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Investigating the relationship between number of friends, posting frequency and received feedback on Facebook

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ABSTRACT

This work investigates facilitation of interaction through Online Social Networks by examining the feedback which user-generated content triggers on Facebook. In the light of growing friend lists and corresponding issues of Information Overload, the analysis examines feedback upon message posts as a function of (1) the number of friends the originator has, and (2) the frequency at which he or she posts. Therefore, 6,705 messages are analyzed with respect to the feedback they triggered. Two different qualities of feedback are distinguished: (1) the number of people who comment on a message, and (2) the number of people who 'like' a message. The results show that both people with a small number of friends, as well as people with an abundance of friends receive less feedback upon their messages than those with a moderate friend count. Interestingly, the frequency at which people post messages does not appear to have a direct effect on feedback. Implications for both platform providers and users are discussed.

Keywords

Online Social Networks, Facebook, News Feed, Feedback, Interaction, Information Overload.

INTRODUCTION

Worldwide, 500 million people use Facebook to keep in touch and interact with one another (Facebook Statistics, 2010). The online platform has established a new standard means of communication that differs from traditional media such as television (i.e., one-way) or telephone (i.e., reciprocal). On Facebook, people communicate "in the stream" (Zuckerberg, 2010) as they post messages on their wall. Without addressing a specific recipient, these messages are pushed into their friends' "News Feeds", turning an individual's friend list into a communications audience.

However, an average Facebook user has 130 friends of which each creates 90 pieces of content per month (Facebook Statistics, 2010). Even if people check their News Feed on a daily basis (and 50% do so; Facebook Statistics, 2010), each message competes with almost 400 pieces of content shared by others as well as the content published by "Group Pages" and "Fan Pages" which users subscribe to as well.

Scarcity of attention and time oblige people to respond and engage in interaction selectively. Therefore, messages remain unanswered, turning a significant proportion of communication on Facebook into (one-way) monologues (about 20% in our data sample; see section *Variables*). This has contributed to the notion of Facebook being a place for narcissists to engage in superficial relationships while avoiding genuine friendship and empathy (Mehdizadeh, 2010). Indeed, researchers have suggested an upper limit on the extent to which people can earnestly maintain even superficial relationships (e.g., Tong et al., 2008).

As Facebook is pro-actively encouraging users to connect to new "friends" (e.g., through automated friend suggestions, asking users to suggest friends to other friends, prompting users for permission to scan their email and Skype contacts to connect with new friends) people's friend list grow continuously. Meanwhile, studies on traditional social networks indicate that people maintain profound relationships with only 10 to 20 individuals (Parks, 2007), while the total number of social relationships people manage may be around 150 (Donath and Boyd, 2004).

This raises questions for both the meaning of friends on Facebook and the level of actual interaction happening on the platform. Therefore, this study seeks to provide insights into the relationship between the number of friends people have on Facebook and the interactions they experience. Precisely, we look at the responses people receive upon the messages they post and investigate how the number of friends and their posting frequency determine facilitation of "a conversation or exchange between people" (i.e., "interaction") on Facebook.

Interaction on Facebook

Facebook allows users to interact through various channels. That way, more than 30 billion pieces of content are shared each month (Facebook Statistics, 2010). Besides asynchronous and synchronous exchange of private messages, individuals can engage in public one-to-one communication by posting messages back and forth on each other's walls (i.e., reciprocal "Wall-to-Wall" communication).

The majority of messages are published on the author's own wall and automatically pushed into the friends' News Feeds who can 'Like' and comment on the message. Messages can contain pictures, videos, event information, or any kind of link to external resources. Each message shows the number and names of the people who 'liked' it as well the comments in reverse-chronological order. The act of 'liking' or commenting creates a new object, which is again pushed into the News Feeds of the friends of the person who responded to the message. This way, messages can spread beyond the social graph of the original author.

Google started out by deploying backlinks as a signal of relevance. Facebook's ecosystem is establishing a personalized recommendation practice based on user-curation. Google is still the most important traffic driver for websites, but Online Social Networks (OSNs) are gaining ground. Already, links shared on Facebook make for a significant amount of traffic of news sites (Hopkins, 2010) and video sites (Hawkins and Burch, 2010). The recent roll-out of Facebook's 'Like-Button' throughout the World Wide Web is contributing to this trend (e.g., Indvik, 2010). Various studies in the domain of micro-blogging have demonstrated the effectiveness of mechanisms of user-curation in allocating information (e.g., Ehrlich et al., 2010; Zhao and Rossen, 2009).

