

Who Likes to Engage?

An Investigation of the Influences of Facebook Fan Page Characteristics on the Engagement Rate.

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Abstract

Facebook fan page marketing has become extremely popular among many different kind of brands. However, debate continues about the effectiveness and best practices. In recent years, there has been an increasing focus on how to keep fans engaged. A commonly used metric to measure the interactions of fans with pages is the engagement rate (ER). So far research has only focused on how posting tactics influence the ER while little is known about which profiles of fans cause a higher ER. This study set out with the aim of assessing the influence of personality traits (Big5), Facebook activity, demographics, culture (Hofstede dimensions) and homogeneity of fans on the ER. Additionally the effects of the fan page category, the amount of fans and the friends among fans on the ER are also included in the analysis. A multiple regression was conducted using data from over 190.000 Facebook users and over 5000 fan pages. Additionally a second simple regression analysis was done to investigate the effects of the ER on the growth of fan pages. The results of this study indicate that older and higher educated fans cause higher engagement rates. The findings also indicate that fans from countries whose culture scores high on individualism, masculinity and indulgence bring higher engagement rates. Regarding homogeneity, this study shows that higher interaction occurs with homogenous fan bases in terms of culture and personality while this is not the case for demographics and levels of Facebook activity. Moreover it is shown that fan page categories with more emotional themes score higher on the ER while the amount of fans does not have a significant impact. Furthermore this study points out that a higher number of friends among fans causes higher engagement rates. Contrary to expectations, this study found that active Facebook users are not active fans and that extravert fans have a negative influence on the engagement rate. Finally, the second analysis shows that a higher engagement rate will attract more new fans. The combination of findings provide practical implications for fan page managers to achieve more interaction with fans and consequently also a higher reach and growth.

Keywords: Facebook fan page marketing, engagement rate, social media, online brand communities, fan page growth

Introduction

One of the most significant current discussions ongoing in marketing is the effectiveness of Facebook marketing. Many companies have already included social media in their marketing mix and the usage of Facebook fan pages has even grown during 2012 by 8% among Fortune500 companies (Barnes, Lescault, & Andonian, 2012). However, debate continues about the best practices for the implementation of Facebook Marketing and how fans should be valued.

A common metric used to determine the effectiveness of a fan page is the Engagement Rate (ER). It measures how many interactions occur between the fan page and its fans. There are quite a few formulas that can be used to calculate the ER, each with its advantages and disadvantages (Harper, 2013). However there are 2 formulas that can be calculated based on publicly available Facebook data. They both use the People Talking About This (PTAT) metric, which measures the amount of users who created a story about a page within a seven-day period (Darwell, 2012). These stories will display in newsfeeds and include the following actions performed by fans: *liking a page, posting on the page wall, liking a post, commenting on a post, sharing a post, answering a question, Rsvp to a page's event, mentioning the page in a post, tagging the page in a photo, checking in at a place, sharing a check-in deal, liking a check-in deal, writing a recommendation and claiming an offer*. Consequently the ER calculations are as follows:

$$ER = \frac{PTAT}{Total\ Fans} \times 100 \quad or \quad ER = \frac{PTAT - new\ fans}{Total\ Fans} \times 100$$

This paper uses the second formula because the first one has the disadvantage that the PTAT is heavily influenced by the new likes which does not indicate interactions by the current fans. To date, several studies have investigated the effects of moderator post characteristics on the post engagement rate (e.g. Cvijikj & Michahelles, 2011; De Vries, Gensler, & Leeflang, 2012). So far, however, there has been little discussion about which characteristics of the fans influence the engagement rate.

The objectives of this research are to determine the fan base characteristics that have an impact on the engagement rate. These fan characteristics include demographic variables, Facebook activity variables, Big5 personality scores, Hofstede cultural dimensions and the homogeneity. In addition, this paper also takes into account the effects of certain fan page features. These include the total amount of likes, product category and the friends-among-fans ratio (FAF). The latter is a variable introduced in this paper, that calculates for each fan page the average number of friends of a fan that are also fan of the same page. It was previously suggested by De Vries et al. (2012) that social contagion could be a factor in the fans their decision to like or comment on a brand post. The FAF allows to determine whether fans are more likely to interact on fan pages when there are a higher number of friends who are also fan of the same page.

Additionally this paper also investigates whether the ER is a predictor for the growth of fan pages, in other words the amount of new fans the page attracts.

The structure of the paper is as follows: the first section of this paper will examine Facebook and its marketing opportunities, followed by a review of previous studies and the conceptual framework with hypotheses. This initial section is followed by an explanation of the methodology used in this study. Next the results are presented and described. Finally the paper concludes with managerial implications, limitations and future research topics.

Facebook and Fan Page Marketing

In order to understand this field of study, it is important to know the concepts of Facebook and its marketing opportunities. Therefore this section gives some general definitions and explanations of Facebook marketing.

Facebook is a social network site (SNS) founded only in 2004. Social network sites can be defined as “*web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system*” (Boyd & Ellison, 2007). Facebook opened for everyone in 2006 and has known a rapid growth ever since. Currently Facebook reports over 1 billion monthly active users (Facebook, 2012).

Facebook (n.d.) outlines 4 steps businesses need to take to achieve success. (1) creating a page, (2) connecting with people, (3) engaging with the audience and (4) influencing friends of fans. Lipsman, Mudd, Rich, & Bruich (2012) identify 4 options through which a brand can generate impressions on Facebook: (1) Page publishing: posts of the fan page will appear unpaid on the wall and may also appear in the newsfeed of fans or friends of fans, (2) Stories about friends: when a fan interacts with a fan page, a “story” is created. These stories may appear to friends of fans, (3) Sponsored stories: in order to increase the chance that the story is seen, brands can pay to have the stories actively distributed and have them also appear on the right column, (4) Advertisements with social: these are ads that also include a social context that tells which friends already like the page. Figure 1 shows an overview of where the impressions may appear.

Summarized, a fan page has an organic reach with all fans and non-fans who saw brand content in their newsfeed and on the fan page itself though page publishing and stories (figure 2). Second, the page can have a paid reach through regular ads, ads with social and sponsored stories (figure 3) (Polich, Atkinson, Litton, & Kemp, 2012). Third, besides the organic and paid reach, there is also a viral reach on Facebook. The viral reach of a fan page post is defined as follows (Facebook, n.d.): “*The number of unique people who saw this post from a story published by a friend. These stories can include liking, commenting or sharing your post, answering a question or responding to an event.*”

An important aspect with regards to the reach fan pages can get on Facebook is the Edgerank algorithm. This algorithm is used by Facebook to decide what content will appear at the top of users their news feed based on its relevance (Facebook, 2011). Although not all parameters of the Edgerank formula are publicly available, there are three main elements that play a role: (1) the amount of interaction that is behind the post, (2) the effort a user has put into the interaction, e.g. a like has a lower weight than a comment, (3) the timing of the post, more recent posts are displayed above older ones. From this it can be concluded that the engagement rate plays a crucial role in the reach of fan pages.



Figure 1: Examples of Earned and Paid Media Impressions Appearing on the Newsfeed or on Profile Pages (Lipsman et al., 2012).



