

Association for Information Systems

AIS Electronic Library (AISeL)

ICEB 2009 Proceedings

International Conference on Electronic Business
(ICEB)

Winter 12-4-2009

Electronic Word-of-Mouth: Impact on Music Sales in the American Market

Miguel A. Morales Arroyo

Tushar Pandey

Follow this and additional works at: <https://aisel.aisnet.org/iceb2009>

This material is brought to you by the International Conference on Electronic Business (ICEB) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICEB 2009 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

ELECTRONIC WORD-OF-MOUTH: IMPACT ON MUSIC SALES IN THE AMERICAN MARKET

Miguel Morales-Arroyo¹, Tushar Pandey²

Wee Kim Wee School of Communication and Information

Nanyang Technological University, Singapore.

¹mangel@ntu.edu.sg; ²nrfproject@ntu.edu.sg

Abstract

Internet, today, is a popular communication and feedback sharing platform. Digital content is also readily available over the internet. These two phenomena have propelled the electronic interaction among music consumers to new heights. Our study investigates the contribution of electronic word-of-mouth (eWOM) to the sales of music albums. We studied the American music market for 13 consecutive weeks. The Sales data for these weeks was correlated to the eWOM data for the period mentioned before.

Keywords: eWOM, Word Of Mouth, music sales, albums, power law, ranks.

Introduction

Word-of-mouth communication (WOM) has long been a topic of considerable importance to many business researchers and practitioners for various reasons. Previous studies about WOM show that WOM has considerable impact on the consumers choice [1] [2] [3] [4], and it also helps to provide a good post product perception [5] on the consumer's choice.

The new communication structure, with internet as the facilitator, is an amorphous web of connections [6]. Internet has also awarded WOM a unique significance [7].

We consider eWOM as a *relevant remark made by potential, actual, or former customers, about a product or service*. This remark is readily available to potential customers and institutions through the Internet [8].

Unlike WOM, eWOM involves *print-based, recorded, traceable, organized, and reusable* one-to-many consumer interactions among strangers in cyberspace. Several studies have been done to examine online consumer created information from the perspective of information credibility. Dellarocas [7] in his paper explained the relationship between online consumer feedback and an unknown seller's reputation. Mayzlin's [9] studied the credibility of the promotional messages in online chat rooms and the implication of those new information channels on sales. These studies help us to understand the basics of consumer

created information, and its possible impact on revenues.

However, Internet-based peer-to-peer communication differs from the face-to-face inter-personal communication, common in traditional WOM, in several ways. First, the Internet allows people to reach many other people in a one-to-many process- similar to that of the mass media [8], while email messages are like inter-personal communication, in that they can be personalized for the recipient [10]. Second, electronic referrals are usually unsolicited (i.e. they are also sent to recipients who are not looking for information) [11].

A Model to quantify the WOM effects has been developed earlier by Hogan, Leman, and Libai [12]. However a predictive model is out of scope due to the following limitations:

- a) The music industry is producing new content everyday. The life cycle of the consumable good in our study is very short when compared to physical goods.
- b) eWOM is a dynamic phenomenon where the content changes more rapidly than the WOM content.
- c) There are many untraceable channels of eWOM such as e-mail.
- d) The eWOM phenomenon is a *product focussed phenomenon rather than a brand focussed one*. Hence the consideration of Customer Long Term Value (CLV), [12] is minimal.

eWOM occurs through different channels: e-mails, discussion forums, instant messaging, short messaging services, news groups, and social networking sites. It has been associated with Viral Marketing by some researchers. In our study, we have focussed only on sharing of *opinions, evaluations, and experiences* as eWOM. Hence Viral Marketing [13] [14], is excluded from the current scope.

After the advent of internet, online user reviews have played a vital role in consumers' purchase decisions [15]. There is a major difference between the owner or the seller created information, and the consumer created information. The owner-created information focuses more on

the technical details. It does not describe a product's actual performance or user perspective. eWOM has been described as *empowering consumers*, and *adding value to Sales* [15]. There are clear findings of the consumer-created information being more credible than seller-created information [16].

Consumers usually comment online on various products such as apparel, books, electronics, games, videos, music, beverages, and wine [16]. Various studies have been done on the effect of eWOM on books, movies [15], beverages, electronic products, and other items [8] [17] [18]. In this paper we analysed the effect of eWOM on the music industry in America. Music industry has not yet been fully explored for eWOM effects in the past.

eWOM can be considered as a value-adding component of advertising in the marketing systems. Many marketing, communication, and new product literature theories have stated that the effect of word-of-mouth in general *increases* over time and the effect of advertising *decreases* over time. However, it needs to be empirically demonstrated that consumer word-of-mouth is more sustainable over the long term than advertising. This research work draws on the two streams of WOM. They are 1) WOM as a driver of buyer behaviour, and 2) The importance of social behaviour in the flow of WOM [11].