Another form of engaging with friends on Facebook is turning to them for recommendations, opinions, as well as factual knowledge (Morris et al., 2010). People do so because they find search engines not suitable for providing credible or subjective information (Morris et al., 2010).

While forms of crowd-sourcing such as endorsing content and asking questions are increasingly relevant features, an important reason for people to use Facebook is to keep in touch with others (Joinson, 2008). By 'liking' someone's posting, people can signal their attention to the message's author. Even more so, by commenting people can keep in touch by interacting with the author of the messages as well as others who comment on the same message.

This provides a cheap and convenient way to maintain and form relationships with a large number of people (Boyd, 2008). Indeed, various studies hint at a positive impact of Facebook use on the formation of social capital (e.g., Ellison et al., 2007; Steinfeld et al., 2008; Valenzuela et al., 2009). Also, patterns of Facebook usage were found to correspond with measures of psychological well-being, in that Facebook provides greater benefits for people with a lower degree of self-esteem and life satisfaction (Ellison et al., 2007).

However, as people's networks grow their News Feed gets denser. When information supply exceeds people's information processing capacity they take measures to cope (Eppler and Mengis, 2004; Koroleva et al., 2010). Given the limitations of information processing ability, people interact with a decreasing proportion of friends when their News Feed is populated with an increasing amount of messages. Meanwhile getting feedback is crucial, in order to benefit from using Facebook: people whose messages are ignored are neither keeping touch with others, nor able to utilize the various possibilities of crowd-sourcing.

This motivates us to look at measures Facebook users can take to promote feedback to their messages, regardless of what they use Facebook for, i.e., regardless of what their messages are about. In particular, we look at how the number of friends an individual has interacts with the frequency of message posting and how it affects feedback.

We assume different dynamics behind the act of (1) 'liking' and (2) commenting on messages. Commenting requires people to deal with the content of a message, implying both codification and cognitive effort to articulate the verbal response. 'Liking' is a swift alternative to respond to a message which requires no codification effort and far less cognitive and emotional involvement. It is therefore more of a signal than a profound response. Consequently, we look separately at

(1) the number of people who 'like' an individual's message which represents superficial feedback, and
(2) the number of people who comment on an individual's message which represents profound feedback.

This paper is structured as follows. In the following section, we review related works and derive the research model. Then, we test our hypotheses using a dataset of almost 6,705 messages. Finally, we conclude by discussing the results and their implications.

THEORETICAL FOUNDATION AND RESEARCH MODEL

Various studies investigated the content of postings (e.g., Koroleva et al., 2010; Morris et al., 2010; Naaman et al., 2010) on OSNs, how people use (e.g., Ellison et al., 2007; Joinson, 2008), perceive and deal with information (e.g., Boyd, 2007; Jones et al., 2008; Koroleva et al., 2010) shared on OSNs, and the implications of friends (e.g., Huberman et al., 2009; Lampe et al., 2006; Ross et al., 2009; Tong et al., 2008) on OSNs.

The main research question driving this study is: ***How does the number of friends people have on Facebook and the frequency at which they post messages correspond with the interaction they experience on the platform?***

