

Social Media Content Analytics: Study On B2C Fan-Pages

Zoha Rahman*, Kumaran Suberamanian**, Hasmah Zanuddin
*** Sedigheh Moghavvemi ****, Mohd Hairul Nizam Bin Md Nasir*****

* *Research Assistant, Faculty of computer Science and Information Technology
UNIVERSITY OF MALAYA (UM), Kuala Lumpur, Malaysia
E-mail: joha_du@yahoo.com*

** *Associate Professor, Department Indian Studies, Faculty of Arts and Social sciences,
UNIVERSITY OF MALAYA (UM), Kuala Lumpur, Malaysia*

*** *Associate Professor, Department of Media Studies, Faculty of Arts and Social sciences,
UNIVERSITY OF MALAYA (UM), Kuala Lumpur, Malaysia*

**** *Senior lecturer, Department of Operation and Information management System, Faculty of Business and
Accountancy,
UNIVERSITY OF MALAYA (UM), Kuala Lumpur, Malaysia*

***** *Senior Lecturer, Department of Software Engineering, Faculty of computer and information Technology,
UNIVERSITY OF MALAYA (UM), Kuala Lumpur, Malaysia*

Abstract: One of the supreme way of directly connecting with consumers via Social Networking Sites (SNS) is to generate a brand page in Facebook (called fan page) containing products information and publish regular postings on these pages. Customers will reply differently to these postings. In defining the effectiveness of social networking sites, marketers are measuring metrics to calculate the engagement rate (e.g. number of comments/share and likings in fan pages). The study applied Pseudo-theories and analyzed a total 3543 brand posts from 19 of the most popular B2C (Business to Consumer) fan pages of Malaysia. 12 months' worth of data (From September 2015- August 2016) were collected for analyses, which were available online from the Brand's fan pages. The Fan-page content was analyzed using Cross Section Regression of the EVIEWS 9 software for its impact on multiple contents upon user's engagement actions. The study explored the content features (content quality, content valence and content volume) of S-O-R (Stimulus -Organism-Response) model and identify their impact on user's engagement actions (Like, comments and shares). The findings of the study will direct e-marketers to apprise informational analyses upon the effectiveness of the posted contents' features.

Key Words: Social media metrics analysis, Fan pages, Social Media Marketing, Social Media Content Analysis, and Social Media Engagement.

1. INTRODUCTION

Facebook Fan pages is currently being considered as one of the chief tools in the brand's marketing campaign to reach out to customers and to create brand image (Zoha Rahman, 2016). It is now very vital for the companies to analyze the updated data to know the effectiveness of different features of contents to be posted in fan pages. While earlier research has been conducted on the recognition of marketing activities on social media, little is known

about factors that impact brand post or contents popularity (Lisette, 2012). Moreover, the prior management-oriented reseraches on brand content's popularity are mainly descriptive and do not formally test which contents actually improve user's actions (Lisette, 2012). Reijmersdal (2012) showed the importance of interactive social media content on diverse cognitive, affective, and behavioral outcomes (Ransbotham, 2012) . De Vries, Gensler, and Leeflang (2012) examined contents to show the impact of different characteristics of contents on the

number of likes and comments. Berger and Milkman (2012) investigate which characteristics make online content go viral (Berger, 2010). Kozinets et al. (2010) classified content in the setting of online word-of-mouth in case of Blog contents (Kozinets, 2010). Another studies investigated the impact of Image and video post on user's action (Zoha, 2016), Impact of interactive contents on user's online actions (Zoha R. K., 2016). But none of the former study investigated the impact of three important feature of social media contents (Quality, Valence and volume) on the user's engagement action (Comment, Like and shares). Thus the current study targets to fulfill this gap by recognizing 19 popular B2C (Business to Consumer) fan-pages' 12 months contents and analyzed the impact of features of contents on user's online actions. The study is an interaction analysis among content quality, valence and volume to show their combined impact on marketer's expected outcome.

2. LITERATURE REVIEW

2.1 Pseudo-theories:

Carlene Li and Jeremiah Owyang from Altimeter Group argued that instead of studying the demographic, geographic, or psychographic profiles of your customers, businesses also need to develop social strategy termed socialgraphics (JOwyang, 2010). According to this concept, marketers needs to find out the following questions: which websites are my customers on? What are my customers' social behaviors online? What social information or people do my customers rely on? What is my customers' social influence? The findings from these questions could identify the customers into layers of engagements: from curating, producing, commenting, and sharing, to watching. The businesses then need to separate their customers into these layers and provide tools and platforms to facilitate their social interaction (Pan, 2012).