Objective

According to Godes [17], the two dimensions of eWOM are Volume and Dispersion. In our research we considered the volume only. It is measured as *the number of views at a particular time*. More number of views implies that more people are aware of the music album. One of the Web 2.0 tools, YouTube, records the number of views and allows anyone to post their comments for free. The comments and the number of views are useful in determining the popularity, and *probable sales* of the albums.

Our research is particularly useful in understanding consumer behaviour on the internet. It can also be used to evaluate web 2.0 tools such as MySpace, YouTube and others as effective, revenue enhancing word-of-mouth channels for music albums. Hence eWOM should not be viewed as an alternative to advertising, but as an important complementary aspect.

Research Methodology

Traditional attempts to measure consumer word-of-mouth (WOM) are based on inference, surveys, and controlled experiments [18]. In our

methodology, we have focussed on inferences from available data. Five elements of eWOM [8] and their values as applicable in our study are:

1. *Statement*- comments on blogs, posts on sites, etc.
2. *Communicator*- blogger, or site visitor who views, uploads, or comments on the content.
3. *Object*- albums.
4. *Receiver*- blog followers, social media members, site visitors.
5. *Environment*: internet.

Data Collection

In our study, we gathered the data from the Internet and Billboard magazine.

The data was classified into two categories:

eWOM data

We are interested to analyse the eWOM impact on sales. eWOM data is in the form of (a) number of views/listenings of an album (b) number of posts on a blog or site (c) number of comments on an uploaded singles/video belonging to the album.

We collected data from the internet with the help of Google search engine. Google facilitates data searching for specific time periods, and in specific geographical area – United States, and most importantly in a specific site or domain.

Google Blog Search was used for collecting the number of blog posts for the music entities. MySpace was used to gather the number of times the entity has been played, and the posts. YouTube facilitated the number of uploads, views, and comments for the entities. Searches were conducted based on keywords such as album title and artist name, the country, and period of observation. We are collecting the eWOM data for a period of *13 weeks for 30 albums*. The results included in this paper represent 45 percent of that information.

Not all the search results retrieved were relevant to our study. For example, searching for an artist, "Pink", and an album, "Funhouse", by Pink, gave us some irrelevant results. These results were irrelevant because of the absence of *any views and or comments, and posts* on the music entity. Hence we arrived at a criterion that we used in filtering the relevant results from the irrelevant ones:

- (a) The data must be from US. This is due to the sales ranking data also being for US territory.
- (b) The eWOM data must be in English.
- (c) The data must be relevant to our research objective. This means that there must be some manifestation of eWOM in the search results.

The social media and video streaming domains did not allow week-wise searching of data. Hence, to retrieve weekly data from them we are using Google search. Given the amount of eWOM data from YouTube, we sampled 20% of the relevant results.

I. Sales Data

Sales Rankings and figures were collected from Billboard magazine, online resources and from some music content providers. These rankings and sales were then mapped to the music entities consumption in U.S.

Data collection activities were performed for over 3 months.

Research Design

Our study investigated the impact of eWom on music sales. However, publicly accessible data is in the form of sales ranks and not the actual sales quantities. Hence a model for representing sales was needed.

Earlier studies on power law were done by Hoogneboom [19] and Clauset [20]. They show that power law distributions occur at many situations of scientific interest. It has also been applied for ran-to-sales estimation of books and movies [21][22][23].

In our study we estimated sales probabilities from the billboard magazine ranks using a Power Law distribution. Then we tested our model with the real-data as tabulated in Table 1.

$$P(x) \propto x^{-\alpha} \quad (1)$$

The validity of such models has been studied earlier by Clauset[20].The scaling parameter, α , was found to vary from 2.37 to 3.21. With this model, the goodness of fit with the actual sales values was found with significance greater than 95 percent.

We calculated the exponents in the power law using Equation 2, which considers the maximum likelihood estimators (MLEs).

$$\hat{\alpha} = 1 + n \left[\sum_{i=1}^n \ln \frac{x_i}{x_{\min}} \right]^{-1} \quad (2)$$

Using (1) and (2), we calculated values of α for each week and then a general value from all the available data for the 13 weeks. Linear Regression between the Log values was performed using SPSS to determine the R square and significance of each model.

Week #	Constant	Alpha	R Square	Sig.
1	0.05689	2.62	0.781	0.00100
2	0.031661	2.23	0.961	0.00000
3	0.0121	2.52	0.882	0.00000
4	0.01778	3.04	0.902	0.00000
5	0.02005	2.48	0.916	0.00000
6	0.03759	2.51	0.959	0.00000
7	0.01715	2.82	0.9	0.00000
8	0.021041	2.55	0.967	0.00000
9	0.0167	2.86	0.987	0.00000
10	0.01058	3.21	0.871	0.00000
11	0.03003	3.13	0.899	0.00000
12	0.07567	2.37	0.92	0.00000
13	0.02976	2.66	0.927	0.00000

Table 1

The collected data shows an acceptable fit with our weekly and general model, shown in Table 1.

