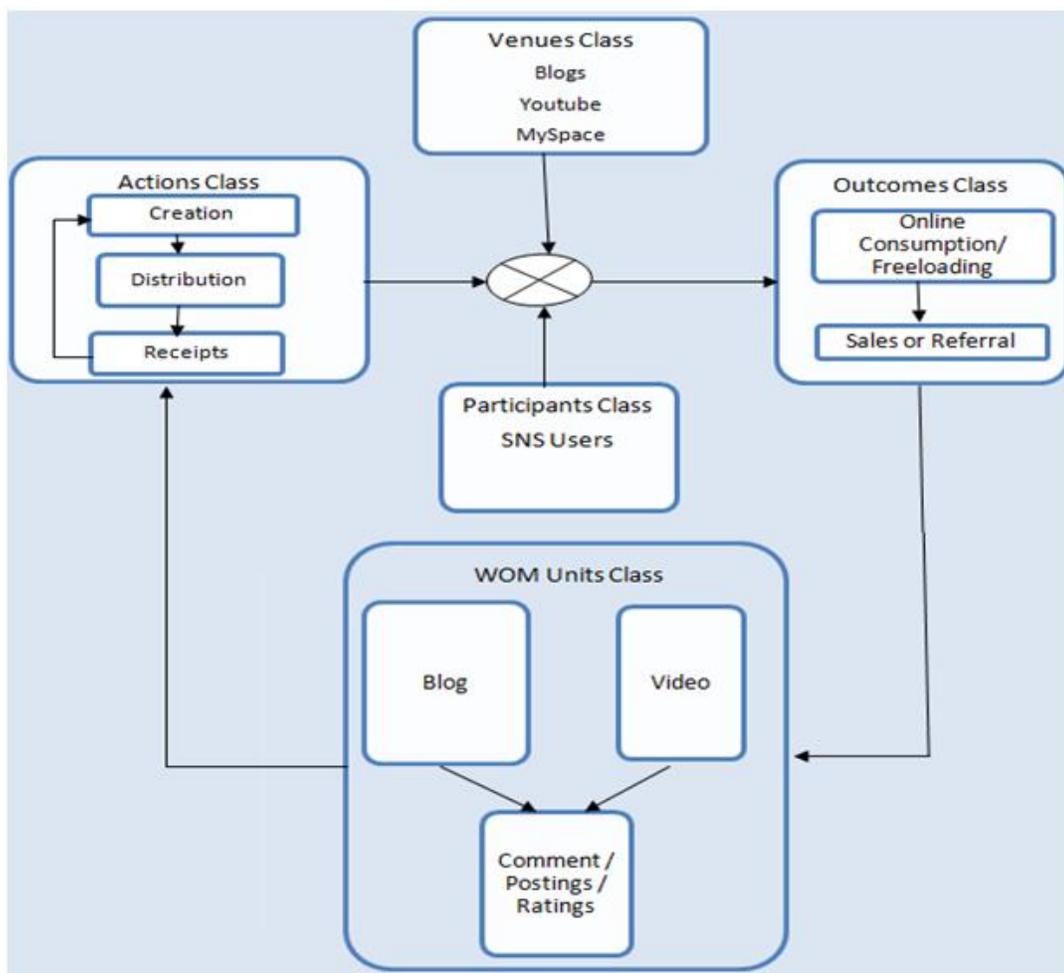


Figure 3. Interaction of different eWOM Objects to generate an Outcome

Given the well understood phenomenon of social networks and its role in the monetization of eWOM, we undertook a study that investigates the impact of several eWOM channels on weekly music album sales (a digital, experience good) in a fairly large, sophisticated market (the United States), in presence of exogenous factors such as the number of fans, release date of the album, and its chart age. The sales data was collected for 11 consecutive weeks for 22 selected albums in the 2nd half of 2009. These albums had constantly featured on [Billboard](#) (2009) top 200 ranks. The motivation behind this study was to establish a clear link between eWOM activities and positive economic outcomes. Having established that, we would undertake further empirical work that would look deeper in to the nature of this link.