Figure 2: Organic reach on Facebook (Polich et al., 2012)

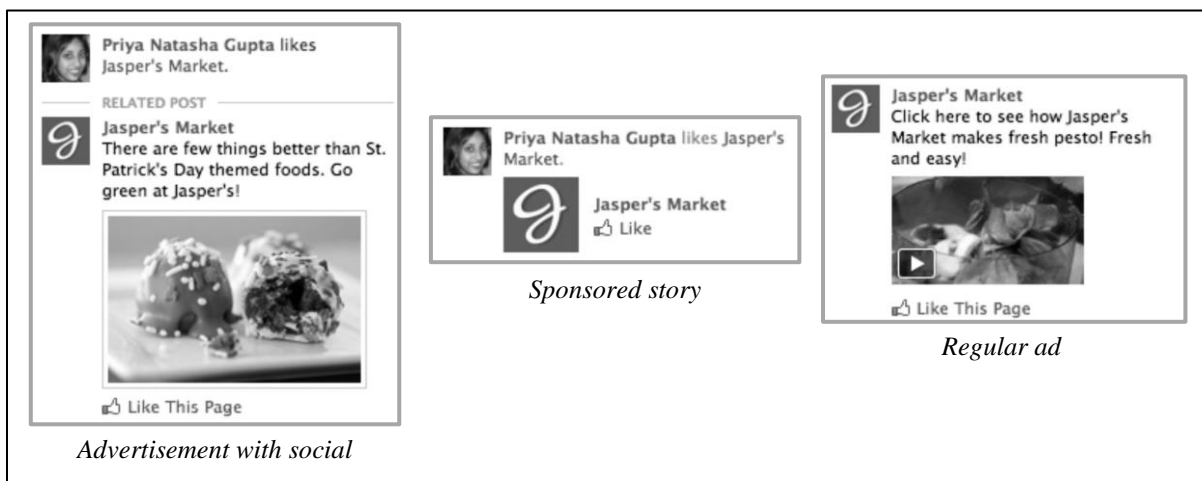


Figure 3: Paid reach on Facebook (Polich et al., 2012)

Previous studies

In recent years, there has been an increasing amount of literature on Facebook marketing. Some studies prove that Facebook can have a positive impact on sales (Corstjens & Umblijs, 2012; Lipsman et al., 2012; Sociable Labs, 2012; Stephen & Galak, 2012). However these studies have only focused on certain cases studies and do not provide results that can be generalized.

Other researchers question the opportunities of Facebook marketing given the audience that can be reached. Nelson-Field, Riebe, & Sharp (2012) investigated the buying concentration of fast moving consumer goods Facebook fan pages. They found that it is not negative binomial distributed and therefore extremely different from a typical population of shoppers. The concentration of heavy-buyers of the Facebook fan base is especially high while there are practically no non-buyers. This being the opposite of a typically distributed consumer base. Facebook (n.d.) tries to convince businesses to run ads with the following argument: “*People who like your Page spend an average of 2 times more as a customer than people who aren’t connected to you on Facebook.*” The study by Nelson-Field et al. (2012) suggests that it is the other way around and therefore it could be suggested that it is not worthwhile to spend much on Facebook advertising.

Furthermore, a large and growing body of literature has investigated the motivations behind Facebook usage. Surveys such as the one conducted by Maurer & Wiegmann (2011) have shown that the majority of Facebook users do not use it as a source of information nor do they purchase because of Facebook. It was shown that the most important reasons for using Facebook is to stay in contact with friends and acquaintances, to receive information about their friends and to share information about their lives with friends. Additionally Sashittal, Sriramachandramurthy, & Hodis (2012) argue that Facebook users have 3 motivations for using the platform: “(1) *to voyeuristically peer into others’ lives, (2) to create a distinctive identity for themselves, and (3) to act on their inner narcissistic tendencies.*” Overall it can be stated that expected motivation of fans to interact with brands will be low because it is not one of the primary reasons for using Facebook.

This leads to the question of how much a fan is actually worth. Lake (2011) argues that fans per se are useless and that the fan count of a fan page is actually meaningless. According to a study conducted by the Ehrenberg-Bass Institute, the number of fans of the biggest brands on Facebook that are actually engaging (likes, posts, comments, shares, tags, check-ins,...) is only somewhat higher than 1% (Creamer, 2012). In order to achieve higher value from fans Lipsman et al. (2012) suggest three steps: (1) increasing the depth of engagement and loyalty, (2) generating incremental purchase behavior and (3) leveraging the ability to influence friends of fans. Hoffman & Fodor (2010) propose to turn the traditional ROI approach on its head and instead measure the returns in terms of consumer reactions. The key aspect of this argument is that managers should look at the user motivations for using social media and then assess the social media investments customers make as they participate with marketers their brands. This also means that returns from social media investments will not always be measured in money, but also in customer behaviors. Furthermore they suggest to link the social media metrics to an additional set of proxy benchmarks to come up with a better ROI calculation. For instance how likely a fan who engaged with the company is to make a future

purchase. In line with these ideas, Parent, Plangger, & Bal (2011) suggest to use “willingness to participate” as the new standard for gaining and sustaining a competitive advantage replacing the old “willingness to pay” metric.

From the previous paragraph it becomes clear that participation or engagement among fans is the key to successful Facebook marketing. To date, research on how to improve the engagement of fans focused heavily on the posting characteristics of the fan page moderator. De Vries et al. (2012) explored the possible drivers for brand post popularity in terms of likes and comments of fans. Their findings suggest that in order to increase the amount of comments on posts, it is necessary to post highly interactive content like for instance posing a question to the fans. While on the other hand placing a link has a negative effect on the amount of comments. This finding was confirmed in a study of the top 20.000 fan pages by Momentus Media (n.d.). With regards to enhancing the amount of likes on a post, highly vivid or medium interactive post characteristics like a video or a contest have a positive effect on the amount of likes (De Vries et al., 2012).

Another small scale study by Cvijikj & Michahelles (2011) analyzed the effect of post characteristics including post type, category and posting day, on user interaction in terms of likes, comments and interaction duration. Their results showed that the post type of photos triggered the highest level of interaction followed by status updates and links. This was also concluded by Momentus Media (n.d.). Finally, it is better to post in weekends and off-peak hours to get higher levels of interaction from fans. The best time to post also depends on the industry of the fan page (Salesforce.com, inc., 2012).

Conceptual Framework and Hypotheses

The framework for the determinants of engagement rate is presented in Figure 4. This paper will investigate the effects of characteristics of Facebook fans. These characteristics consist of Big5 personality profiles, Facebook activity behavioral parameters, demographic characteristics and the Hofstede dimensions of culture. Additionally, fan page characteristics that might have an impact on the engagement rate are included as well. These include the total amount of Fans, fan page category and the friends-among-fans. Also as mentioned in the literature review there has been studies conducted that show the effects moderator posts on the engagement rate however this is not investigated in this paper. Finally the effect of the engagement rate on the growth of fan pages is also investigated.