Hypotheses

We hypothesize that different channels used to spread electronic word-of-mouth have different impact on sales. This impact can be represented by the following null hypothesis, also shown in Figure 1.

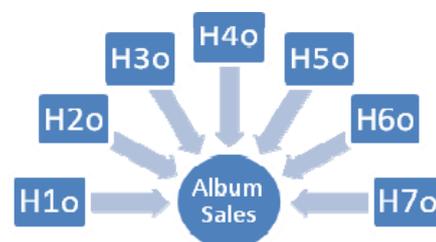


Figure 1

H1o- eWOM represented by the blog postings does not impact album sales.

H2o- eWOM represented by the comments in video-sharing sites does not impact album sales.

H3o-eWOM represented by the views in video-sharing sites does not impact album sales

H4o- eWOM represented by the total number of videos uploaded on video-sharing sites does not impact album sales.

H5o- eWOM represented by the postings on social networking sites does not impact album sales.

H6o- eWOM represented by the listenings on social networking sites does not impact album sales.

H7o- the combination of eWOM represented by blog postings, social networking site postings, and number of video uploads, does not impact album sales.

The eWOM value in the above hypotheses is the total eWOM count for 13 weeks for each album.

Dependent variables

A single dependent variables is used: total album sales for the 13 weeks defined as below:

Total_Album_Sales= Total Albums sold during the 13 week period for each of the 14 album titles.

(3)

Independent variables

- eWOM_B_A*: total number of posts on blogs about the album.
- eWOM_YT_Comm_A*: total number of comments posted by users on YouTube about the album.
- eWOM_YT_View_A*: total number of times the album related video has been played on YouTube.
- eWOM_YT_Video_S*: number of album related videos uploaded by users on YouTube.
- eWOM_MySp_Msg_A*: total number of posts by users about the album in MySpace.
- eWOM_MySp_Play_A*: total number of times the album's song or video has been played on MySpace.

Results and Discussion

Data was analysed using the SPSS (version 14.0). Descriptive statistics were computed for dependent and independent variables. Bivariate analyses were undertaken to explore the associations between independent, dependent, and potentially confounding variables. Linear regression analysis

was then conducted to determine the variables with which sales were most strongly associated.

	H1o	H4o	H5o	H7o
R	0.607	0.379	0.359	0.607
Sq.				
Sig.	0.001	0.019	0.024	0.001
B_0	2.285	2.343	2.25	2.28
B_1	0.00013	0.00017	0.00015	0.00013
t	4.3	7.5	6.5	4.3

Table 2

The hypotheses H2o, H3o, and H6o were not rejected. H1o, H4o, and H5o were rejected as shown in Table 2.

On performing the stepwise regression, *eWOM_B_A* was found to be the only predictor in the model. Hence we conclude that *the blog posts* impact the album sales *most strongly*.

The blogs are posted by news media and music lovers. It is one of the best mediums to be updated on music and music related news. Probably the data is more representative of the views of the music connoisseurs. Moreover, the structure and popularity of blogs among consumers in general could be the reasons for people to keep themselves updated on music entities and related news.

Despite the large number of views and listenings on Youtube and Myspace respectively, which exceeded the blog posts by a large amount, the dependence of sales on views and listenings was not significant. In fact the more significant factor was the number of video uploads on Youtube. If these results are correct, the media industry may re-think their strategy in order to allow more video uploads.

Limitations and future research

The study involved data posted by users, and official sales data/rankings as released by Content Providers or magazines. Hence, there were many instances when exhaustive data was not available during the period of research. Data collection for more samples is ongoing and will strengthen the robustness of our findings in the current investigation.

The dynamic nature of the eWOM and the presence of some untraceable channels, such as instant messaging services, and e-mails, pose a major challenge in estimating the collective impact of all eWOM sources on digital music sales. Hence the current study focuses on the impact, if any, on the sales of music entities. In the near future, we

intend to collect more data and further substantiate the findings and investigate them across different levels (singles, ring tones, videos, other formats), platforms (mobile, web), and tools (MySpace, Content Providers, Music producer's websites).

Conclusions

Our study helps in understanding the transition from physical goods market to the e-business market for music. The findings may be used to complement the existing advertising, and promotion to increase revenues. It can be used as a tool by stakeholders to create strategies for better positioning and segmentation of digital music market

The study is also suggestive of the most effective *eWOM* channels. It could be used by content providers to replicate the environment present at these effective *eWOM* tools, for marketing and increasing album sales. This insight also opens doors for similar research on other content such as music singles across platforms.

