

Fanpage KPI Analytics: “Determining the Impact of KPI Metrics on Growth Rate and User Base “

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Abstract

Facebook with its incredible audience is becoming immensely attractive channel to Brands and Marketers around the world. By this time, we are observing explosive growth in brand pages, variations in advertising and other innovative ways to monetize this audience. Now E-marketers are determined to know measurement procedures and related issues of Social media's Key Performance Indicators (KPI). In the Fanpages companies are frequently and periodically posting different contents, but they also have to measure whether user engagement in this contents are valuable in maintain user base or page growth rate. E-marketers now also need to know which types of user engagement are more impactful on page performance. In this study we explored the effect of each KPI (Key performance Indicator) Metrics on page growth rate and Page likes (no of user). We have explored the KPI metrics data from the Fanpages of different industry (Consumer electronic, Electronics-phones, Health, beauty, and telecom). We investigated total 108 observations collected from 18 Global Brand pages and data was composed from the month of February 2015 to July 2015. We recorded monthly data and conducted Panel Data analysis through E-views 9 software to show the individual impact of each KPI Metrics.

Keywords and phrases: Fanpage, Social Media, Social Media Analytics, Fanpage KPI

Article type: Research article

INTRODUCTION

Social Networking Sites (SNS) is presently the world's fastest developing personal networking tool (Kuan-Yu Lin et al., 2011)[15]. Social networking sites (SNS) have penetrated people's daily life with remarkable rapidity to become an important social platform for computer-mediated communication (Correa, 2010)[6]. Researchers have been able to indicate that social media can be used successfully e.g. for marketing processes (Stephen, 2010)[17]. However, for many businesses the application of social media is still in its early stages and more about presence than assimilating it as part of daily business processes, and the businesses are likely to move through different stages regarding their social media maturity (Gallaugh, 2010)[10]. The SNS innovative operation mode

has not only successfully drawn the attention of industry and academia, but has also boosted user growth.

Facebook Fanpage marketing has become extremely popular among many different kind of product marketers. Yet, argument endures about the efficacy and best practices. In current years, there has been a growing emphasis on how to retain fans engaged. A frequently used metric to measure the interactions of fans with pages is the engagement rate (ER) and measurement of KPI. So far research has only focused on how posting tactics influence the ER while little is known about which KPI metrics is more influencing in Producing ER. And by selecting the right metrics to optimize for, the whole publishing process in Fanpages gets more structured and easier to follow (Peiniger, 2013)[16]. As we know, every e-marketer is following its individual social media strategy. Some emphasis on fan growth, some on interaction, and some on new leads (and there are many more strategies) (Peiniger, 2013)[16]. Therefore, our KPI outline on identifying important metrics will expectantly solve open points.

In the study we collected publicly available data on KPI related metrics from Fanpages. We gathered data from different brand Fanpages on a social networking site to test our hypotheses. The authors investigated six months' data of Fanpages of 18 global companies. Data was collected according to date and panel data was analysed by taking 108 observations. Total 3839 posts were taken into account to make analysis. In the study we developed model showing the impact of Fanpage KPI metrics on page performance (Page growth rate and Page likes or Fan numbers). The acceptability of the model is tested by residual checking using E-views 9 software. The sequence of this paper is as follows: first, we identified the publicly available KPI metrics and described the descriptive statistics of Fanpage posts and user interactions. And then develop the conceptual framework and hypotheses according to previous research study and literature review. The initial division is followed by an explanation of the study design. The empirical results is then defined and discussed following summarization of the result with suggestions for the managers.

LITERATURE REVIEW

KPI (Key Performance Indicator):

KPI's give marketers a solid foundation from which to measure the result of Fanpages (Kruse Control Inc, 2015)[14]. It is

obvious that judging the right Facebook KPIs is very individual and every marketer should check for themselves what their aims are and what to boost for. Some studies have identified 5 metrics as the most important and they are: Page fan/likes, PTA, Fan growth base, Interaction base, post types/frequency and keeping them in mind when laying out Facebook strategy makes a lot of sense (Peiniger, 2013)[16].

Post interaction: The post interaction provides information on how active the fans engage with a post of a page. It shows the average amount of all interactions (likes, shares, comments) for each fan per post (ISMOOD, 2014)[13]. This metric is defined for a certain time interval by taking the sum of likes, comments and shares that we get on published posts divided by the number of posts published and divided by the number of fans (Peiniger, 2013)[16].

Growth Rate: The growth rate indicates the average weekly growth of a Facebook page. It does this by answering the question "How much had the page to grow in a week on average to get from value 1 to value 2? (Wusthoff, 2014)[19]. So, the growth measures the increase of the number of fans in a given period (Eyl, 2012)[8]. Growth rate is an important metrics of KPI and marketers have to measure and compare the growth rate at which the fans and their engagement grows over time as a percentage and this measurement gives them an image of efficiency in Fanpage (ISMOOD, 2014)[13].