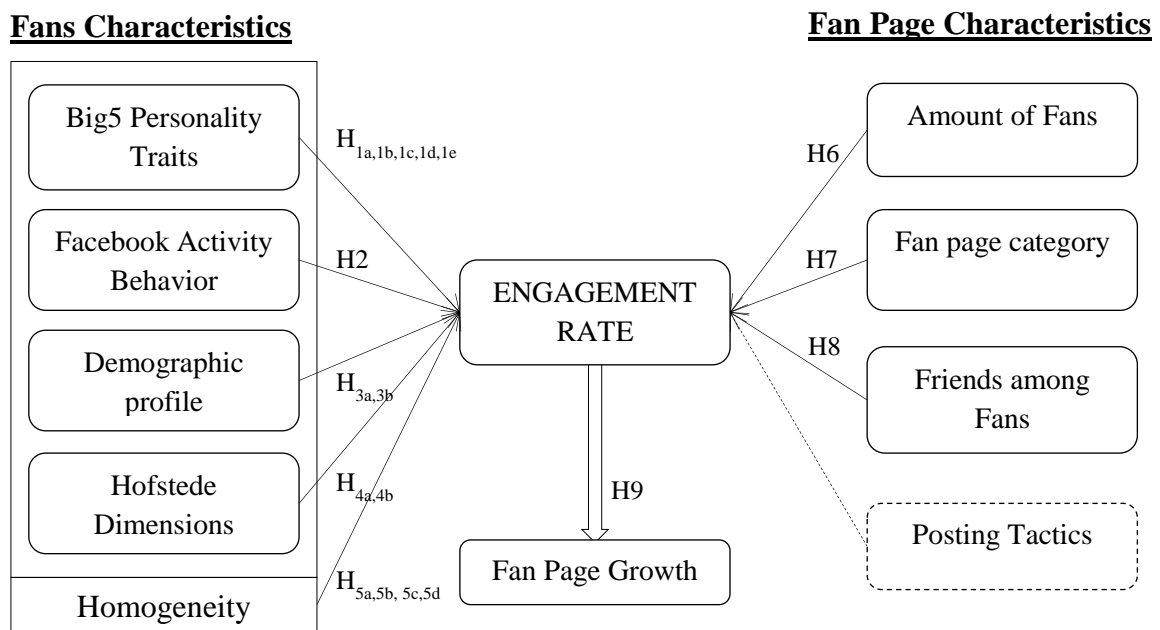


Figure 4: Conceptual Framework.

Big5 Personality Traits

The first fan base characteristic that might have an influence on fan page engagement is the personality of the fans. The model used in this study to assess personality is the five factor model of personality (FFM), also known as the Big5 (Costa & McCrae, 1992). This model empirically generalizes different personality traits into five basic tendencies based on a questionnaire. Below is an overview of the five profiles along with some of the characteristic adaptations (McCrae & Costa, 1999):

Openness to experience: *“interest in travel, many different hobbies, knowledge of foreign cuisine, diverse vocational interests, friends who share tastes”*

Conscientiousness: *“leadership skills, long-term plans, organized support network, technical expertise”*

Extraversion: *“social skills, numerous friendships, enterprising vocational interests, participation in team sports, club memberships”*

Agreeableness: “*forgiving attitudes, belief in cooperation, inoffensive language, reputation as pushover*”

Neuroticism: “*low self-esteem, irrational, perfectionistic beliefs, pessimistic attitudes*”

Previous research shows that personality has a significant impact on how people behave online. Huang & Yang (2010) analyzed the relationship between personality traits and online shopping behavior. Their findings suggest that extraverts like shopping online out of a sociality motivation, meaning that they can share information and experiences with people that have the same interests. This also means that extraverts have a tendency to feel attached to a brand community, to make friends and interact with other brand community members as well as identifying with the members of the brand community (Füller, Matzler, & Hoppe, 2008; Matzler, Pichler, Füller, & Mooradian, 2011). Contrary to expectations, Matzler et al. (2011) found that agreeableness did not significantly impacts the identification with a brand community. Given the characteristics of the Big5 traits and the previous research, the following hypotheses are proposed:

H1a: Higher openness scores of fans has a positive effect on the ER of fan pages.

H1b: The conscientiousness scores of fans have no impact on the ER of fan pages.

H1c: Higher extraversion scores of fans has a positive effect on the ER of fan pages.

H1d: Higher agreeableness scores of fans has a positive effect on the ER of fan pages.

H1e: Higher neuroticism scores of fans has a negative effect on the ER of fan pages.

Facebook Activity Behavioral profile

There are many differences along people when it comes to how active they are on Facebook. The activeness of a Facebook user will be assessed based on the following parameters in this study: the amount of likes, tags in photos, status updates, attended events and group memberships. The most logical expectation is that heavy Facebook users will be more active on fan pages too. However it could be possible that the heavy-users have other priorities on Facebook besides interacting with fan pages.

H2: Fans who are active Facebook users have a positive influence on the ER

Demographic Profile

A considerable amount of literature has been published on motivations for SNS usage among different ages and gender (e.g. Barker, 2009; Joinson, 2008; Lin & Lu, 2011). Weiser (2000) identified the differences in motivations for internet usage between males and females. According to this study males are more likely to use the internet for purposes of functionality leisure and entertainment while females are more in favor of the communication and

interaction values. On the other side males seem to be more expressive and eager to share their opinions online (Wallace, 1999). However Krasnova, Veltri, & Günther (2012) suggest that men and women are equally comfortable sharing their personal details on SNS. Additionally, there seems to be no different reaction between men and women to perceptions of invasiveness and privacy concerns (Taylor, Lewin, & Strutton, 2011).

Regarding the age of SNS users, Taylor et al. (2011) found that college-aged (19-24) users found advertisements on SNS to be more informative than other age groups. They suggest that this age segment has a more positive attitude towards advertisement messages on SNS.

Consequently, the following hypotheses are proposed:

H3a: The gender of Fans will not have a significant influence on the ER.

H3b: A higher concentration of college-aged fans will have a positive impact on the ER.

Hofstede dimensions of culture

Countries clearly play an important role on the fan page ER (Socialbakers, 2011). Therefore a third characteristic of fans that might influence their engagement on fan pages is the culture of their country of origin. A commonly used model to identify differences among cultures is the Hofstede model. The original model contained four dimensions, later a fifth one was added in 1991 and more recently in 2010 the sixth dimension was added. Below follows an overview of the six dimensions along with their definitions (Hofstede, n.d.):

Power distance (PDI): *“the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally”*

Individualism versus collectivism (IDV): *“the degree of interdependence a society maintains among its members”*

Masculinity versus femininity (MAS): *“what motivates people, wanting to be the best (masculine) or liking what you do (feminine)”*

Uncertainty avoidance (UAI): *“the extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these”*

Long-term versus short-term orientation (LTO): *“the extent to which a society shows a pragmatic future-oriented perspective rather than a conventional historical short-term point of view”*

Indulgence versus Restraint (IVR): *the extent to which a society allows relatively free gratification of basic and natural human drives related to enjoying life and having fun rather than the suppression of gratification of needs regulated by strict social norms.*

Previous studies have reported differences in the motivations for using social networking sites across different cultures as well as the way people are using it (Kim, Sohn, & Choi, 2011; Leeming & Danino, 2012; Rosen, Stefanone, & Lackaff, 2010; Vasalou, Joinson, & Courvoisier, 2010). This, for instance, translates to the way people from different cultures are presenting themselves on social networking sites (Zhao & Jiang, 2011).

Krasnova, Veltri, & Günther (2012) identified the importance of uncertainty avoidance and individualism in the cognitive processes of social networking sites usage. A higher level of individualism facilitates the revealing of information because of higher trusting beliefs. Whereas the uncertainty avoidance negatively impacts the privacy concerns one might have on Facebook. However some argue that collectivistic cultures show a higher sense of community involvement in terms of in-group sharing of information and providing useful comments (Dou, 2011; Qiu, Lin, & Leung, 2012). It is interesting to note that previous research on culture and the web mainly emphasize individualism versus collectivism as influencing factors (Gallagher & Savage, 2013).

According to the definitions of the dimensions and the previous research, the following hypotheses are suggested:

H4a: Power Distance scores of fans will have no significant effect on the ER.

H4b: Higher levels of Individualism among fans will positively affect the ER of fan pages.

H4c: Masculinity scores of fans will have no significant effect on the ER.

H4d: Higher levels of Uncertainty Avoidance among fans will negatively affect the ER of fan pages.

H4e: Long Term Orientation scores of fans will have no significant effect on the ER.

H4f: Higher levels of Indulgence among fans will positively affect the ER of fan pages.