2.2 Fan-page content:

Key peter in 2013 in analysis social media S-O-R (Stimulus-Organism-Responses) model, revealed that within social media the contents may have three

distinct aspects : (1) content quality, subsuming content characteristics (e.g., interactivity, vividness), content domain (e.g., entertainment, information); (2) content valence, subsuming emotions (e.g., anger, anxiety, joy) and tonality (e.g., positive, negative); and (3) content volume, subsuming counts and volumes (Kay Peters, 2013). Fan-page *Interactive contents* are classified as: contents with link to other websites, contents asking for vote or urge to act something, contents with contest participations requests, questions, quiz contents. (Lisette, 2012). *Content vividness* indicated the pictorial presentation, announcement on upcoming events or applications, video presentation (Lisette, 2012) and Vividness can be achieved by the inclusion of dynamic animations, (contrasting) colors, or pictures. Brand posts are regarded as *informative contents* when the brand post contains information about the company/brand and/or its products (Lisette, 2012). Information-seeking is an important reason for people to contribute to Facebook groups (Park, 2009). *Entertaining content* contains post that is unrelated to the brand, such as funny movies or anecdotes. Entertaining ads – ads that are perceived to be fun, exciting, cool, and flashy – do have a positive effect on attitude toward the posts (Taylor, 2011). *Content valence* refers Brand fans' comments either on positively, neutral, or negatively on brand posts (Lisette, 2012) and brand fans can also comment in either of the three ways on a brand post. And content valence also refers emotions (e.g., anger, anxiety, joy) of the fan's reactions (Kay Peters, 2013). *Contents volume* refers the number, frequency or counts of contents (Kay Peters, 2013).

3. CONCEPTUAL FREAMWORK AND HYPOTHESIS DEVELOPMENT:

The conceptual model of the study is developed according to the concept of pseudo theories (Pan, 2012). The model is designed to show the impact of three features of contents (Kay Peters, 2013) on the user's online engagement actions (Like, comments, Shares).

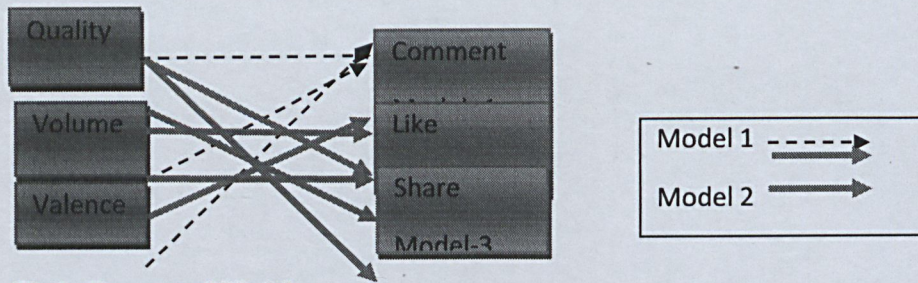


Fig 1: Conceptual Model

1. Content quality :

One way of enhancing the salience of brand posts is to include vivid brand post characteristics (Lisette d. V., 2012). Brand post characteristics differ in the degree of interactivity. For example, a brand post with only text is not at all interactive, while a link to a website is more interactive (Zoha R. K., 2016) since brand fans can click on that link. Moreover, a question acts as a highly interactive brand post characteristic because it begs an answer from brand fans (Lisette d. V., 2012). If a brand post contains information about the brand or product, then the brand fans motivations to participate or consume the content are met (Lisette d. V., 2012). Entertainment leads people to consume, create or contribute to brand-related content, online (Muntinga D. G., 2011). So, we propose that the higher the quality of the contents of fan-pages, the higher the user's engagement rate toward the brand post. This engagement leads fans to like or comment or share on a brand post.

Therefore, we formulate:

H1: The higher the quality of fan-page contents the higher the number of comments.

H4: The higher the quality of fan-page contents the higher the number of likes

H7: The higher the quality of fan-page contents the higher the number of shares.

2. Content Valence

Studies found that the share of positive comments on a brand post, compared to the share of neutral comments, leads to higher popularity of this brand post (Lisette d. V., 2012). The positive comments on a brand post might have complementary value to the company's brand post Besides, content is more likely to viral when it reflects anxiety, anger, or awe, but even more so when it is practically useful or surprising (Kay Peters, 2013). So it is offered that more valence characteristics of the contents lead to more user's engagement toward the brand post. This

engagement leads fans to like or comment or share on a brand post.

