

Social Media Engagement Metrics Analysis - "Study on Fan Page Content"

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Abstract—Social Media is now determined as an excellent communicative tool to connect directly with consumers. One of the most significant ways to connect with the consumers through these Social Networking Sites (SNS) is to create a facebook fanpage with brand contents and to place different posts periodically on these fanpages. In measuring social networking sites' effectiveness, corporate houses are now analyzing metrics in terms of calculating engagement rate, number of comments/share and likings in fanpages. So now, it is very important for the marketers to know the effectiveness of different contents or posts of fanpages in order to increase the fan responsiveness and engagement rate in the fan pages. In the study the authors have analyzed total 1834 brand posts from 17 international brands of Electronics companies. Data of 9 months (From December 2014 to August 2015) have been collected for analyses, which were available online in the Brand' fan pages. An econometrics analysis is conducted using Eviews 9, to determine the impact of different contents on fanpage engagement. The study picked the four most frequently posted content to determine their impact on PTA (people Talking About) metrics and Fanpage engagement activities.

Index Terms—Social Media; Social Networking Sites; Social Media Content Analysis; Social Media Metrics Analysis; Online Marketing

I. INTRODUCTION

In order to implement a successful social media marketing strategy, it is imperative to know and understand the user's behavior towards different posts on brand pages. It is important for the marketers to understand what types of contents motivate users to be engaged in a particular page. It is noticeable that users of the facebook fanpages tend to exhibit favorable brand related engagement and also contribute different brand promoting actions.

Facebook brand pages is a current marketing tool and presently it is being unified as one of the chief components in the brand's marketing campaign to reach out to customers and fans. To keep the brand pages active and to promote the corporate fan pages it is vital to understand the behavior of the consumers online and marketers should also identify the contents that encourage consumers to be engaged in fanpages. It is notable that users or fans of the brand pages tend to

exhibit various brand related engagements and buying actions. In order to have a successful social media marketing campaign, it is important to understand the behavior of customers on the brand pages and what motivates them to engage on a Facebook Brand Page which eventually should lead to purchase of the brand's products or services [1]. With each new fan, the company not only gains a new potential active user but can also reach the fan's private network due to Facebook's technical features. This implies that it is indispensable for companies to increase their fan base in order to achieve extensive awareness for its brands and products.

In fanpages most brand or companies post Videos and Images. But in the study, the authors discovered that all the posted images and Videos don't exhibit or show similar characteristics. In case of Electronics brand pages, there are variances among different image post as well variances among different video posts. Previously several researches have been conducted about Image and Video contents' effectiveness, but no study has yet revealed the differentiating factors of different types of Images post and video posts. In this study the authors explored the posts of 17 Electronic companies, that will help the companies to get a clear idea about the types of contents and their variations in generating different consumer actions or engagement (Like, comments or shares).

II. FAN PAGE POST STATISTICS

Researcher explored 15 different types of contents posted in fanpages. Among those contents, Images and Videos are mostly frequently posted contents. But all of those images and videos are not similar in terms of interactivity and content elements. In the study authors selected for types of mostly frequently posted contents. Fanpage post's percentage of the selected four contents is shown on Figure 1.

Selected Contents for Analysis:

1. Only Image posts: The author categorized these contents as Images related to product and product updates. These are only image without details product information or any details product link. These images included profile picture post, cover photo post, product catalogue or any other images without text or

information. The number of only Image post frequency was 157 and it is 9% of total posts.

2. Image with details: This types of images Contains products information in associated with texts or link to product details or link to other social sites. Total number of this post frequency is 586 and it is 43 of total posts.
3. Feature Video: In case of Electronics Brands there are some videos those are created to show products’ using feature, details products demonstrations, technical elements, comparative version analysis, expert panel

interview video or product characteristics featuring videos. Among the total 300 collected video posts, this feature video contributes about 42%. And it is 11% of Total Posts.

Entertaining Video: These videos also related to product, but do not show products features in details. It may take form in commercial videos, broadcasted TV advertisement or any entertaining video in combination of music, human amusement elements. This content dominates 58% of total videos and it is 10% of total posts.