Homogeneity

Another element that might have an impact on the levels of interaction on fan pages, is the homogeneity of the fan base. The homogeneity will be assessed for demographics, Facebook activity, culture and personality. An article by Mannix & Neale (2005) investigates the previous research over the past 50 years on group composition and team performance. They conclude that surface-level differences like gender, age and ethnicity are more often expected to have a negative influence on the capability of groups to operate effectively. On the other hand, the underlying differences such as personality and functional background tend to enhance the performance. Usually the group performance in the literature has been measured by communication, conflict and social integration. However they also note that the effects usually are not strong and that previous studies often contradict each other.

H5a: A homogenous fan base in terms of demographics will positively impact on ER.

H5b: A heterogeneous fan base in terms of Facebook activity will positively impact the ER.

H5c: A heterogeneous fan base in terms of culture will positively impact the ER.

H5d: A heterogeneous fan base in terms of personality will positively impact the ER.

Amount of Fans

A report by SocialBakers suggests that in general more fans means lower engagement rates, except for the fashion industry (Allen, 2012). This is confirmed by another study by Fanpage Karma which reveals that engagement rates start to drop for fan pages with more than 1 million fans (Fanpage Karma, 2013). However up to 200.000 fans, the ER still grows. A possible explanation, according to Fanpage Karma, is that the bigger pages are run by well-known brands and that user may like the page while not really being interested in the content.

H6: Having more fans has a negative effect on the ER of fan pages.

Fan page Category

A study by social media analytics company Fanpage Karma reveals that there are remarkable differences in engagement rates between categories (Fanpage Karma, 2013). This finding is also supported by a Socialbakers report on engagement rates by industry (Socialbakers, 2012). These studies show that the most engaging brands on Facebook belong to the following categories: sport, automobile, alcohol, airlines and services. According to Fanpage Karma, fan pages with controversial or emotional topics gets the highest engagement rates while more common topics like finance and food are lagging behind. Therefore, the following hypothesis is proposed:

H7: Fan pages categories with more emotional, controversial or personal appeal will positively influence the ER.

Friends Among Fans

Friends among fans (FAF) stands for the amount of friends per fan that are also fan of the same fan page. It is included in the analysis because it is believed that having a higher amount of friends who are also fans will positively influence the engagement rate. It was also suggested by De Vries et al.(2012) that social contagion could be a factor in the fans their decision to like or comment on a brand post.

H8: A higher friends-among-fans ratio will positively influence the ER of fan pages.

Engagement Rate and Page Growth

Given the Edgerank algorithm, it seems obvious that a high engagement rate will result in a higher reach. With a higher reach, the chance to attract new fans should also be higher. Consequently, the following hypothesis is tested:

H9: A higher engagement rate will have a positive influence on the growth of fan pages.

Method

Data

This study uses data obtained from a Facebook application called myPersonality (Kosinski & Stillwell, 2013). The application was launched in 2007 and gives users the opportunity to take real psychometric tests. With the consent of the users, the application recorded not only the psychological test results but also other Facebook profile data. The initial dataset contained over 4 million Facebook users but due to missing profile info and other privacy restrictions there are far less records that contain like data. Consequently 190.725 users were included in this study. Additionally, other missing profile features reduced the number of data points used to calculate certain variables. Table 1 gives an overview of the descriptive statistics of the users included in the analysis of this paper.

Furthermore data containing the 6 Hofstede dimensions of culture was obtained from Geert Hofstede his website (“Geert Hofstede | Hofstede Dimension Data Matrix,” 2010) and was matched to the countries of origin of the Facebook users in the dataset. The users in the dataset had diverse nationalities: United States 60,1%, United Kingdom 8,7%, Philippines 4,4%, India 4,3%, Australia 2,7%, Canada 2,7%, Indonesia 1,2%, Ireland 1,1%, Malaysia 1,0%, South Africa 1,0% and 82 more countries with less than 1%.

Next, the engagement rate data was gathered for 7.790 fan pages and was linked to the users in the sample according to the pages they had liked on the day they took the myPersonality test. The fan page data was gathered according to the following procedure: a list of around 17.000 pages was generated based on the pages the users within the dataset liked. For all fan pages Facebook enlists some performance statistics that are publicly available at the following URL: [https://www.facebook.com/\[name of the page\]/likes](https://www.facebook.com/[name of the page]/likes). A script developed by Dirk Yperman was used to extract the following data: the total amount of likes, People Talking About This and new likes for the past 30 days. The script used the names of the pages in our selection and inserted it into the above URL. Due to pages changing name, not existing anymore and other errors the set of 7.790 pages was obtained on April 16, 2013. It was important to have data for a longer period because of the many fluctuations in new likes and PTAT.

Only fan pages of brands were included in the dataset in order to restrict the analysis to meaningful pages for marketing research. Consequently all fan pages focusing on interests, statements, opinions etc. were not used. Among the brand fan pages included in the dataset one can find products, services, organizations and public figures in 111 categories. In order to include the fan page category in the analysis, all the fan pages in the dataset were categorized into 15 more general categories based on the category they had selected on Facebook. Table 2 gives an overview of the categories along with their subcategories and the amount of pages.

Table 1:

Descriptive Statistics Facebook User Data

Fan Characteristics	Variables	N	Mean	Std. Deviation
Big5	Openness	174103	3,7470	,74790
	Conscientiousness	174103	3,3288	,79146
	Extraversion	174103	3,4431	,87507
	Agreeableness	174103	3,4413	,76977
	Neuroticism	174098	2,6309	,94755
Activity	Number of friends	189863	,61	,488
	Number of likes	167242	26,27	10,749
	Number of status updates	154902	256,99	257,267
	Number of events	190725	237,85	413,530
	Number of group memberships	114906	151,45	168,757
Demographic	number of photo tags	13582	17,13	54,877
	Age	158130	33,58	46,309
	Gender	84414	1,65	1,151
	Number of work places	154914	2,06	1,100
	Number of education	132389	112,29	172,752
	College graduate	24219	-	-
	In college	8408	-	-
Hofstede	In high school	5633	-	-
	Power distance	98961	46,62	17,425
	Individualism	98961	78,73	23,127
	Masculinity	98961	60,24	7,851
	Uncertainty avoidance	98961	47,16	12,251
	Long-term orientation	100482	32,24	13,139
	Indulgence	100452	62,51	14,634

Another criterion for the fan page selection was the amount of likes it had within the dataset. Accordingly, each fan page had a decent amount of fans within the dataset ranging from 100 to 36572 fans. When compared to the actual amount of likes each page has, this accounted for sample percentages ranging from 0,0004% up to 5,89% (= fans in the dataset divided by total fans on April 16). Although this seems rather low, it has been demonstrated that private traits and attributes can be accurately predicted from Facebook like data (Kosinski, Stillwell, & Graepel, 2013). In order to enhance the power of the model it was decided to leave out all pages with a sample percentage lower than 0,05%. This specific level was chosen based on the R value along with the amount of significant results. However multiple tests were done with different sample percentage boundaries and it was concluded that the signs of the betas were always in the same line while only the amount of significant results changed. Consequently the final dataset of pages consisted of 5.286 pages.