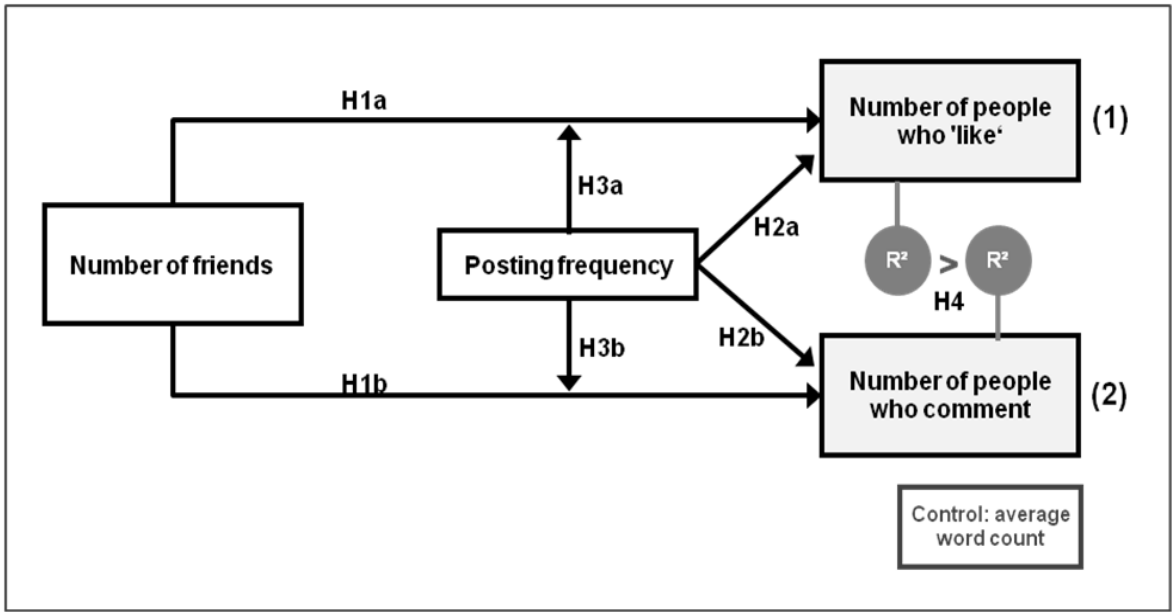

Figure 1. Research model of feedback upon people's message postings on Facebook

Usually, the number of friends a person has on Facebook defines the upper limit of people who can possibly respond to one's message. The more friends people have, the larger the exposure their messages get and, thus, the larger the chances that somebody responds. Therefore, intuitively, we expect a higher number of friends to go in line with a higher level of feedback an individual receives upon his or her messages.

However, there is an upper limit to which individuals can credibly maintain social relationships (Donath and Boyd, 2004; Gladwell, 2000; Parks, 2007). Even though many Facebook 'friendships' are based on real-life (i.e., offline) encounters (Lampe et al., 2006; Ross et al., 2009), the meaning of a friend on Facebook is usually not equated with traditional connotations. Rather, "the size of one's network is the behavioral residue of the way one accrues one's associations online" (Tong et al., 2008, p. 527). As it became common to both send and accept (Boyd, 2006) friend requests to/from even barely familiar people, the number of friends an individual 'hoards' hints at an attitude towards Facebook usage (e.g., Mehdizadeh, 2010). Practices of "drive-by friending" (Urban Dictionary, 2010) manifest in a high number of friends, but chances are that the connection to these friends is at the most superficial. Therefore, we expect people with a very high number of friends to receive less feedback than the ones with a moderate number of friends.

Already, a non-linear relationship between the number of friends people have on Facebook and how others perceive the social attractiveness has been shown (Tong et al., 2008).

Therefore, we hypothesize the following:

H1: *There is a curvilinear inverted U-shaped relationship between the number of friends a Facebook user has and*
(a) *the average number of people who 'like' their messages, and*
(b) *the average number of people who comment on their messages.*

Similarly, behaviour of excessively posting messages can be associated with reduced intentions to engage in sincere interaction (Mehdizadeh, 2010). Hence, we expect the frequency at which people post messages to be negatively related to the feedback they receive upon these messages:

H2: *There is a negative relationship between the frequency at which people post messages and*
(a) *the average number of people who 'like' their messages, and*
(b) *the average number of people who comment on a their messages.*

For the same reasons, posting frequency is expected to moderate the relationship between people's number of friends and feedback their messages get:

H3: *Posting frequency moderates the relationship between the number of friends people have and*
(a) *the average number of 'likes,' and*
(b) *the average number of (distinct) comments they receive upon their messages*

Our analysis neglects an important factor determining feedback: the content of a message, i.e., what a message is about. When people deal with Information Overload they develop mechanisms to distinguish relevant information (McGuire, 1976) and judge by categories such as such as novelty, ambiguity, uncertainty, intensity and complexity, and general signal relevance of information (Schneider, 1987). Meanwhile, omitting such categories from our analysis allows us to apply our results on a broad scale. But given the importance of the content, the explanatory power of our models is limited. However, drawing on the fundamental difference between the act of 'liking' and the act of commenting allows us to hypothesize the performance of using the number of friends and the posting frequency to predict feedback.

