

2013 Russell Ackoff Doctoral Student Fellowships

“Friending Consumers”: The Effect of Advertising Content on Consumer Engagement in Social Media

By: Dokyun Lee, Kartik Hosanagar, Harikesh Nair
Ph.D. Student Applying: Dokyun Lee, 3rd Year OPIM Department
Advisor: Kartik Hosanagar



Advisor's Signature:

Project Description

We are studying the effect of content on consumer engagement in social media. Across all industries and all levels of organization, social media is now being used to interact with clients and consumers. Hospitals are actively maintaining their social media pages to shape relationship with patients while non-profit organizations are recruiting and soliciting for donations on Facebook. In a recent stream of research, Miller and Tucker (2013) study active social media management in a healthcare setting while Tucker (2012) studies the effectiveness of social advertising in philanthropic settings. These studies find that active social media content management does drive more engagement online (and thus possibly offline) and that socially driven messages do get more philanthropic responses, respectively.

While the potential of social media in transforming the firm-customer relationship is well recognized, less is known about what social media strategies actually work. While many organizations have established a social media presence, it is not clear whether and how social media content created by organization engages users on social media. This is particularly important given the sheer volume of information flowing through these sites and filtering algorithms used to selectively show certain information to the users.

There are many open questions regarding what content posted by organizations on social media platforms such as Facebook are more likely to be engaging. For example, are simple descriptive posts seeking to inform people about much required clean water support in Africa more effective than persuasive messages? Will it be better with photos or videos? What type of posts will increase the number of organization's engaged-users over time? What strategy stay constantly effective across different industries? The study of content and underlying mechanism of advertising that drives consumer engagement has been known to be difficult and under-developed (Bagwell 2007, Godes et al 2005). And traditionally, these questions about contents and medium of advertising have been studied mostly in lab settings, through small-scale field experiments or case studies. But with the availability of large-scale social advertising field data in conjunction with the recent progress in natural language processing (automated text data mining), we can study the issue at a massive scale (Liu 2011; Jurafsky 2008).

The burgeoning empirical literatures on word-of-mouth (WOM), social contagion, and viral marketing are also related to our research. The most relevant of these papers are the recent papers studying what kinds of content cause WOM. For example, Berger and Milkman (2012) investigated what content in NY Times articles cause viral sharing, focusing on the emotional and psychological factors that drive readers to share. Similarly, Berger and Schwartz (2011) showed that the interestingness of content is good for immediate WOM but not for ongoing WOM. Tucker (2012) explores ad persuasion versus virality using data on user engagement with Youtube videos and finds that persuasiveness and virality is negatively correlated.

Our dataset is derived from a feature provided by Facebook named “Facebook Page.” Many organizations use FB Pages since its introduction over the past year. FB Pages enable organizations to create profile pages and maintain close connections with current and potential clients. FB allows organizations to post status updates,

advertise new promotions, ask questions and basically convey any sort of information and get feedback. Our panel data span more than 100,000 unique messages posted by approximately 1000 companies and organizations (more than 120 industry categories) resulting in millions of records. Using this unique dataset and theories from marketing and consumer behaviors, this research study seeks to answer the following questions:

What content attributes of social media messages and strategy drive greater consumer engagement? How do the answers to the above questions vary by industry?

We utilize Amazon Mechanical Turk to get sentence-level content attributes for subset of the data then use this as the training set to tag bigger dataset using machine learning and natural language techniques. We then use econometric methods to evaluate the content's effect on engagement.

Our research makes two main contributions. First, while many organizations recognize the potential impact of social media, there is little in terms of best practices for practitioners based on large data and econometric methods accounting for Facebook's selective filtering EdgeRank algorithm. The insights from our analysis will have a significant managerial implication for all users of social media, guiding their policies and practices in social media advertising and consumer relationship management. Second, our analysis will help researchers better understand whether (and how) consumers respond to social media advertising. In addition, this large data offers a great chance to examine previous WOM literature, mostly carried out in lab experiment, in a field setting.

Bibliography

- [1] Bagwell, K. Chapter 28: The economic analysis of advertising. Handbook of Industrial Organization 3 (August 2007), 1701–1844.
- [2] Baumeister, R. F., Finkenauer, C., and Vohs, K. D. Bad is stronger than good. Review of General Psychology 5, 4 (2001), 323–370.
- [3] Berger, J., and Milkman, K. L. What makes online content viral? Journal of Marketing Research 49, 2 (2012), 192–205.
- [4] Berger, J., and Schwartz, E. What drives immediate and ongoing word-of-mouth? Journal of Marketing Research 48, 5 (October 2011), 869–880.
- [5] Godes, D., Mayzlin, D., Chen, Y., Das, S. R., Dellarocas, C., Pfeiffer, B., Libai, B., Sen, S., Shi, M., and Varlegh, P. The firm's management of social interactions. Marketing Letters 16 (2005), 415–428.
- [6] Jurafsky, D., and Martin, J. H. Speech and Language Processing. Prentice Hall, 2008.
- [7] Liu, B. Sentiment Analysis and Opinion Mining. Morgan and Claypool, May 2011.
- [8] Miller, R. Amalia and Tucker, Catherine. Active Social Media Management: The Case of Health Care. Information Systems Research *Articles in Advance* (2013), pp 1-19
- [9] Porter, L., and Golan, G. J. From subservient chickens to brawny men: a comparison of viral advertising to television advertising. Journal of Interactive Advertising 6, 2 (2006).
- [10] Tucker, C. Ad virality and ad persuasiveness. MIT Working paper (2012).
- [11] Tucker, C. Social advertising. Working paper (2012).

Current Budget and Request

The majority of cost for this project is from using amazon mechanical turk (AMT). Bulk of research budget is covered by the Baker Retail Center grant but currently we are over budget by ~\$2500 due to pilot studies, job resubmission and additional data collection for augmenting automated text mining training set. We request total of \$4000 for funding (details below).

The breakdown of AMT studies that's currently not covered

- Supplemental Tagging of 10000 additional messages for brand and product mention: 0.03 cents each (+10% fee) and 3 people per message = $10000 \times 3 \times 0.033 = \990
- Iterated study for survey question clarification and pilot study = \$400
- Re-submitting tagging jobs to AMT that failed accept-criterion = \$1080
- Plus Travel budget detailed below

Since the data is rather large, even a small pilot study costs much money. I am also requesting travel budget for a conference, Statistical Challenges in eCommerce 2013 (<http://scecr.org/scecr2013/>) which is held in Lisbon, Portugal this year where I will be presenting this research. I don't have any other travel budget.

Following are the break down of the budget request

Reason	Amount
Data Collection from Mech Turk	\$2470
Airfare +Transportation for conference	\$1500
Hotel	\$300
Total Requesting	\$4000