Table 2:

Categories of the fan pages included in the dataset

Categories	subcategories	Amount of Fan Pages
Apps/Websites	N/A	240
Automobile	Cars, Parts	16
Clothing/Fashion/Accessories	Jewelry, Watches	138
Electronics/Technology/Telco	Computers, Software, Internet	66
Foods/Beverages	Wine/spirits, Grocery, Vitamins	239
Movies/TV Shows/Fictional Characters	Studio, Book	671
Musicians/Bands	Artists, Producers, Record labels	1883
News/Media/Entertainment	Magazines, TV channels, Radio stations, TV networks	446
Organizations/Causes/Political Party	Governmental organizations, NGO's, Universities	211
Products/Services	Tools/Equipment, Pet supplies, Patio/Garden, Kitchen/Cooking, Household supplies, Health/Beauty, Games/Toys, Furniture, Camera/Photo, Bank/Financial institution, Baby goods/Kids goods, Bags/Luggage	458
Public figures	Actor/Director, Writer, Comedian, Politician, Journalist, Entertainer, Business personality, Chef, Dancer, Coach, News personality, Athlete	594
Restaurant/Café	N/A	20
Shopping/Retail	N/A	25
Sports	Professional sports team, School sports team, Sports league, Sports venue	163
Travel/Attractions	City, Country, Tours/Sightseeing, Leisure, Movie theatre, Transport, Hotel, Concert venue	116
Total		5286

Variables: from fans to pages

In order to analyze the fan characteristics of the fan pages, the user related variables needed to be translated into page related variables. In order to do this, the mean was calculated for all the available attributes of the fans linked to a specific page. For categorical variables percentages were used (e.g. 35% of a page were male).

The Five Factor Model, aka Big5, scores of personality were recorded according to the Revised NEO Personality Inventory (Costa & McCrae, 1992). The length of the test was optional to the user and varied between 20 to 100 items (40% took the 100 item version).

Since the respondents were taking the test to get personal feedback, there was a high accuracy (reliability > 0.8) (Kosinski & Stillwell, 2013).

To measure the general Facebook activity behavior of the fans, the total number of friends, likes, tags in photos, status updates, events and group memberships were included.

The demographic variables consisted of gender, age, country and the number of workplaces and educations the user has enlisted on his profile. Additionally, it was calculated whether the user was graduated, in college or in high school. This calculation was made based on the names and the year of their latest education enlisted on their Facebook profile plus extra age control margins. Also, the countries of the users were translated into 6 Hofstede cultural dimensions to give a meaningful explanation for the influence it might have on the ER.

In order to assess the homogeneity of the users of a page, the standard deviation was calculated for all of the previous discussed variables. Next the average was calculated according to each theme (personality, activity, culture and demographic) which resulted in the 4 variables of homogeneity. In this case, a higher value means a higher level of heterogeneity. Among the different mean variables there were many intercorrelations, therefore in order to tackle the problem of multicollinearity it was decided to perform a factor analysis for the activity, demographic and Hofstede parameters. Below follows an overview of the factor analysis outputs. In order to better interpret the factors, coefficients smaller than 0,3 were suppressed.

The factor analysis for Facebook activity of fans, presented in table 3, can be interpreted as follows: component 1 consists of pages with fans who have many friends and who often get tagged in photos. Component 2 consists of pages with fans who like many other pages and who find it important to post status updates. Component 3 can be described as pages with fans who are member of groups and who attend many events.

Table 3:

Rotated Component Matrix^a Facebook Activity

	Component		
	1	2	3
Mean of fan pages			
No. of likes		,840	
No. of status updates	,310	,772	
No. of events			,700
No. of groups		,300	,788
No. of tags	,758		
No. of friends	,880		

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Table 4 gives the output of the factor analysis for the demographic components of pages. Component 1 consists of pages with older users who have work experience and who are mostly graduated from college while it excludes younger people who are still in high school.

Component 2 represents pages with fans who are still in college along with fans who have work experience.

Table 4:
Rotated Component Matrix^a Demographics

	Component	
	1	2
Mean of fan pages		
No. of workplaces	,553	,663
No. of education	,823	
Age	,740	
College graduates (%)	,848	
In college (%)	-,330	,763
In high school (%)	-,812	

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 3 iterations.

The last factor analysis output is presented in table 5. Component 1 describes pages with fans from cultures that score high on individualism and indulgence while having lower scores for power distance and long term orientation. Component 2 represents pages with fans from masculine cultures but less from uncertainty avoidance cultures.

Table 5:
Rotated Component Matrix^a Hofstede

	Component	
	1	2
Power distance	-,875	
Individualism	,917	
Masculinity	,544	,690
Uncertainty avoidance		-,963
Long term orientation	-,777	
Indulgence	,879	

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 3 iterations.

Besides the user characteristics variables, page related variables were calculated. First the engagement rate was calculated with the following formula: $ER = \frac{(PTAT - new\ likes)}{Total\ Likes} \times 100$

The ER was calculated for 30 days and eventually the mean was calculated. The ER values over a 30 day period ranged from 0% to 30%. All outliers above 30% were removed from the dataset.

Second, this study introduced the friends-among fans (FAF) variable. This measures for every page the average amount of friends of a fan that are also fans of the same page. Although this was calculated only based on the friendship data inside the dataset, it should give a representative idea of how many friends there are among the fans of each page. Within the dataset this ratio ranged from 0 to 1,67 friends per fan. For instance a FAF ratio of 0,09 means that the page has 9% chance that a fan has a friend who is also fan.

Table 6 gives an overview of all the descriptive statistics for all the fan page variables used in this study.

Table 6:

Descriptive Statistics Fan Page Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Openness (mean)	5286	3,29	4,32	3,8332	,16130
Conscientiousness (mean)	5286	2,81	3,92	3,2779	,14283
Extraversion (mean)	5286	2,74	3,97	3,4466	,13989
Agreeableness (mean)	5286	2,82	3,96	3,4231	,10767
Neuroticism (mean)	5286	1,22	3,25	2,7132	,16075
Activity (Factor score 1)	5286	-2,54497	5,40316	,0341101	,95118682
Activity (Factor score 2)	5286	-4,32690	3,88866	,0511091	,96418241
Activity (Factor score 3)	5286	-2,42161	5,88847	-,0071273	,92831559
Demographics (Factor score 1)	5286	-3,62495	3,51191	-,0679439	1,02486363
Demographics (Factor score 2)	5286	-3,21475	8,28147	,1395909	,93592419
Gender (male %)	5286	,0	100,0	63,085	18,7230
Hofstede (Factor score 1)	5286	-4,69300	1,21921	,1837690	,83895242
Hofstede (Factor score 2)	5286	-9,22129	3,69299	,0874498	,83723738
Heterogeneity (Demographics)	5286	1,12	7,70	4,0419	,90615
Heterogeneity (Activeness)	5286	100,51	370,79	251,2031	32,54559
Heterogeneity (Culture)	5286	,00	22,86	9,8877	4,55867
Heterogeneity (Personality)	5286	,65	1,01	,8118	,03539
Friends among Fans (FAF)	5286	,0000	1,6667	,034389	,0659869
Amount of Likes on Facebook	5286	8164	56505843	1078398,60	3051576,166
Amount of Likes within the Dataset	5286	100	36572	1008,51	2261,516
Sample Size (%)	5286	,0500	3,4052	,134250	,0992849
Engagement Rate (Mean 30 days)	5286	,0028	29,7678	1,952636	3,4604277
Growth (Mean 30 days)	5286	,00	623912,93	3834,0273	15125,16226

Methodology

A multiple regression analysis was adopted to investigate the effects of the variables on the ER. Initially multiple regression was not possible because the ER variable was positively skewed (to the right) and consequently the assumption of normality was not met. This distribution seemed not unusual as other sources reported the majority of pages having ER values below 1% (Creamer, 2012; Socialbakers, 2012). Also Fanpage Karma reports half of ER values below 0,2% (Fanpage Karma, 2013).

To solve this problem the natural logarithm of the ER was used as dependent variable (this is a popular corrective measure for non-normal errors in econometrics (Gujarati, 2003; Simon, 2003)). A binary logistic regression was used to check the validity of the linear regression model with the logarithm applied. In this binary logistic regression, the dependent category made a distinction between successful and non-successful pages whereby the separation was made on 2% ER. The logistic regression model indicated that the multiple regression model with $\ln(ER)$ was valid as the significances and beta values were in the same line.