Page Likes/ No of Fans: This was the first public KPI published by Facebook years ago and hence this has been the most prominent number by which page owners track their performance (Peiniger, 2013). This is the most generic KPI for Facebook that shows mainly FanpageReach (ISMOOD, 2014)[13].

CONCEPTUAL MODEL CONSTRUCTIONS AND HYPOTHESIS

Figure-1 depicts the Conceptual model for the study.

Comments:

Social media should be a place where companies and their audience are having a two-way conversation and comments are a way to keep the conversation going. (Edgecomb, 2013)[7]. A comment is more valuable than a like and a share is more valuable than a comment (Cleary, 2016)[5]. Facebook does take into account the popularity of content, so it's more likely to be shared to other people if there are likes or comments (Cleary, 2016)[5]. So, getting comments in posts are indicating to have engaged user base and high growth rate.

Positive Comments and negative comments:

Marketer should measure the positive or a negative comment in Fanpage and this is a part of Sentiment analysis. Sentiment analysis is an important part of KPI and it is about the mood of the fans on a whole Facebook page or in each post. To determine this, comments and posts are analysed and put in categories such as positive, neutral and negative (Eyl, 2012)[8].

So we propose the following hypothesis:

H1: Positive Comment is significantly related to Growth Rate.

H2: Negative Comment is negatively related to Growth Rate

H7: Positive Comment is significantly related to the Number of Page Likes.

H8: Negative comment is negatively related to the Number of Page Likes

Like on Post:

A quick check to see if your audience likes any of Fanpage posts is a good indication of whether or not the content is attractive to users and it indicates the user engagement (Edgecomb, 2013)[7]. So, if users put likes in posts, indicating the establishment of engaged and continuing user in Fanpages. According to efficiency of this metrics we can formulate the following hypotheses:

H3: Likes are significantly related to Growth Rate

H9: Likes are significantly related to the Number of Page Likes

Shares:

Shares are considered to be UGC (User generated Contents) and users in Fanpages like user-generated content most because this is creating more brand awareness, traffic and much more, without the involvement of marketers. (Cleary, 2016)[5]. So, we propose the following hypotheses:

H4: Shares are significantly related to Growth Rate

H10: Shares are significantly related to the Number of Page Likes

Shared post:

In Fanpages user shares some post or contents with their friends. Among consumers, the opinions of the others are seen as more objective than the marketing messages of companies (Akar, 2010)[1]. This may mean that consumers do not approve of company-generated advertisements within social media environments (Topçu, 2011)[18]. These online users are vital for marketers because they are active and effective. They are talkative, and active consumers who try new products first do not hesitate to share their own experiences with other consumers and to spread their opinions (Blackshaw, 2006)[2]. In this study we calculated the shared post interaction by summing the number of Likes, comments and shares of each shared post and propose the following hypotheses.

H5: Shared posts significantly related to Growth Rate

H11: Shared Posts are significantly related to the Number of Page Like

Service Level:

The service level counts the posts that are posted by the users in a Fanpage. It shows how many user posts get a reaction of the page in form of a like, a comment or deletion (Wusthoff, 2014)[19]. With the KPI "Service Level" we measure the rate of posts from fans which the page has responded to (Either by liking, commenting or deleting) (Eyl, 2012)[8]. This metrics is indicated as consumer generated product review post. Consumer-generated product reviews, images, and tags, which serve as a valuable source of information for customers making product choices online (Ghose, 2009)[11], have increased rapidly on the Internet and have had a great impact on electronic commerce (Forman, 2008)[9]

So According to the above discussion and review we can generate the following Hypothesis respectively:
 H6: Service Level is significantly related to Growth Rate
 H12: Service Level is significantly related to the Number of Page Like.

STUDY DESIGN

We picked six publicly available metrics of KPI from the Fanpages. For our study we selected Positive comments, negative comments, Likes, Shares, Users’ shared post Interactions and Service level as explanatory variables to show their impact on Fanpage Growth rate and number of page likes. The operationalization of the variables is clarified in Table-1.