While commenting requires people to dwell on the content of the message, 'liking' requires less connection to the content of the message and its author. 'Liking' is therefore an appropriate way also for less acquainted friends on Facebook to interact. Therefore, we expect the number of friends people have on Facebook and how often they post messages to be a better predictor for the number of people who 'like' their messages as opposed to the number of people who comment on them:

H4: *The number of friends people have on Facebook in conjunction with their posting frequency plays a more important role in predicting the average number of people who 'like' their messages than predicting the average number of people who comment.*

METHODOLOGY

Data Collection

In order to analyze interaction on Facebook, we obtained the messages which users posted on their wall and the corresponding feedback they received upon their messages in terms of 'likes' and comments. People's messages and profile information are usually not publicly available on Facebook and can only be accessed by friends. Therefore, ten seed users were recruited to manually store the profile page and messages of about 30 randomly selected friends (including all feedback) in HTML files. A Facebook user's wall shows all messages he or she posted including the corresponding conversations (in terms of the subsequent comments) and 'likes' from all his or her friends. We thereby provided a Java-based script to parse and anonymize the data previously stored in HTML files before converting them to CSV format for the analysis.

To ensure different levels of income and education and thus diverse social networks, seed users were recruited from diverse backgrounds (five nationalities, six professions). The average age of the seed users was 24 lying within a range from 17 to 45 along with an equally balanced male-female ratio. All seed users crawled data over an eight-weeks period spanning from June 21 to August 15, 2010.

We obtained profile information and messages including all corresponding feedback of 311 users in total (159 females, 152 males). Some users do not explicitly state their gender or age on their profile page. In these cases, the gender was guessed from the name. However, we were of course not able to make any guess about users' date of birth, which prevents us to include effects of people's age in our analysis. The social networks of the seed users had no overlaps so that no profile was crawled twice.

In total, we obtained 11,515 status updates including the corresponding comments and 'likes'.' About 60 percent of those were plain status updates (i.e., without any kind of attachment such as photographs, videos, links etc.), which are the subject of the present study. This yielded a data set comprising 6,705 messages from 290 users (21 users were eliminated from the data set as they did not post any messages at all).

Variables

From the collected data, we constructed several variables for our model. For each user, the following variables were compiled:

- gender *(SEX)*,
- number of friends the user has on Facebook *(FRIENDCOUNT)*,
- frequency (per week) at which the user posted messages *(FREQUENCY)*,
- average number of people who 'liked' the user's messages *(AVGLIKES)*,
- average number of people who commented on the user's messages *(AVGCOMMENTATORS)*, and
- average number of words the user's messages consisted of *(AVGWORDCOUNT)*.

We apply linear-regression techniques to examine the relationships between our constructed variables (more details on analysis methods are given in the section *Analysis Method* below). The dependent variables of the model are the average number of people who liked an individual's messages, and the average number of people who commented on the user's messages, respectively. In our model, the explanatory variables are a user's number of friends, posting frequency, and gender.

Further, we include the average word count of a user's messages as a control variable. Previous research has shown that users are more likely to respond to simpler messages in overloaded mass interaction as short messages require little cognitive effort to read (Jones et al., 2008). For example, Whittaker et al. (1998) found that newsgroups with longer messages will have less interactivity in terms of number of posts.

Descriptive statistics can be obtained from Table 1. Users of our sample have an average (median) number of 283 (229) friends. This number is more than twice as high as the official figure reported by Facebook (Facebook Statistics, 2010) but is close to the numbers reported by other studies (395, Tong et al., 2008; 246, Walther et al., 2008). On average, the users of our sample post almost two messages per week. While Facebook provides statistics only about "pieces of content" (e.g., photos, links, 'pokes,' automatically generated posts etc.) created by users, there are no official number on the average number of posted messages per user. The only study known to the authors which reports numbers on people's posting frequency on Facebook reports similar numbers to the ones on our sample (Köbler et al., 2010). The mean (median) values of people who 'like' or comment on the messages of the users in the sample are 1.46 (1.13) and 2.04 (1.84), respectively. About 20% of the messages did not get any kind of feedback at all. Figure 2 and 3 show the empirical distributions of the dependent variables *AVGLIKES* and *AVGCOMMENTS*, respectively. Both histograms indicate that the distributions tend to be right-skewed with a few outliers.