Table 1
Variable clarifications

Variable Name	Characteristics
Only Image post	<ul style="list-style-type: none"> • Profile/cover pictures post • Products’ image post • Company Logo post.
Image with Details post	<ul style="list-style-type: none"> • Image with details text about product • Image with a link of products’ details • Image with a link to other social site • Image with a link to company the site • Video demonstrating all parts of a product • Video about tips and user manual.
Feature Video	<ul style="list-style-type: none"> • Video describing products’ technical issues • Video related to upgrading issues • Videos on Expert Panel review • Videos that do not show product features specifically.
Entertaining video	<ul style="list-style-type: none"> • Video demonstrating company image • Other entertaining video related to products only.(Not any social video or fun video)

III. STUDY DESIGN

Different contents on fanpage encourage the users to act differently. After exploring all the contents of the electronic companies’ fanpages, author discovered important issues. In this paper the authors identified the effect of video and image contents on the consumer actions. Fanpage users’ engagement involve in liking, sharing and commenting on the posts. After investigating, the authors discovered that all the video posting are not same. In case of electronic fanpages, some videos are created to show exactly product feature, showing know-how feature, describing details on how to use product. In this article author indicated this type of videos as feature video. Simultaneously, there are some videos that is created just to attract users in a commercial way with an entertaining feature. These videos are neither describing the products’ nut and shell nor the using feature. These videos don’t show or describe anything about how to use products. These videos are combination of music, human entertaining elements. Author in this paper indicated these types of videos as entertaining video. Similarly, in the fanpages there are different types of images, some posts are only image containing product design or picture. Or the image may be just a profile picture or changing the cover photos or posting companies’ logos. The author in this paper indicated such types of image as Only Image. These types of image don’t contain product details or any texts. Besides these, there are some images that contain details product links with a brief text. The link associated with these images may redirect the users to another social sites or company sites. These images indicate the details of product features through brief texts. The authors prescribed these

images as Image with Details for the purpose of analyzing. Finally, the authors took this Four variables (Only Image, Image with Details, Entertaining Videos and Feature Videos) to show their impact on generating Comments, Likes and Shares. Characteristics of the variables are shown on the **Error! Reference source not found..**

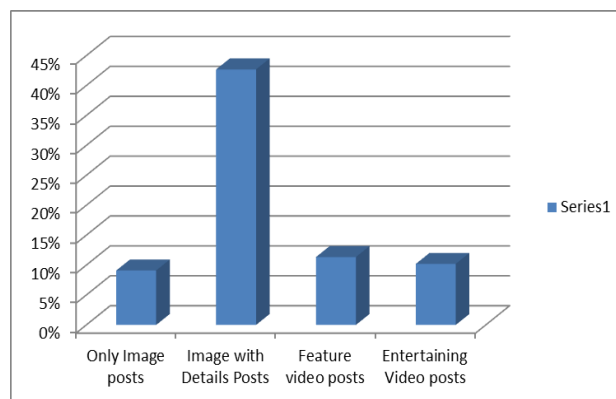


Figure 1: Percentage of Selected four contents

A. Conceptual Framework and Hypothesis

In our conceptual model there are four models to be discussed. Model -1, will show the impact of the four variable on the comments, Model-2, will show the impact of the four variables or four types of posts on the Like and Model 3, will show the impact of the targeted four contents or variables on the Shares. The conceptual Model is shown on **Error! Reference source not found..**