Therefore, we formulate:

H2: The higher the valence of fan-page contents the higher the number of comments

H5: The higher the quality of fan-page contents the higher the number of likes

H8: The higher the quality of fan-page contents the higher the number of shares

3. Content Volume

Studies found that number of user actions (likes) varies according to the number of posting (Lisette d. V., 2012). Volume has significant impact on user's online ratings and brand postings (Moe, 2011). We assume that the more number of post volume will generate more likes, comments and shares.

Therefore, we formulate:

H3: The more the number of fan-page contents the higher the number of comments

H6: The more the number of fan-page contents the higher the number of likes

H9: The more the number of fan-page contents the higher the number of shares

4. SAMPLE SELECTION AND DATA

For sampling purpose, we executed non-probability sampling technique. In the study we counted the frequency of different types of posts of the Malaysian B2C (Business to Consumer) companies' fan-pages. We filtered out the Fan-pages according to their variation in contents. We selected the Fan pages those are active in posting regularly and those have a strong user base. So we selected samples of Fan pages according to three criteria: 1) variation of contents 2) post regularity 3) number of users. Frequency of fan-page posts and users' actions was recorded day-wise. For data collection we followed Netnography technique, that is we started collecting data from 1st September 2015 until 30 August, 2016

from 19 Malaysian brands' Fan pages. So, we collected 12 months' data and explored total 3543 posts during the selected time period. Besides posts' data, we collected number of Likes, comments and shares given for each post. After collecting data of one month, we re-checked data of users' actions (Comment, like, Shares) to ensure the actual number of users' responses. The types of collected posts and their operationalization in the study is shown in Table 1.

The average number (M) of brand fans was 14,310,798 per brand; the number of posts taken into account in this research was, on average, 129.09(SD=123.06) per Fan page; the average number of likes per brand post was 298123.7(SD=387343.7), the average number of comments per brand post was 3876.1 (SD=6954.363817), the average number of shares per post was 8202.5 (SD= 21734.4). The data shows quite a degree of variation across and within categories of PTA metrics (Comments, likes, shares)

Table 1: Content operationalization

Content Feature	Types of collected posts (counted by post frequency)
Content Quality (Lisette d. V., 2012)	Posts containing link to a website(link to news site or blogs, but not company site) Ask for vote posts Call to act (ask users to any urgent task online) Contest (posts that ask fans to do participate any contest to achieve prize) Questions Quiz Video posts
Content Valence (Lisette d. V., 2012)	User's positive comments Posts with emotions (joy, anger, excitement, annoy)
Content volume (Kay Peters, 2013)	No of posts during the data collection period

5. METHODOLOGY:

In the study, the author collected data from Fan pages on daily basis and clustered them into 12 months .And Panel Data Multidimensional analysis was selected to develop the regression model. The author selected panel data analysis here because the multiple observations on each unit can provide superior estimates as compared to cross-sectional models of association (Greene, 2003)[17]. For panel data Multidimensional analysis, the author checked following three models:

5.1 Pooled OLS Regression Model

In the stage the author pooled 223 observations together and run the OLS regression model, neglecting the cross section and the time series nature of data. The key Problem with this model is that it does not differentiate between the various Fan pages that we have. In other words, if we combine 19 Fan pages by pooling, we denied the

heterogeneity or individuality that may exist among the different Fan pages. So, we excluded pooled OLS model, because independently pooled panel accepts that there are no unique attributes of individuals within the measurement set. But in our study, all Fan pages were not same as the variation of no of users in Fan pages were high. The Fan pages average user rate was 12,489,782 with a high SD (Standard Deviation) value 13036.17.

5.2 Fixed Effect or LSDV Model:

The fixed effect model or LSDV model allows for heterogeneity or individuality among 19 Fan pages by allowing to have its own intercept value (Cameron, 2005).The term fixed effect is due to the fact that although the intercept may differ across the Fan pages, but intercept does not vary over time, that is it is time invariant

5.3 Random Effect Model (REM):

This model indicated that for the 19 Fan pages we have common mean value for the intercept as the REM allows for having a common mean value for the intercept.

5.4 Residual Testing:

1. Total Comment (Model -1)

We selected fixed Effect model for the analysis of Model-1 and analyzed the actual/fitted residual graph and table. We tested residual diagnostics. In this case residual was not auto-correlated as the Durbin Watson Value for the residual was 1.7 that is near to 2. Besides we checked residual normality and the Jarque Bera P statistics was above 76% which indicated the normality of data.