Variable	Mean	Median	Standard Deviation
FRIENDCOUNT	283.15	228.50	182.25
FREQUENCY (weekly)	1.91	1.01	4.54
AVGWORDCOUNT	12.20	9.63	7.68
AVGLIKES	1.46	1.13	1.29
AVGCOMMENTATORS	2.04	1.86	1.09

Table 1. Descriptive Statistics

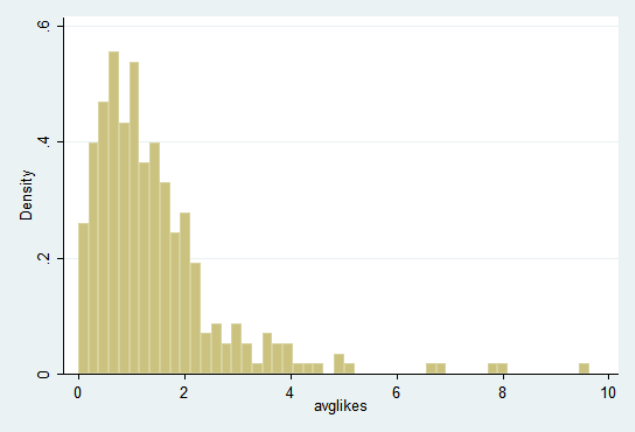

Figure 2. Empirical Distribution of *AVGLIKES* (Histogram)

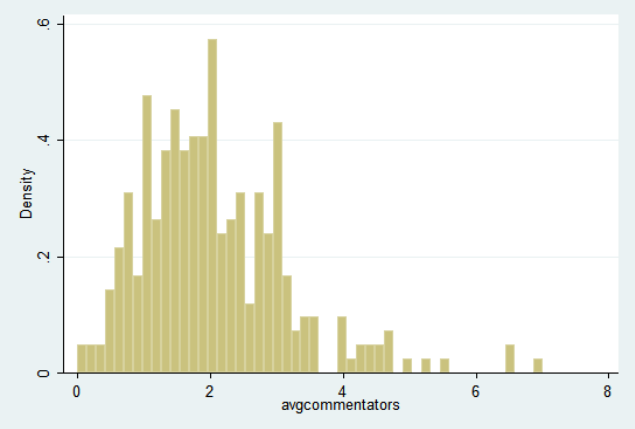

Figure 3. Empirical Distribution of *AVGCOMMENTATORS* (Histogram)

Analysis Method

We seek to investigate the relationships friend count and posting frequency and the average quantity of feedback in terms of 'likes' and comments they receive upon their messages. That is, we want to explicitly examine the extent to which the differences in people's characteristics can explain the between-person variation in the (average) quantity of received feedback. Since the (person-level) dependent variables *(AVGLIKES and AVGCOMMENTATORS)* are average values of feedback quantities and thus not true count data, we perform regression analysis using Ordinary Least Square (OLS) estimation. To account for non-normality of the dependent variables, we log-transform them before applying OLS regression.

In H1, we hypothesized that users with very few or very many Facebook friends tend to get less feedback upon their messages compared to people with a moderate number of friends. This would result in a curvilinear inverted U-shaped relationship between the number of friends an individual has on Facebook and (a) the average number of people who 'like', as well as (b) the average number of people who comment on an individual's post. We model this relationship by including the number of friends as both a linear term *(FRIENDCOUNT)* and quadratic term *(FRIENDCOUNT²).* We expect the linear term to be positive and the quadratic term to be negative indicating the hypothesized inverted U-shaped relationship.

Following H2a and H2b, *FREQUENCY* is modeled as a direct determinant. Finally, we include the interaction terms *FRIENDCOUNT x FREQUENCY* and *FRIENDCOUNT² x FREQUENCY* to test the hypothesized moderating effect of users' posting frequency on the relationship between the number of friends and feedback people receive upon their message (i.e., H3a and H3b).