One major advantage of using the US market was that sales rankings and figures were available and hence conveniently extracted from billboard magazine (cf. [Billboard](#), 2009) and Paul Grein's Yahoo blog ([Grein](#), 2009) respectively. The eWOM data in the form of comments, views, blog counts, and audio listening was collected from some examples of eWOM components as shown in Figure 2: YouTube-Comments, Views and number of video uploads; Blogs- blog posts, and Myspace- Listenings and posts. No data was discarded but missing values were noted. The album weekly ranks were modeled as sales figures using a Power Law distribution using maximum likelihood estimators.

We have used the Object Oriented Theoretical Framework, adapted from WOMMA definitions for WOM episode components shown in Figure 3. Since there are multiple eWOM units, venues, actions, and outcome, we have modeled them as eWOM classes and looked at a few objects for each class and one outcome object- sales rankings.

Distinct from the sales data collected as reported above, eWOM data was collected for a 6-month period in the 2nd half of 2009. The 22 music albums were selected based on their outreach among music lovers who stay socially connected. The reason we collected eWOM data for a longer period of time than the sales data was to supplement our analysis of a time lag effect of the eWOM. In other words, we hypothesized that the effects of eWOM will be felt in terms of sales some amount of time later. This data was normalized within each dynamic and repository system it originated from. Correlating the eWOM data to sales was performed using the Multivariate Linear Regression module of SPSS (version 17.0).

Since there were several channels and types of eWOM which may potentially impact sales, we used two multivariate regression models: one considering the lag effect of eWOM and the other without considering the lag effect. By lag we mean the time differential between the posting of an eWOM message and its impact on sales. The weekly correlation values in the two models were found to be comparable and did not reveal the "better" fit. In both instances, a positive correlation was found between the eWOM units from different venues and the outcome objects of the time scale model, shown in Figure 3. In other words, in most of the instances, the research hypothesis that the various eWOM objects have a direct (and lag) effect of sales was found to be significant. Summarizing the empirical results in Table 1, we found three important results:

Table 1. Multi-Variate Linear Regression Results (considering time lag)

	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11
Model Parameters	R ² =0.75 Sig=0.05	R ² =0.59 Sig=0.05	R ² =0.69 Sig=0.05	R ² =0.56 Sig=0.05	R ² =0.68 Sig=0.05	R ² =0.38 Sig=0.05	R ² =0.56 Sig=0.05	R ² =0.62 Sig=0.05
comments - YT	(0.058)	X	X	X	X	(0.01)	X	X
video views - YT	X	(0.02)	X	X	X	X	(0.01) (0.00)	(0.00) (0.00)
video uploads - YT	(0.05)	X	(0.08)	X	X	(0.01)	X	X
blogs	(0.02)	(0.04) (0.05)	(0.02) (0.03)	X	X	X	(0.02)	(0.01)
Weeks in Chart	X	X	X	X	X	X	X	X
First Rank	X	X	X	X	X	(0.03)	X	X
Num Fans	(0.00)	X	(0.01)	(0.02)	(0.02)	X	X	X

X = null hypothesis accepted (i.e., research hypothesis not supported).

- There was a time lag effect of 2.5 weeks. In other words, after this period, the various eWOM types did not have any correlation with the sales. Co-linearity between independent variables was absent in all weeks.
- Blog postings and eWOM generated in YouTube became more relevant when we considered the lag or latency. A dynamic system was more strongly correlated to the sales figures among the other dispersed sources discussed.
- The three control variables considered – number of fans, release date of the album, and its chart age, had a greater correlation to the outcome object in the model without a time lag effect. Hence it can be inferred that the time scaled eWOM model was less affected by these exogenous variables and hence explains more of the variance in sales rankings.