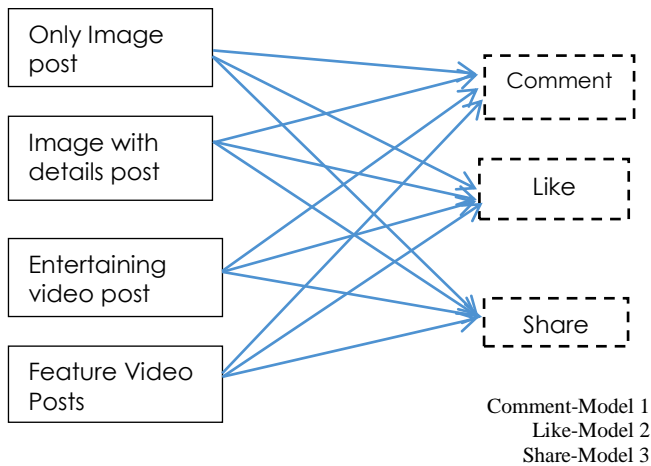


Figure 2: Conceptual Framework

B. Image post

One way of enhancing the salience of brand posts is to include vivid brand post characteristics [4]. Vividness can be achieved by the inclusion of dynamic animations, (contrasting) colors, or pictures [5]. One study revealed that photos on Facebook Pages received 53% more Likes than the average post [7]. Engagement rate on Facebook for photos averages 0.37 % where text only is 0.27% and articles with Images get 94% more total views [6]. This percentage difference is substantial, and it emphasizes a huge opportunity for businesses to use photos and images as a means to increase Likes and comments, and thus EdgeRank [6]. EdgeRank is Facebook's visibility algorithm based on users' interaction with Facebook Page content. Boosts in Likes helps increase EdgeRank, which can then cause a page's content to appear in News Feeds more often, increasing visibility [7]. Wishpond's data shows that posts that include photos receive 120% more engagement than the average post, while posts that include photo albums received 180% more engagement. Photos are huge on Facebook. They get more Likes, comments and click-through than other type of content.

So, we propose that more Image posts lead to a 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:

- H1: Only Image posts have a significant impact on generating Comments on Fanpages.
- H2: Only Image posts have a significant impact on producing Likes on Fanpages
- H3: Only Image posts have significant impact on producing shares on Fanpages.
- H4: Image with Details has a significant impact on generating Comments on Fanpages
- H5: Image with Details has a significant impact on producing Likes on Fanpages
- H6: Image with Details has a significant impact on producing shares on Fanpages.

B. Video Post

A video is more vivid than a picture because the former stimulates not only sight, but also hearing [4]. When managers

aim to enhance the number of likes, they can place a highly vivid or a medium interactive brand post characteristics such as a video. By 2017, video will account for 69% of all consumer internet traffic, according to Cisco [10]. For any social media campaign, any SEO exercise, video is without doubt one of the best tools in the kit [8]. According to a new Ascend2 survey conducted in September, 2015: titled "Video Marketing Strategy," the vast majority of marketers are seeing positive results from their use of videos. In fact, about 87 % said that their video marketing effectiveness is increasing, and half of these marketers claimed that the increase is "significant." When we upload video directly into Facebook, we can see 40% higher engagement rates because it has a longer shelf-life and we can also have the ability to tag people in the video [9].

We propose that more video posts lead to a 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:

- H7: Entertaining video posts have a significant impact on generating Comments on Fanpages.
- H8: Entertaining video posts have a significant impact on producing Likes on Fanpages
- H9: Entertaining video posts have significant impact on producing shares on Fanpages.
- H10: Feature video posts have a significant impact on generating Comments on Fanpages
- H11: Feature video posts have a significant impact on producing Likes on Fanpages
- H12: Feature video posts have a significant impact on producing shares on Fanpages

IV. METHODOLOGY

In the study, we collected data from each Fanpages for the duration of 9 months' period (starting from December 2014 to August 2015) and we totally analysed 1834 posts from 17 different electronics brands' pages. To test our model, we used Cross Section Data analysis by taking LS (Least Square) Method.

A. Data Analysis

a. Model 1 (Comment)

The model for the Total comments is significant as a whole (F-value=5.69, p-value 0.008) and clarifies the variance of the dependent variable soundly well ($R^2 = 65.5\%$, $adj.R^2 = 54\%$). So, we can interpret that the overall 66% comments in a Fanpage is because of Only Images, Image with Details, Entertaining Videos and Feature Videos. And remaining 34 % comments come from other posts (other posts are indicated in the post Statistics section in the study)

The Only Image post is not statistically significant in generating Comments ($P > .05$), hence we cannot support Hypothesis 1(H1). Image with details post is significant and positively related to the number of Comments (Beta= 105, p-value 0.04) in support of Hypothesis 4 (H4). The Entertaining Video post is not significantly related to the number of comments ($p > .05$), so we cannot accept Hypothesis 7 (H7).

The Feature video post is positively related to the number of comments significantly (Beta=1305, p-value=.002) supporting the Hypothesis 10 (H10).

b. Model 2 (Like)

The model for the number of Likes is significant as a whole (F-value=4.39, p-value=0.02) and explains the change of the dependent variable (Like) well (R2 =60%, adj. R2 =45%) So, we can interpret that in the Electronics Brand pages 60% Likes are because of studied four variables. And remaining 40% likes derives from other posts.