The resulting regression models are:

$$(1)\ \log(AVGLIKES) = \beta_0 + \beta_1\, FRIENDCOUNT + \beta_2\, FRIENDCOUNT^2 + \beta_3\, FRIENDCOUNT\ x\ FREQUENCY + \beta_4\, FRIENDCOUNT^2\ x\ FREQUENCY + \beta_5\, FREQUENCY + \beta_6\, SEX + \beta_7\, AVGWORDCOUNT + \varepsilon$$

$$(2)\ \log(AVGCOMMENTATORS) = \beta_0 + \beta_1\, FRIENDCOUNT + \beta_2\, FRIENDCOUNT^2 + \beta_3\, FRIENDCOUNT\ x\ FREQUENCY + \beta_4\, FRIENDCOUNT^2\ x\ FREQUENCY + \beta_5\, FREQUENCY + \beta_6\, SEX + \beta_7\, AVGWORDCOUNT + \varepsilon$$

H4 suggests that a model based on the number of friends people have on Facebook in combination with their posting frequency predicts superficial feedback (i.e., 'likes') better than profound feedback (i.e., the number of other friends' comments). As the right-hand side of both equations (1) and (2) is identical, we can benchmark the predictive power of both specifications against each other by comparing their respective (adjusted) R^2-values.

EMPIRICAL RESULTS

In H1, we hypothesized a curvilinear inverted U-shaped relationship between the number of friends and (H1a) the average number of 'likes' people receive upon their messages, and (H1b) the average number of people who comment upon their messages. This implies that users with a very high or low number of friends tend to receive less feedback in terms of 'likes' as well as comments, as opposed to people with a moderate friend count. The results (see Table 2 and 3) support our hypotheses (i.e., H1a and H1b) as reflected by the positive coefficients of *FRIENDCOUNT* in conjunction with the negative coefficients of $FRIENDCOUNT^2$. In each regression model, both terms are highly significant ($p < 0.001$). However, the amount of users with a very high number of friends in our sample is relatively low. Therefore, even though the data technically provide support for the hypothesized inverted U-shape relationship, the validity of this finding may be subject to the randomness of the sample. Given the sample distribution, this limitation applies only to the right-hand side of the inverted U-shape (i.e., high-friendcount area) though. Therefore, it is the bottom line that the average feedback people receive represents a *concave* function of the number of their friend, implying 'diminishing marginal utility' of friend accumulation on Facebook.

In H2, a negative relationship between *FREQUENCY* and both *AVGLIKES* (H2a), and *AVGCOMMENTATORS* (H2b) was hypothesized. However, results indicate that feedback is not directly affected by posting frequency. H2a and H2b are therefore rejected.

In order to test for a moderating effect of *FREQUENCY* on the relationship between *FRIENDCOUNT* and *AVGLIKES* (H3a), as well as *AVGCOMMENTATORS* (H3b), we introduced the interaction terms *FRIENDCOUNT x FREQUENCY* and $FRIENDCOUNT^2$ *x FREQUENCY*. In both models, we find all coefficients of the interaction terms to be statistically significant. The coefficient of *FRIENDCOUNT x FREQUENCY* is significant and negative in both models suggesting that a higher frequency at which people post messages (linearly) mitigates the relationship between number of friends they have and the average number of (a) 'likes' and (b) comments they receive upon their messages. Furthermore, the coefficients of $FRIENDCOUNT^2$ *x FREQUENCY* are significant and positive indicating a *flattening* effect of *FREQUENCY* on the inverted U-shape (i.e., lower curvature) between *FRIENDCOUNT* and *AVGLIKES* and *AVGCOMMENTATORS*, respectively. This implies that people who have very many or only a few friends on Facebook tend to get more (a) 'likes' and (b) more comments when they post at a higher frequency. Therefore, H3a and H3b are confirmed.

By comparing the adjusted R^2-values of both specifications, we find strong support for H4. The independent variables account for about 27% of the variance of average number of 'likes' which people's messages receive, while the same setup explains only 11% of the variation in the average number of people who comment on an individual's messages. As hypothesized, the result suggests that predicting profound responses is more complex and that other factors such as the content of messages play a more important role in predicting such kind of feedback.