Acknowledgement

This work is supported by the Singapore National Research Foundation Interactive Digital Media R&D Program, under research Grant NRF.2007IDM-IDM00276.

References

- [1] Katz Elihu, Lazarfeld Paul F (1955), "Personal influence". Glencoe, IL' Free Press; 1955.
- [2] Engel James E, Blackwell Roger D, Kegerreis Robert J (1969), "How information is used to adopt an innovation". Journal of Advertising Research; vol 9: pp 3– 8.
- [3] Arndt Johan (1967), "Role of product-related conversations in the diffusion of a new product". Journal of Marketing Research"; Vol 4: pp 291 – 295.
- [4] Richins Marsha L (1983), "Negative word-of-mouth by dissatisfied consumers: a pilot study". Journal of Marketing ; vol 47: pp.68 –78.
- [5] Bone Paula F (1955), "Word-of-mouth effects on short-term and long-term product judgments". Journal of Business Research; Vol 32: pp: 213–223.
- [6] Ahuja, Manju K. and Kathleen M. Carley (1999), "Network Structure in Virtual Organizations," Organisation Science, 10 (6), 741-757.
- [7] Dellarocas, Chrysanthos (2003), "The Digitization of Word of Mouth: Promise and Challenges of Online Feedback Mechanisms," Management Science, 49 (10), pp.1401-1424.
- [8] Hennig-Thurau, T., Qwinner, K.P., Walsh, G., Gremler, D.D., (2004), "Electronic word-of-mouth via consumer-opinion platforms: what motivates consumers to articulate themselves on the Internet?", Journal of Interactive Marketing, Vol. 18 No.1, pp.38-52.
- [9] Mayzlin, Dina (2006), "Promotional Chat on the Internet," Marketing Science. Vol. 25, No. 2, pp. 155–163.
- [10] Phelps, Joseph E., Regina Lewis, Lynne Mobilio, David Perry, and Niranjana Raman (2004), "Viral Marketing or Electronic Word-of-Mouth Advertising: Examining Consumer Responses and Motivations to Pass Along Email," Journal of Advertising Research, 44 (4), 333-348.
- [11] De Bruyn, Arnaud, Gary L. Lilien (2008), "A Multi-Stage Model of Word of Mouth through Viral Marketing," International Journal of Research in Marketing, 25(3), September, 143-225.
- [12] John E. Hogan, Katherine N. Lemon, Barak Libai (2004) "Quantifying the Ripple: Word-of-Mouth and Advertising Effectiveness", Journal of Advertising Research, vol. 44, issue 03, pages 271-280.
- [13] Kharif, O. (2000, August 30), "An Epidemic of Viral Marketing". Business Week.com.
- [14] Welker, C.B. (2002), "The paradigm of viral communication", Information Services and Use, 22, 3-8.
- [15] Fiona Sussan, (2005), "The Added Value of Online Word-Of-Mouth to Advertising in New Product Adoption: An Empirical Analysis of the movie industry".
- [16] Wilson, E.J. and D.L. Sherrell (1993), "Sources Effects in Communication and Persuasion Research: A Meta-Analysis of Effect Size," Journal of the Academy of Marketing Science, vol 21, pp 101–11.
- [17] Godes, D., & Mayzlin, D. (2004), Using online conversations to study word of mouth communication. Marketing Science, 23(4), 545-559.
- [18] Dellarocas, C., ZHANG, X., AWAD, N. F.(2007), "Exploring the value of Online Product Reviews in Forecasting Sales: the Case of Motion Pictures, Journal of Interactive Marketing", 21(4), p. 23-45.
- [19] Hooogenboom JP, den Otter WK, Offerhaus HL, Accurate and unbiased estimation of power-law exponents from single-emitter blinking data, J. Chem. Phys. 125, 204713 (2006).
- [20] Clauset, Aaron, Shalizi, C. R., Newman, M. E.

- J. (Forthcoming 2009), "Power-law distributions in empirical data," SIAM Review, (arXiv:0706.1062)
- [21] Brynjolfsson, Erik., Hu, Y., Smith, M. D. (2003), "Consumer Surplus in the Digital Economy: Estimating the Value of Increased Product Variety at Online Booksellers". Management Science, 49(11), 1580-1596.
- [22] Chevalier, Judith, Goolsbee, A. (2003), "Measuring Prices and Price Competition Online: Amazon.com and BarnesandNoble.com," Quantitative Marketing and Economics, 1(2), 203-222.
- [23] De Vany, Arthur, Walls, W. D. (1996), "Bose-Einstein Dynamics and Adaptive Contracting in the Motion Picture Industry," The Economic Journal, 106(439), 1493-1514.