Consequently the model used to explain the ER value pages looks like this:

$$\begin{aligned} \ln(ER) = & \beta_0 + \beta_1 \textit{openness} + \beta_2 \textit{conscientiousness} + \beta_3 \textit{extraversion} \\ & + \beta_4 \textit{agreeableness} + \beta_5 \textit{neuroticism} + \beta_6 \textit{activity}_1 + \beta_7 \textit{activity}_2 \\ & + \beta_8 \textit{activity}_3 + \beta_9 \textit{demographic}_1 + \beta_{10} \textit{demographic}_2 + \beta_{11} \textit{hofstede}_1 \\ & + \beta_{12} \textit{hofstede}_2 + \beta_{13} \textit{heterogeneity}_{\textit{personality}} \\ & + \beta_{14} \textit{heterogeneity}_{\textit{activity}} + \beta_{15} \textit{heterogeneity}_{\textit{demographic}} \\ & + \beta_{16} \textit{heterogeneity}_{\textit{culture}} + \beta_{17} \textit{Likes} + \beta_{18} \textit{FAF} + \sum_{c=1}^{14} \beta_c \textit{Category}_c + \varepsilon \end{aligned}$$

where:

$\ln(ER)$ is the dependent variable,

β_0 is the constant,

β_1 to β_c are the regression coefficients for the corresponding independent variables as listed below:

- | | | |
|--|---|--|
| openness, conscientiousness, extraversion, agreeableness and neuroticism | = | The average personality scores for all fans of the fan page |
| activity _i , demographic _i , and hofstede _i | = | The factor scores from the corresponding average values for all fans of the fan page |
| heterogeneity _{personality} , heterogeneity _{activity} , heterogeneity _{demographic} , heterogeneity _{culture} | = | The average of the standard deviations of all corresponding variables among all fans of the page (e.g. heterogeneity of personality takes the average of the standard deviations of the big5 scores) |
| Likes | = | Total amount of fans of a page on Facebook |

- FAF (friends among fans) = The average number of friends per fan that are also fan of the page
- Category_c = 14 dummy variables for the categories presented in table 2 (the reference category is ‘Musicians/bands’)
- ε = residual

The second analysis predicts the growth of fan pages by the ER. The distribution of the growth of fan pages was also heavily skewed to the right, consequently the natural logarithm was taken (Gujarati, 2003; Simon, 2003). It should be noted that this is only an initial analysis for page growth prediction because there are many more possible predictors not included in the model. However this initial analysis was included mainly for the implications for the engagement rate.

The regression model used to predict the growth of fan pages can be explained by the following equation:

$$\ln(\text{Growth}) = \beta_0 + \beta_1 \ln(\text{ER}) + \varepsilon$$

where:

$\ln(\text{Growth})$ is the dependent variable and stands for the average amount of daily new fans over a 30-day period,

$\ln(\text{ER})$ is the independent variable and stands for the average engagement rate of the page over a 30-day period

Results

The multiple regression results are presented in table 7. A review of the plot of the residuals against the predicted ER (figure 5), the histogram of the residuals (figure 6) and the collinearity diagnostics (presented in table 7) suggests that the assumptions for homoscedasticity, normality and no multicollinearity are met.

The model as a whole is significant ($N = 5286$; $F = 26,150$, $p < .001$) and explains the variance of the ER fairly well ($R^2 = 0,141$; $\text{adj. } R^2 = 0,136$).

When looking at the personality variables of pages, only extraversion has a significant impact on the ER ($\beta = -,053$; $p < 0,01$). This impact is negative and contrary to the expectations in hypothesis 1c. Additionally the openness trait is almost significant at the 0,05 level and would have a positive effect on the ER of fan pages agreeing to hypothesis 1a.

The degree of Facebook activity of fans, indicated by three factor score variables, has a significant negative impact on the ER ($\beta = -,083$; $p < 0,001$)($\beta = -,093$; $p < 0,001$)($\beta = -,075$; $p < 0,001$) and consequently these results reject hypothesis 2.

The results for demographic characteristics show that there is a highly significant effect of the first demographic factor score on the ER ($\beta = ,089$; $p < 0,001$). This suggests that older and higher educated fans have a positive effect on the ER which contradicts with hypothesis 3b.

The results for culture, according to the two factor scores of the Hofstede dimensions, show that individualism, masculinity and indulgence have a positive impact on the ER. Power distance and long term orientation have a negative impact on the ER of fan pages. Consequently hypotheses 4b and 4f are confirmed while hypotheses 4a, 4c, 4e are rejected.

When looking at the homogeneity of the fans, the results show that fans with different demographic profiles and Facebook usage patterns positively influence the ER of fan pages ($\beta = ,093$; $p < 0,001$)($\beta = ,054$; $p < 0,05$). On the other hand the results show that a culturally and personality heterogeneous fan base has a negative effect on the ER ($\beta = -,072$; $p < 0,001$)($\beta = -,041$; $p < 0,05$). Accordingly, hypotheses 5a, 5c and 5d are rejected and hypothesis 5b is supported.

Turning to the page characteristics, the output shows that the amount of likes has no significant impact on the ER. Next, the friends among fans variable clearly has a positive influence on the ER of fan pages ($\beta = ,052$; $p < 0,01$).

From the regression output it becomes clear that the page category is a very important factor when predicting the ER. Compared to the reference category, Musicians/Bands, there are five categories that have a significant positive influence on the ER: Clothing/Fashion/Accessories, News/Media/Entertainment, Organizations & Causes, Public figures and Sports. The categories that have a significant negative effect on the ER of fan pages are Foods & Beverages, Movies & TV shows and Products & Services.

Table 7:

Regression Results

	Beta	Std. Error	t	Sig.	Tolerance	VIF
(Constant)		2,014	-,113	,910		
Openness (mean)	,035	,173	1,881	,060	,460	2,174
Conscientiousness (mean)	,022	,262	,863	,388	,255	3,923
Extraversion (mean)	-,053	,194	-2,870	,004	,486	2,057
Agreeableness (mean)	,003	,240	,171	,865	,533	1,876
Neuroticism (mean)	-,002	,189	-,116	,907	,386	2,588
Activity (Factor score 1)	-,083	,034	-3,810	,000	,346	2,893
Activity (Factor score 2)	-,094	,041	-3,484	,000	,225	4,439
Activity (Factor score 3)	-,075	,028	-4,329	,000	,538	1,858
Demographics (Factor score 1)	,089	,033	3,934	,000	,320	3,123
Demographics (Factor score 2)	-,018	,026	-1,103	,270	,618	1,617
Gender (male %)	,028	,001	1,563	,118	,508	1,967
Hofstede (Factor score 1)	,070	,038	3,279	,001	,354	2,826
Hofstede (Factor score 2)	,020	,028	1,251	,211	,633	1,581
Heterogeneity (Demographics)	,093	,028	5,443	,000	,556	1,797
Heterogeneity (Activeness)	,054	,001	2,168	,030	,265	3,772
Heterogeneity (Culture)	-,072	,005	-4,285	,000	,576	1,735
Heterogeneity (Personality)	-,041	,822	-2,072	,038	,422	2,371
Amount of Likes on Facebook	-,013	,000	-,821	,412	,703	1,423
Friends among Fans	,052	,342	3,437	,001	,703	1,423
Apps & Websites	,020	,096	1,443	,149	,890	1,124
Automobile	,013	,349	1,019	,308	,972	1,028
Clothing/Fashion/Accessories	,043	,125	3,164	,002	,892	1,121
Electronics/Technology/Telco	-,022	,176	-1,651	,099	,931	1,074
Foods & Beverages	-,034	,100	-2,419	,016	,821	1,218
Movies & TV shows	-,201	,064	-13,855	,000	,775	1,291
News/Media/Entertainment	,043	,076	2,989	,003	,791	1,264
Organizations & Causes	,079	,103	5,797	,000	,874	1,145
Products & Services	-,063	,076	-4,347	,000	,782	1,279
Public Figures	,050	,067	3,505	,000	,791	1,264
Restaurants & Cafés	-,008	,311	-,633	,527	,977	1,023
Shopping & Retail	,009	,279	,702	,483	,971	1,030
Sports	,033	,120	2,366	,018	,828	1,208
Travel & Attractions	,010	,135	,762	,446	,916	1,092