2. Total like (Model-2)

We selected fixed Effect model for the analysis of Model-1 and analyzed the actual/fitted residual graph and table. The residual for this model was not auto-correlated as the Durbin Watson value was 2.3 % indicating no serial correlation problem. For the normality testing Jarque-bera P value was 43%, confirming the normality of data.

3. Total share (model-3)

We selected Random Effect Model to analyze this model and diagnosed the residual as well. The Durbin Watson Value is 1.5, confirming having no autocorrelation problem. The Jarque -bera Probability for normality was 27%, indicating normality of residual.

6. INTERPRETATION

The effects of the potential explanatory variable on the Fan pages' users' actions (Like, Comment, shares) are evidently different.

6.1 Total Comments (Model -1):

The model for the Total comments is significant as a whole (F-value=8.727, p-value=0.000029) and clarifies the variance of the dependent variable soundly well (R2 =86.10%, adj.R2 =76%). So, we can interpret that the overall 86% comments in a Fan page is because of the content quality, valence and volume. And remaining 14 % comments come from other posts not studied in current research.

The content quality is significantly related to the number of Comments (Beta= 0.52, p-value 0.002) in support of Hypothesis 1 (H1). The content valence is strongly and positively related to the number of comments significantly (Beta=0.79, p-value=.000)

supporting the Hypothesis 2 (H2). The content volume is not significantly related to the number of comments, so we cannot accept Hypothesis 3 (H3).

6.2 Total Likes (Model 2):

The model for the number of Likes is significant as a whole (F-value=42.20, p-value=0.001) and explains the change of the dependent variable strongly well (R2 =94%, adj. R2 =91.0%). So, we can interpret that in the Brand pages 91% Likes are because of the studies variables. And remaining 9% likes derives from other posts.

The content quality feature is evidently significant to support Hypothesis 4(H4) with a positive beta value (Beta= 0.72, P= .0024). The content valence characteristic is not significantly related to the number of likes confirming to reject Hypothesis 5 (H5) (beta= 0.27, p-value=0.53). Content volume is significantly related to the number of like with a positive impact (Beta= 0.83, p-value=0.0012) confirming Hypothesis 6 (H6).

6.3 Total Shares (Model 3):

The model for the number of Shares is significant as a whole (F-value=6.59, p-value=0.016) and describes the adjustment of the dependent variable reasonably well (R2 =69.0%, adj. R2 =63.0%). From this analysis we can interpret that 63% of total shares of a Fan page is because of the studied contents.

Content quality feature is significantly related to the number of shares having a positive impact (beta= 0.56, p-value=0.002) confirming to accept the Hypothesis 7 (H7). Content valence is significantly related to the number of shares with a high impact (B= 0.87, P-value=0.000) supporting to accept Hypothesis 8(H8). Content volume is not significantly influential towards no of shares (P-value= .67) leading to reject Hypothesis 9(H9).

7. FINDINGS:

The study found that the valence of the contents (user's positive comments and emotion status) is highly influential in generating user's comments and shares. Content quality is moderately related in producing users' likes, comments and shares. However, content quality is strongly significant in generating likes. Content volume is strongly significant in creating likes. But content volume or the no of posting is not related to the number of users' comments or shares.

6. CONCLUSION

Our study explored the impact three important features of social media contents on the user's online action. B2C Managers can be guided by our findings in determining the important feature of fan-page content. The study explored that the content valence is the most valuable feature in fan-page context that can create comments and shares most significantly. In the social networking area, users' share action carries the most weight since through sharing users can express their customized opinion to other friends in the network. Besides, comments action carries more weight than likes as when any user put a comment in any posts, that post will be instantly visible to the other friends of the users' network. So, to gain the maximum growth in the fan-page user base, manager should adopt strategy to create content valence. They should post contents expressing emotions like excitement or enjoyment. Also managers should encourage online users to express their emotion regarding the product. Besides, managers in fan-pages should open and create an interactive platform for the online users to express their opinion that may help to create content valence. Content quality features are also significant in generating likes, comments and shares. So, in generating contents B2C managers should post contents with link to informative sites, interactive contents (Vote, question, quiz, call to act) and video posts. Content volume is not significant is increasing the number of comments or shares. So Instead of just putting posts every day, managers should concentrate on content quality and valence features.

Acknowledgments

This research is funded and supported by postgraduate research [Postgraduate Research Grant (PPP) - (Project no: PG182-2015A)] Grant of University of Malaya, Malaysia. We would like to give our special thanks and gratitude to the University of Malaya Research Grant Program for injecting financial support to have necessary research equipment, research-workers, research assistants associated with this research.