The only Image post characteristics approaches but fails to achieve a customary level of statistical significance (p=0.18) to the number of Likes, contrary to hypothesis 2 (H2). The Image with Details post is not significant to produce Likes (p>.05), hence rejecting Hypothesis 5 (H5). The Entertaining Video post characteristic is significantly and positively related to the number of likes (beta= 0.67, p-value=0.015), in support of hypothesis 8 (H8). Similarly, Feature video Posts is significantly related to the number of like with a positive effect (p-value=0.03) confirming Hypothesis 11 (H11).

c. Model 3 (Share)

The model for the number of Shares is significant as a whole (F-value=3.6, p-value=0.03) and describes the adjustment of the dependent variable reasonably well (R2 =55.0%, adj. R2 =40.0%). From this analysis we can interpret that 55% of total shares of a Fanpage is because of the four independent variables. And 45% shares occur because of the other posts not included in the model.

Only Image posting is not significantly related to the number of Shares and we cannot confirm hypothesis 3 (H3). Besides, Image with Details posts is not significantly related to the number of shares (p>.05), rejecting Hypothesis 6 (H6). Entertaining Video posts is approaching independent prognostic significance (p=0.08), confirming to reject Hypothesis 9 (H9). Feature Video posts is reasonably significant to generating shares having a positive impact (p-value=0.01) confirming to accept the Hypothesis 12 (H12).

B. Residual Testing

a. Model 1

The actual, fitted residual for this model was tested and residual was diagnosed using Breusch-Godfrey Serial Correlation LM Test, Heteroskedasticity Test: Breusch-Pagan-Godfrey, Jarque-Bera Normality Test. The residual was serially correlated with Obs*R-squared 7.8 and Chi-square p value was .01. Residual Also had Heteroscedasticity problem with Obs*R-squared 12.85 and Prob. Chi-Square .01 also. The residual was normally distributed as the Jarque-Berra P value was 0.77.

b. Model 2

The actual, fitted residual for this model was tested and residual was diagnosed using Breusch-Godfrey Serial Correlation LM Test, Heteroskedasticity Test: Breusch-Pagan-Godfrey, Jarque-Bera Normality Test. The residual was not serially correlated with Obs*R-squared 0.26 and Chi-square p value was 0.87. Residual Also had no Heteroscedasticity

problem with Obs*R-squared 7.2 and Prob. Chi-Square 0.12. The residual was not normally distributed as the Jarque-Berra P value was 0.008.

c. Model 3:

The actual, fitted residual for this model was tested and residual was diagnosed using Breusch-Godfrey Serial Correlation LM Test, Heteroskedasticity Test: Breusch-Pagan-Godfrey, Jarque-Bera Normality Test. The residual was not serially correlated with Obs*R-squared 1.8 and Chi-square p value was 0.39. Residual Also had no Heteroscedasticity problem with Obs*R-squared 2.6 and Prob. Chi-Square 0.62. The residual was not normally distributed as the Jarque-Berra P value was 0.006.

C. Model Modification

a. Model 1

To remove the serial correlation problem from the model, we created three periods LAG of the dependent variable (Comment). After estimation, we tested Breusch-Godfrey Serial Correlation LM Test and the residual was not serially correlated with Obs*R-squared value of 6.4 and Prob. Chi-Square as 0.09.

To remove the Heteroskedasticity problem we converted all variables into LOG and conducted model estimation. The model was free from Heteroskedasticity problem since the Breusch-Pagan-Godfrey test indicated Obs*R-squared value as 2.05 and Prob. Chi-Square value as 0.84

b. Model 2

To convert the residual into normally distributed form of this model, we converted all variables into LOG and made the estimation. After LOG conversion, the Jarque-berra probability value was 0.64.

c. Model 3

To convert the residual into normally distributed form of this model, we converted all variables into LOG and made the estimation. After LOG conversion, the Jarque-berra probability value was 0.66.

V. RESULT INTERPRETATION OF ACCEPTED MODELS

A. Model 1 (Comment)

After removing serial correlation and Heteroscedasticity, the model for the comments is still significant as a whole (F-value=4.75, p-value 0.02) and clarifies the variance of the dependent variable more soundly (R2 =74%, adj.R2 =59%). So, now we can interpret that the overall 74% comments in a Fanpage is because of Only Images, Image with Details, Entertaining Videos and Feature Videos. And remaining 26 % comments come from other posts (other posts are indicated in the post Statistics section in the study).