Discussion and Conclusion

The major findings of this study are that: i) eWom have a shelf-life of about 2.5 weeks after which they do not have any significant impact on sales nor do they correlate with the sales; ii) blog postings and eWOM generated in YouTube became more relevant after a certain lag or latency; iii) the three control variables considered – number of fans, release date of the album, and chart age - had a greater correlation to the outcome in the model without a lag which was hence less affected by these exogenous variables and explain more of the variance in sales rankings.

We may therefore attribute a direct and causal relationship between eWOM activities (such as blogs, video views or downloads and referrals) and economic outcomes (such as demand for digital products and their brand equity). As anecdotally suggested, this causal relationship is far more significant than other metric such as the number of fans or eyeballs (Bughin et al., 2010). However, this study comes with several limitations. For one, we concede that our study focused on the US music album market because of the availability of sales and rank data as well as the maturity of social networks and forums focused on such genre of music. This is a limitation but it opens avenues for further research. In the ongoing study we shall look at the Chinese and Indian markets for digital music albums. As well, other experience and hedonic goods in such emerging markets.

Another limitation is that our research may have created a sample selection bias as we studied successful cases (i.e., best-selling music albums) only. Though we believe the results to be relatively general across other digital media goods, it would be interesting to replicate the study in other categories offering different utility value to the consumers. The decision to buy a music album is a low-cost, low-risk one, and it would be necessary to investigate the role of eWOM in the adoption of a new technology, or the purchase of more utilitarian goods or services. Identifying the most effective eWOM channel for a digital good is significant not only for consumers but also for the content providers and syndicators. Another aspect we are currently investigating is whether or not eWOM more exploitable and monetized when directed at a digital product or service or is it more impactful when relating to a brand per se.

An unintended contribution of our study is in the discovery of a time lag effect for the online music business and laying the foundation for a quantitative model – using power law estimation – for the impact of eWOM on sales. The results of such a study can also be used as a mechanism by marketers to re-align their marketing, product development, and consumer relationship management strategies.

As Bockstedt et al. (2006) pointed out in their in-depth study of music markets, many complex factors characterize the forces at work in the market transformation and each player's role in the industry value chain is likely to change. Thus we may conjecture that the other extraneous effects such as MTV/Radio exposure, world-tours by artists, real life experiences etc. which were not considered in our study would be prime candidates for inclusion as suggestions for further research. Moreover, in order to limit our study, we have not considered the sentiment (positive or negative) of eWOM messages. This is an obvious additional factor for inclusion as we may conjecture that the sentiment of the eWOM message could have opposite effects on economic outcome. It would not be trivial to include more external variables in the study and perform panel data regression. As well, a Granger test of causality, which incorporates a time lag between dependent and independent variables, could be performed as we work with a larger data set, from other regions or for other products.

Much remains to be investigated in the area of eWOM and social media efficacy. For now, our provisional findings indicate a strong and valid link between eWOM epidemics and the commercial success of the genre of digital goods such as music albums. However, there is reason to conjecture that in the era of the mobile Internet and the accompanying social media proliferation, context-aware (e.g., time and location) eWOM is a potent tool in the digital marketplace. To put our findings in the context of reasoned action and social identification, eWOM has emerged in the social media space as more effective than search engine hits in the world-wide-web precisely because its tipping point is a notion users related to personally and shape their subsequent cyber behaviors.

Acknowledgements

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Footnotes

1. [The Social Network](#), based on the book "Accidental Billionaires" by Ben Mezrich, directed by David Fincher and starring Jesse Eisenberg was released on 1 October 2010.
 2. Dunbar's Number, also referred to as the *Cortex Ratio*, is a measurement of the "cognitive limit to the number of individuals with whom any one person can maintain stable relationships", and is about 150 at par value. However, this notion has been criticized because it does not take into account the strength of the relationships – strong (i.e., influential) or weak (less so).
 3. The Word Of Mouth Marketing Association ([WOMMA](#)) is a premier non-profit organization dedicated to advancing and advocating the discipline of credible word of mouth marketing. Through best practices, industry education and member value, WOMMA advocates word of mouth as a solution to business challenges and a key component in the creation of Talkable Brands.
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