References:

Berger, J. A. (2010). Positive Effects of Negative Publicity: When Negative Reviews

Increase Sales. *Marketing Science*, , 29, 5, 815–27.

Dholakia, U. M. (2004). A Social Influence Model for Consumer participation in Network and Small Group Based Virtual Community. *International Journal of Research in marketing*, 21, 3, 241–63.

Ernault, E. (2013, March 13). *socialmediaexaminer.com*. Retrieved from 6 Facebook Metrics Marketers Should Be Measuring: <http://www.socialmediaexaminer.com/facebook-page-metrics/>

Frasco, S. (2013, September, 10). *convertwithcontent.com/15-tips-increase-fan-page-engagement/*. Retrieved from [www.convertwithcontent.com: https://www.convertwithcontent.com/15-tips-increase-fan-page-engagement/](http://www.convertwithcontent.com/15-tips-increase-fan-page-engagement/)

Greene, W. H. (2003). *Econometric Analysis*. New York: Prentice Hall .

Hallikainen, P. (2015). *Why People Use Social Media Platforms: . Australia: Springer International Publishing Switzerland*, Sydney, NSW .

Hines, K. (2011, March 24). *kissmetrics.com*. Retrieved from <https://blog.kissmetrics.com/>: <https://blog.kissmetrics.com/new-facebook-fan-pages/>

JOwyang, J. (2010). "Socialgraphics Help You To Understand Your Customers: Slides and Webinar Recording." *Altimeter Group*.

Kay Peters, Y. C. (2013). *Social Media Metrics — A Framework and Guidelines for Managing Social Media*. *Journal of Interactive Marketing* , 27, 281–298 Doi: <http://dx.doi.org/10.1016/j.intmar.2013.09.007>.

Kozinets, R. V. (2010). Networked Narratives: Understanding Word-of-mouth Marketing in Online Communities., *Journal of Marketing*, 74, 2, 71–89.

- Lin, K.-Y. A.-P. (2011). Why People Use Social Networking Sites. *Computers in Human Behavior*, 27, 3, 1152–61.
- Lisette, d. V. (2012). Popularity of Brand Posts on Brand Fan Pages: An Investigation of the Effects of Social Media Marketing. *Journal of Interactive Marketing*, 26, 83–91 doi:10.1016/j.intmar.2012.01.003.
- Moe, W. W. (2011). The Value of Social Dynamics in Online Product Ratings Forums. *Journal of Marketing Research*, 48, 3, 444–56.
- Muntinga, D. G. (2011). Introducing COBRA's: Exploring Motivations for brand related social media use. *International Journal of Advertising*, 30, 1, 13–46.
- Pan, B. &. (2012). Theoretical models of social media, marketing implications, and future research directions. . In Sigala, M., Christou, E., & Gretzel, U. (Eds.). *Social Media in Travel, Tourism and Hospitality: Theory, Practice and Cases*, Surrey, UK: Ashgate. PP 73-86.
- Park, N. K. (2009). Being Immersed in Social Networking Environment: Facebook Groups, Uses and Gratifications, and Social Outcomes. *Cyberpsychology & Behavior*, 12,6, 729–33.
- Ransbotham, S. G. (2012). Network Characteristics and the Value of Collaborative User-generated Content. *Marketing Science*, 31, 3, 387–405.
- Taylor, D. G. (2011). Friends, Fans, and Followers: Do ad works in Social Media? . *Journal of Advertising research*, 51, 1, 258–75.
- Zoha Rahman, S. K. (2016). Effectiveness of Building Brand Image through Facebook Fanpages. *Journal of Advances in Information Technology*, Vol. 7, No. 3, pp. 171-176, doi: 10.12720/jait.7.3.171-176
- Zoha, R. K. (2016). SNS METRICS ANALYSIS "A STUDY ON FANPAGE INTERACTIVE CONTENTS". *I J A B E R*, Vol. 14, No. 2 (2016): 1405-1415 Doi: <http://www.serialsjournals.com/serialjournalmanager/pdf/1462531482.pdf>
- Zoha, R. S. (2016). Social Media Engagement metrics analysis: "study on Fan-page Contents". *Journal of Telecommunication, Electronic and Computer Engineering*, Vol. 8 No. 8,71-75 Doi: <http://journal.utem.edu.my/index.php/jtec/article/view/1322/802>.