The Only Image post is not statistically significant in generating Comments (P>.05), hence we cannot support Hypothesis 1(H1). Image with details post is now not significantly related to the number of Comments, rejecting Hypothesis 4 (H4). The Entertaining Video post is now significantly related to the number of comments (Beta= .59,

$p < .05$), so we can accept Hypothesis 7 (H7). The Feature video post is positively related to the number of comments significantly (Beta=1.36, p -value=.004) supporting the Hypothesis 10 (H10).

B. Model 2 (Like)

After converting the residual of the model into normally distributed form, the model turns to more significant as a whole (F-value=9.1, p -value=0.001) and explains the change of the dependent variable (Like) more reasonably (R2 =75%, adj. R2 =67%) So, we can interpret that in the Electronics Brand pages 75% Likes are because of studied four variables. And remaining 25% likes derives from other posts.

The only Image post now turns to be a significant variable to describe likes (P =.001, Beta= .73) indicating a strong positive relationship and allowing us to accept Hypothesis 2(H2).

The Image with Details post is not significant to produce Likes ($p > .05$, Beta=-.08) showing a negative relationship, hence rejecting Hypothesis 5 (H5). The Entertaining Video post characteristics approaching borderline significance but fails to achieve a customary level of statistical significance ($p=0.08$) to the number of Likes, contrary to hypothesis 8 (H8). In support of hypothesis 8 (H8). Feature video Posts is significantly related to the number of like with a positive effect (Beta= 1.11, p -value=0.01) confirming Hypothesis 11 (H11).

C. Model 3 (Share)

After converting the residual into normally distributed form, the model for the number of Shares turns to more significant as a whole (F-value=5.14, p -value=0.01) and describes the adjustment of the dependent variable more equitably (R2 =63.0%, adj. R2 =50.0%). From this analysis we can interpret that 63% of total shares of a Fanpage is because of the four independent variables. And 37% shares occur because of the other posts not included in the model.

Only Image posting is not significantly related to the number of Shares and we cannot confirm hypothesis 3 (H3). Besides, Image with Details posts is not significantly related to the number of shares (Beta=-0.27, $p > .05$) having a negative relationship, confirming to reject Hypothesis 6 (H6). Entertaining Video posts is approaching a borderline significant trend (Beta=.49, $p=0.09$), approving to reject Hypothesis 9 (H9). Feature Video posts is rationally more significant in generating shares having a positive impact (Beta= 1.23, p -value=0.006), admiring to accept the Hypothesis 12 (H12).

VI. MANAGERIAL IMPLICATION

Social networking Managers can be guided by our research with regards to deciding which content to publish at brand posts. Our research shows that not all elements which are valuable for improving the number of likes do also have an effect on increasing the number of comments, shares and vice versa. Also a new social networker can get an idea about the all types of posts in electronics Fanpages and the frequency rate of those posts. The study showed clearly overall how much percentage of total viral actions is created because of

which posts.

The study suggests that Entertaining Video has a positive impact on generating comments in fanpages. Similarly, Feature video is more effective in generating comments showing a strong positive relationship. Moreover, about 74% comments in fanpages are generated from the studied contents (Four variables). In case of producing Likes, Only Image posts are helpful positively. But feature video is more effective in generating Likes in fanpages showing comparatively stronger positive relationship. Besides, it is explored that about 75% likes in a fanpage comes from the four indicated variables. In case of generating shares, only Feature Video post is effective and significant. Further, about 63% total shares in a fanpages derive from the four studied variables. Overall it is found that, in case of Electronics fanpages, the Feature video (video describing product feature and manuals) is the most effective content in generating Likes, Comments and Shares. So, the study recommends and urge the fanpage owners to post more interactive post like feature video in order to produce likes, comments and shares. Since, in fanpage PTA (people talking About) metrics, shares carry the more weights, feature video posting is important in that viewpoint also.

In the research we identified all types of posts those are published in Fanpages. But we picked the most frequently posted item to make analysis and to show their impact. In future we can have a research on showing the impact of all posts particularly.

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