Note: VIF = variance inflation factor

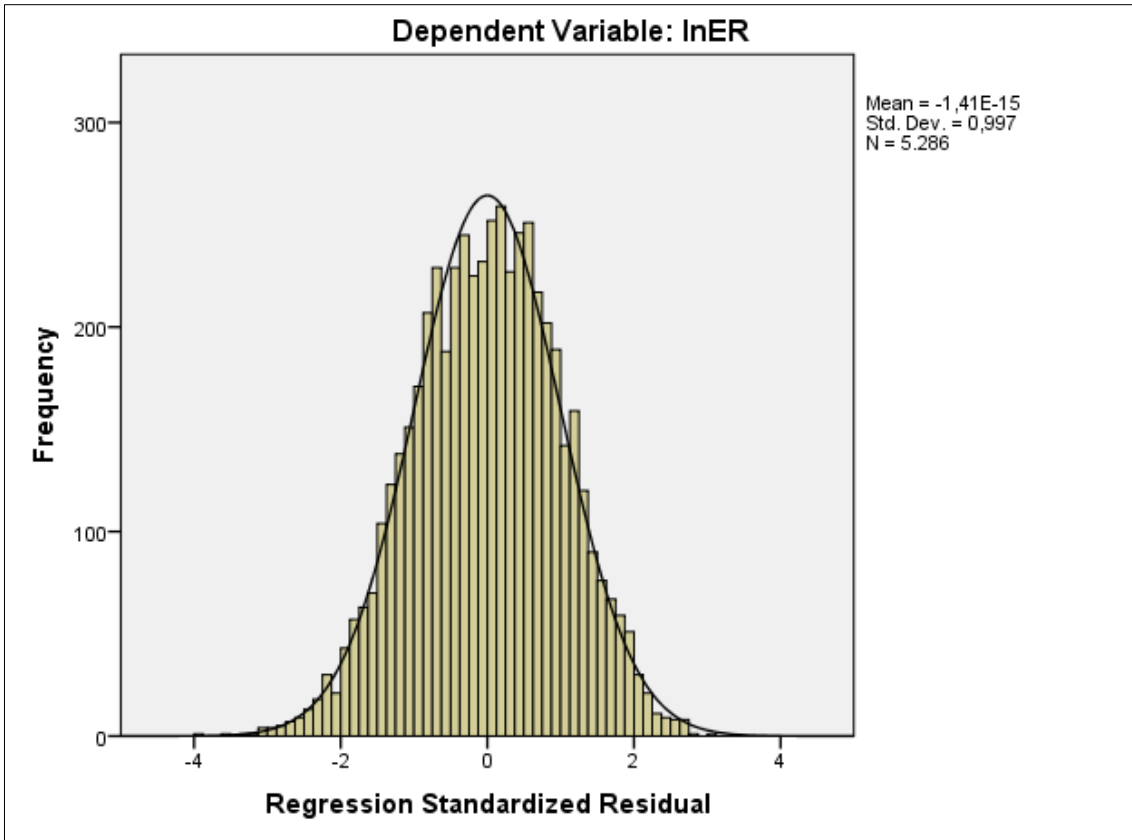


Figure 5: Residuals histogram

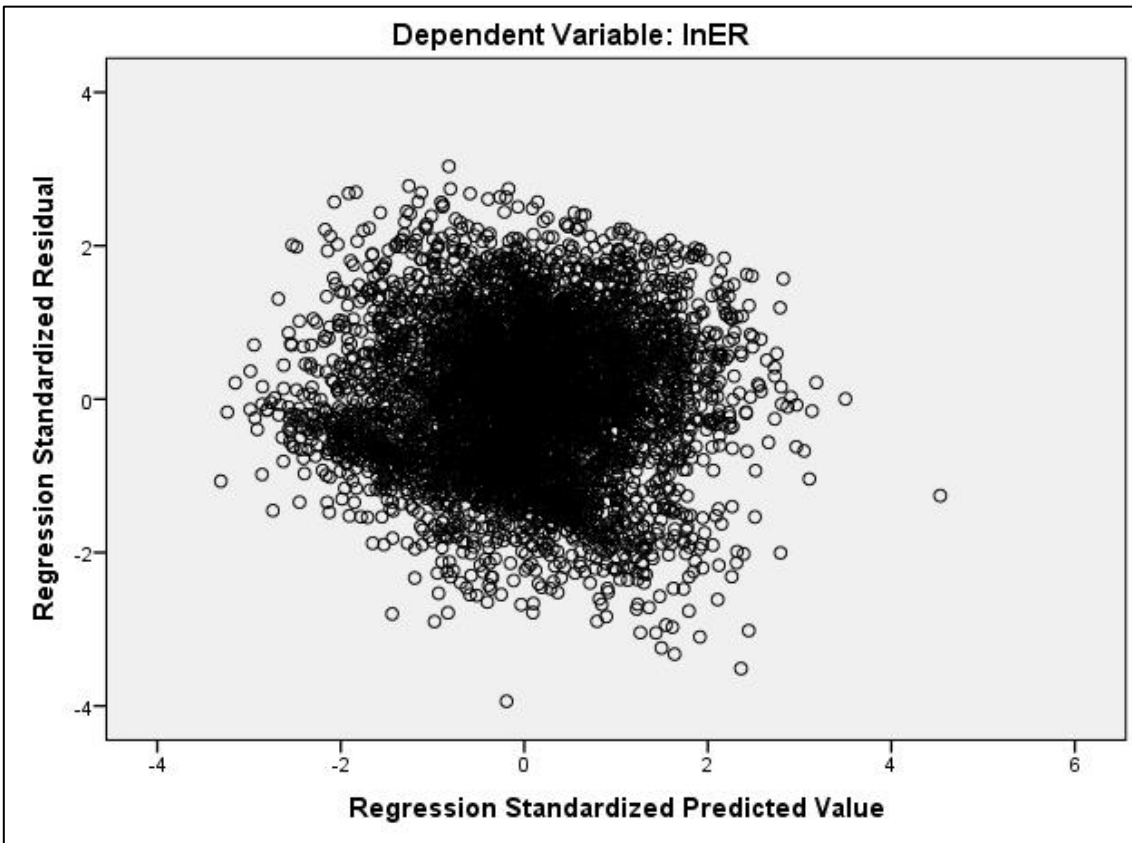


Figure 6: Scatterplot of the dependent variable against residuals

Table 8 gives an overview of the remarkable findings from the individual regressions for each product category that are not in line with the global model. This means that other significant results that had the same sign as the global model are not included. The results show that other variables have an influence on the ER for different fan page categories. Hypothesis 1a finds support in the categories Apps & Websites and Products & Services. Besides, hypothesis 4d is accepted for Electronics/Technology/Telco and Foods & Beverages. The gender variable provides mixed results as a larger percentage of male fans causes a higher ER for Movies & TV Shows and Public Figures while it is the other way around for Musicians & Bands. The table also suggests that agreeableness and conscientiousness causes an influence on ER for some categories.