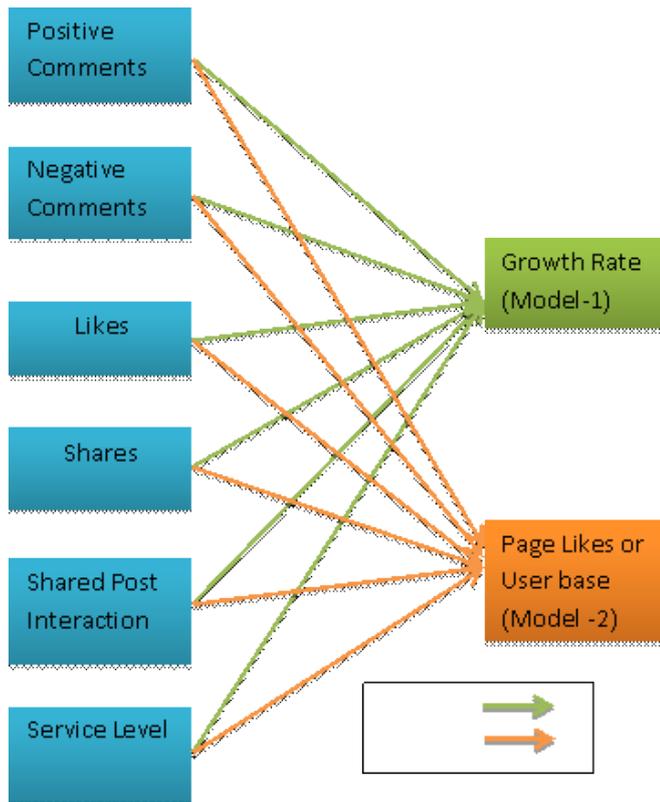


Figure 1: Conceptual Model

Table 1: Operationalization of the variables

Explanatory variables	Variables Clarifications	Dependent Variable	Variable clarifications
Positive Comments	Frequency Number of only positive comments of each post	Growth rate	Published Growth rate of each Fanpage. (growth rate was recorded weekly and the monthly average rate was calculated for panel data analysis)

Negative Comments	Frequency Number of only Negative comments of each post	Page likes/ User base	Number of FanpageLike or number of fans.
Likes	Frequency Number of Likes of each post		
Shares	Frequency Number of shares of each post		
Shared Post Interaction	Summed up number of comments, likes and shares in each shared post (Shares by users only)		
Service Level	Frequency number of posts (Created by User) User posts deletion actions were not counted here.		

SAMPLE SELECTION AND DATA:

We selected Fanpage of five different industries (Consumer electronic, Electronics-phones, Health, beauty, and telecom). We selected 18 Global brands’ Fanpage according to the number of fans. We investigated total 108 observations and six months’ data was collected starting from the month of February 2015 until July 2015.

Table 2: Descriptive Statistics of Fanpages

Industry	No of Fanpages/ Brands	Total Fans as on July, 2015	Average number of Fans Per Brand	Average Growth rate Monthly (percentage)	Total considered posts for metrics evaluation	Average post Per Brand
Consumer Electronics	4	13838640	3459660	0.8	1325	331
Electronics -Phones	4	35527780	8881945	0.7	721	180
Health care	3	8257519	2752506	0.4	523	174
Beauty Products	3	81397070	27132356	0.6	832	277
Telecom	4	50360217	12590054	0.7	438	110

The average number of brand fans was 10963304 per brand; the number of posts taken into account in this research was, on average, 214.4 (SD=238.54) per Fanpage; the average number of likes per brand post was 235143.715 (SD=358341.3937), the average number of positive comments per brand post was 1367.3 (SD=5953.423116), the average number of Negative Comments per brand post was 765.5(SD=891.34), The average number of Shared post Interaction per

brand post was 898.56 (SD= 781.89), the average number of Service level post per brand post was 536.59 (SD= 897.21), the average number of shares per post was 8901.985 (SD= 23714.04).

METHODOLOGIES:

In the study, we collected data from each Fanpages according to date and clustered them into 6 months (February 2015-July 2015). And finally we selected Panel Data Multidimensional analysis to develop our regression model. We use panel data analysis here because the multiple observations on each unit can provide us superior estimates as compared to cross-sectional models of association (Greene W. H., 2003)[12]

For panel data Multidimensional analysis, we checked following three models:

Pooled OLS Regression Model:

Here we pooled 108 observations together and run the OLS regression model, neglecting the cross section and the time series nature of data. The major Problem with this model is that it does not distinguish between the various Fanpages that we have. In other words, by combining 18 Fanpages by pooling, we denied the heterogeneity or individuality that may exist among the Fanpages. Finally, we rejected pooled OLS model, because independently pooled panel assumes that there are no unique attributes of individuals within the measurement set. But in our study, all Fanpages were not same as the variation of the users in Fanpages were high. The Fanpages average user number was 10963304 with a high SD (Standard Deviation) value of 13036729.13 (Min: 12,376,931 and Max: 32,147,813). And we also selected Fanpages from different Industry. This provided another support to reject the Pooled OLS model.