Table 8:
Remarkable Results For Individual Fan Page Categories

Category	Variable	Beta	sig.
Apps & Websites	Openness	,245	,007
Electronics/Technology/Telco	Hofstede2	,516	,012
Foods & Beverages	Hofstede2	,208	,012
Movies & TV Shows	Gender (% male)	,118	,023
Musicians & Bands	Openness	-,072	,040
	Agreeableness	,083	,011
	Gender (% male)	-,113	,000
	Hofstede2	-,066	,019
Products & Services	Openness	,200	,001
	Conscientiousness	,309	,003
	Agreeableness	-,183	,003
Public Figures	Gender (% male)	,199	,000

Finally, the results for the second analysis are reported. The model is significant ($N = 7348$; $F = 820,742$, $p < .001$) and explains the variance of the ER for 10 percent ($R^2 = 0,100$; adj. $R^2 = 0,100$). The independent variable, $\ln(ER)$, has a highly significant positive effect on the growth of fan pages ($\beta = ,317$; $p < 0,001$). Consequently hypothesis 9 is confirmed.

Discussion and Conclusions

In reviewing the literature it became clear that the engagement rate is an important and common used metric to assess the success of Facebook fan pages. Consequently the present study was designed to determine which characteristics of the fans and the page itself cause a higher engagement rate.

The results of this study show several elements that have a significant impact on the ER. An unanticipated finding was that fans who are more active Facebook users have a negative impact on the engagement rate of fan pages. The most obvious explanation is that these more heavy-users have other priorities on Facebook. Instead of interacting with fan pages the communication with friends would be more important as this is the main motivation for Facebook usage (Maurer & Wiegmann, 2011).

A remarkable finding regarding the personality of fans is that fans who score high on the extraversion personality trait cause lower engagement rates. A possible explanation is closely related with the overall Facebook activity of users. A relationship between extraverts and the amount of Facebook friends has been shown before (Quercia, Lambiotte, Stillwell, Kosinski, & Crowcroft, 2012). Additionally a higher degree of Facebook activeness is a strong predictor for extraversion (Bachrach, Kosinski, Graepel, Kohli, & Stillwell, 2012). Consequently the same explanation as for active users goes for extraversion as a possible cause for lower engagement rates.

The findings in this study have important implications for fan page operators who want to attract more fans. Insights from this paper can help with the decision making for selecting targeting options for Facebook advertisements. In case the objective of a fan page manager is to enhance the engagement rate, the recommended targeting options are explained below.

With regards to the demographic targeting options, it is advised to target older and college-graduated fans as these fans cause higher engagement levels on fan pages. This targeting option also gains importance because of previous research. Pfeil, Arjan, & Zaphiris (2009) showed that older people have fewer friends on SNS than teenagers. This implies that older people more carefully select their friends and have stronger ties with their peers. This seems important as it was shown that strong-tie endorsers on SNS are more effective in influencing the purchase intention for hedonic products (Chang, Chen, & Tan, 2012).

For the geo targeting this paper suggests to target users from countries whose culture scores higher on individualism, masculinity and indulgence. Contrary, users who score high on power distance and long term orientation cause lower ER and might have less value for fan page owners. The effect of masculinity was not according to the hypothesis. A possible explanation is that fans from masculine cultures respond well to contests and questions on fan pages in order to win or to receive the most positive response from other fans. The explanation for the negative effect of power distance and long term orientation is not obvious. Maybe these fans perceive a greater distance between themselves and a powerful brand while the long term orientation possibly withhold fans from reacting immediately on posts.

Now turning to the homogeneity of the fan base, fan page managers should try to establish a fan base that is heterogeneous in terms of demographics and Facebook activity in order to achieve higher engagement rates. While on the other hand fans with homogenous cultural

values and personality traits will positively improve the ER of fan pages. These results were not according to the corresponding hypotheses. This could be explained by the fact that fan pages deal with much larger groups of people and therefore the group effects could be quite different than in previous studies. Also previous research on group performance often reported contradicting results (Mannix & Neale, 2005). That being said, the outcome of this study implies that brands should go for country specific fan pages in order to establish a culturally homogenous fan base. Moreover, an outspoken brand personality could help to attract similar personalities as fans.

It is interesting to note that a higher friends-among-fans ratio (FAF) has a positive impact on the engagement rate. A possible explanation is that by having more friends as fans, the interaction on a fan page comes closer to the primary use of Facebook which is the social interaction with friends. This result suggests that the FAF ratio is an important fan page metric that managers should strive to increase. Additionally managers could adjust the content they post to actively engage fans who are friends. For instance offering a reduction for fans who complete a certain action together.

In the current study, 15 fan page categories were used as predictors for engagement. The outcome of the regression proves that product category plays a very important role with regards to interaction with fans. It can be concluded that categories with more emotional or controversial themes induce higher ER's. A suggestion for fan page operators of less performing categories is to try adding emotional appeals to the content posted on the page.

The second analysis in this paper revealed that the fan page engagement rate is a factor that positively influences the growth of fan pages. Moreover, as mentioned before, will posts with more interactions behind it appear higher and more frequently on users their timeline because of the Edgerank algorithm. So it can be concluded that the ER results in both a higher reach and growth of fan pages. This finding has an important implication for managers of brand fan pages. Rather than spending funds on advertising, a higher reach and growth can be achieved by enhancing the engagement rate. Therefore it is advised to put more efforts in optimizing the fan base and the posting tactics to achieve greater results at a lower cost.

Limitations and Future research

Finally, a number of important limitations need to be considered. The formula used to calculate the engagement rate in this paper has certain limitations. Wisemetrics (2012) points out four weaknesses. First, it does not calculate all interactions. For instance fan actions like watching a video, viewing a picture and clicking a link are not included and might be very important for certain product categories. Second, the formula is based on the total number of fans while not all of these fans always get to see the content posted by a page. A better option would be to work with the total amount of reached users. Third, there is no distinction between interactions from fans and non-fans. Fourth, pages that posts very frequently will be favored although the engagement rates of their posts could be much lower than pages with less frequent posts. Further experimental investigations are needed to estimate how more precise formulas will affect the outcome of this study. However, this would not be possible with the publicly available data Facebook is providing.

Another important limitation is that the engagement in this study does not make a distinction between positive and negative comments. It is possible that for certain pages there are a large number of complaint comments or negative reactions on the posted content. These type interactions are now included in the ER, while page moderators will want to reduce them. Further research might explore the distribution of positive, neutral and negative comments by fans and how this relates to certain brand performance metrics.

The way of posting on the fan page by the moderator clearly also has an impact on the ER as indicated in the literature review. However, this fan page characteristic was not included in this study. Further work needs to be done to establish how certain fan profiles react on the posting tactics of the fan page.

Unfortunately there were several product categories included in the study that did not contain enough fan pages to produce significant results. A further study could conduct a more in-depth investigation into the different page categories. It would also be interesting to assess the effects of more specific product attributes on the ER. These categorizations could include hedonic versus utilitarian goods, social versus private products, fast moving versus slow moving consumer goods,...

To date, little is known about how the fans were acquired affects their engagement. There are many different ways to acquire new fans, e.g. through promotions, contests, Facebook ads,... or just organically. Therefore research needs to be done to find out how these different types of fans will interact with the page. In addition to this, the behavior of fans over time needs to be investigated since little is known about that as well.

Lastly, if the debate is to be moved forward, considerably more work will need to be done to determine the true effects of Facebook marketing on the overall performance of brands. The focus should be on how Facebook marketing activities influence the brand revenue and equity.

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