1. Fixed Effect or LSDV Model: The fixed effect model or LSDV model allows for heterogeneity or individuality among 18 Fanpages by allowing to have its own intercept value (Cameron A. C., 2005)[4]. The term fixed effect is due to the fact that although the intercept may differ across the Fanpages, but intercept does not vary over time, that is it is time invariant
2. Random Effect Model (REM): This model indicated that for the 18 Fanpages we have common mean value for the intercept as the REM allows for having a common mean value for the intercept (Cameron A. C., 2005)[3]

DATA ANALYSIS

For data screening, model testing, model estimation and analysis we used Eviews 9. In our study, there are two models:

- 1) Model 1-: Growth Rate
- 2) Model-2: Page Likes

Data testing:

Normality Test:

The Data Collected from the Fanpages was not normally distributed as the jarque Berra statistics for all variables were less than 5%. So we converted data into Log and turned into normally distributed data.

Multicollinearity Test:

We checked the Multicollinearity of the variables. No Variable is overlapping, and there is no problem of Multicollinearity.

Model testing:

Growth Rate (Model-1)

Fixed and Random Effect Testing:

We estimated the fixed effect model and random effect model for the analysis of this model. After estimation, we tested the model through Hausman testing (Correlated random Effect-Hausman Test). In this test the Chi sqr probability value was not less than 5%. So we selected Random Effect Model.

Page Likes (Model-2)

Fixed and Random Effect Testing:

We tested fixed and random effect through Hausman test and as the P value of Hausman test is less than 5%, we selected Fixed Effect Model and tested the fixed effect model through Wald test, which was significant to accept fixed effect model

Residual Testing:

Growth rate (Model-1)

We selected Random Effect model for the analysis of Model-1 and analysed the actual/fitted residual graph. 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 JarqueBera P statistics was above 81% which indicated the normality of data.

Page Likes (Model-2)

We selected fixed Effect model for the analysis of Model-2 and analysed the actual/fitted residual graph. 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 39%, confirming the normality of data.

RESULT INTERPRETATIONS.

Model 1: Growth Rate

The model for the Growth Rate is significant as a whole (F-value=8.759, p-value=0.000038) and clarifies the variance of the dependent variable soundly well (R² =87.80%, adj.R² =76%). So, we can interpret that the overall 88% growth in a Fanpage is because of the six studied variables. And remaining 12 % Growth Rate is result of other metrics of KPI. The Positive Comments is significant and positively related to the Growth rate (Beta= 0.54, p-value 0.03) in support of Hypothesis 1 (H1). The Negative Comments is also positively related to the Growth Rate (Beta= 0.41, p-value=.04),

rejecting Hypothesis 2 (H2). Likes is not significantly related to the Growth rate ($P=.56$), rejecting Hypothesis 3 (H3). Shares are positively related to the Growth rate ($\text{Beta}=.67$, $P\text{-value}=0.003$), supporting to accept Hypothesis 4 (H4). Shared post Interaction is also positively related to the growth rate significantly ($\text{Beta}=0.53$, $p\text{-value}=.003$), confirming to support the Hypothesis 5 (H5). Service level is strongly related to the Growth rate ($\text{beta}=0.68$, $p\text{-value}=0.006$) in support of Hypothesis 6 (H6)

Model 2: Number of Page Likes/ Fan Base

The model for the number of page Likes is significant as a whole ($F\text{-value}=25.34$, $p\text{-value}=0.003$) and explains the change of the Fan number strongly well ($R^2=87\%$, $\text{adj. } R^2=83.0\%$). So, we can interpret that in the Fanpages 87% page likes are because of the studied KPI metrics.

The positive comments are significantly and positively related to the number of page likes ($\text{beta}=0.63$, $p\text{-value}=0.002$), supporting hypothesis 7 (H7). Negative Comments are also positively related to the number of Fans ($\text{beta}=0.35$, $p\text{-value}=0.03$), rejecting Hypothesis 8 (H8). Likes are not significantly related to the number of Page Likes, contrary to hypothesis 9 (H9). Share is significantly and positively related to the number of page likes ($\text{beta}=0.69$, $p\text{-value}=0.0003$), in support of hypothesis 10 (H10). Similarly, Shared post Interaction is not significantly related to the number of fans, confirming to reject Hypothesis 11 (H11). Service level is not significantly related to the number of Page like, supporting to reject hypothesis 12 (H12).

CONCLUSION

The studied KPI metrics (positive comments, Negative comments, Likes, shares, Shared post Interaction, Service Level) are strongly related to the Growth rate and number of Fans of Fanpages. Enhancing these user actions will definitely increase the growth rate and Fan base. Both positive and negative comments are strongly related to the number fans and fan growth rate, indicating the managers to enhance the number of comments. Likes are not positively related to the Growth rate or number of fans. Shares carried the most important weight in enhancing fan number. Shared post Interactions are not related with the Fan number. This may be because of the users who engaged with the shared posts are not visiting the Fanpage or they may not become fan of that particular page. Service level or the post from the user is not significantly related to produce Fan number. The reason behind this issue is, the users' post in a Fanpage may not be evaluated or seen by the users' friends or followers. Managers in that case need to increase more interaction (Likes, comments, shares) in the Users' post in order to get new Fans.

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