Contrary to what has been suggested by the literature (e.g., Jones et al., 2008; Whittaker et al., 1998), we find that *AVGWORDCOUNT* is significantly positively related to the number of 'likes' a message receives (see Table 2). This, however, does not hold for the regression model incorporating feedback in terms of the number of people who comment on a message (see Table 3). Overall, our regression models represent a good fit with all *p*-values corresponding to *F*-statistics being below 0.0001.

As a robustness check, the analysis was performed with median values (instead of averages) of the number of people who 'like' and comment on user's messages. This analysis led to similar results, i.e., using median numbers did not meaningfully affect the levels of significance or the direction of the parameter estimates in the models.

Independent Variable	Coefficient	Standard Error	*t*-statistic	*p*-value
FRIENDCOUNT	0.0033***	0.0005	6.60	0.000
FRIENDCOUNT^2	-1.08 x 10^{-6}***	1.85 x 10^{-7}	-5.80	0.000
FRIENDCOUNT x FREQUENCY	-0.0004**	0.0001	-2.74	0.007
FRIENDCOUNT^2 *x FREQUENCY*	2.16 x 10^{-7}***	4.38 x 10^{-8}	4.93	0.000
FREQUENCY	0.0283	0.0270	1.05	0.296
SEX	-0.069	0.1314	-0.53	0.600
AVGWORDCOUNT	0.0205*	0.0085	2.41	0.017
$F(7, 290) = 16.00$ (p-value = 0.0000), adjusted $R^2 = 0.2665$ *, ** and *** indicate significance level at 5%, 1%, and 0.1%, respectively.				

Table 2. OLS Regression Output for Model (1) - Dependent Variable: log(*AVGLIKES*)

Independent Variable	Coefficient	Standard Error	*t*-statistic	*p*-value
FRIENDCOUNT	0.0021***	0.0005	4.46	0.000
FRIENDCOUNT^2	-7.14 x 10^{-7}***	1.74 x 10^{-7}	-4.11	0.000
FRIENDCOUNT x FREQUENCY	-0.0003*	0.0001	-2.36	0.019
FRIENDCOUNT^2 *x FREQUENCY*	1.52 x 10^{-7}***	4.10 x 10^{-8}	3.71	0.000
FREQUENCY	0.0364	0.0253	1.44	0.152
SEX	-0.0055	0.1231	-0.04	0.964
AVGWORDCOUNT	0.0105	0.0080	1.32	0.189
$F(7, 290) = 5.95$ (p-value = 0.0000), adjusted $R^2 = 0.1071$ *, ** and *** indicate significance level at 5%, 1% and 0.1%, respectively.				

Table 3. OLS Regression Output for Model (2) - Dependent Variable: log(*AVGCOMMENTATORS*)

CONCLUSION

Returning to our original research question, we can definitively state that both the number of friends people have on Facebook and the frequency at which they post messages play a significant role in determining the interaction individuals experience on the platform[1].

The goal of this research was further to determine the nature of the relationship between the feedback which people receive upon their messages and the number of friends they have as well the amount of messages they post. Here, a couple of insights emerged from the results of this study, which allow us to derive a few implications.

The first is that the intuitive estimate that more friends yield to more feedback is not holding true to an infinite level. 'Hoarding' friends does at some point backfire on the feedback people receive, and, thus, alleviates interaction. The shown curvilinear inverted U-shaped relationship also implies 'diminishing marginal utility' of making new friends on Facebook in terms of the feedback any extra friend generates.

Users of the platform need to consciously evaluate the benefits of 'yet another Facebook friend.' The results show that regardless of the content of a message, on average, people with less extreme (meaning, neither very low, nor very high) friend counts receive significantly more feedback upon their messages. This way, they maintain more relationships and are well positioned to tap into the various opportunities of crowd-sourcing.

Generally, the value of a social network increases as the number of its members rises (Krasnova et al., 2009). However, social capital does not grow from adding names to a friend list. The 'real' social network people maintain on ONSs is defined

[1] Note that Facebook employs a proprietary algorithm to selectively expose users to postings. The algorithm applies equally to every user so that there is no systematic bias regarding the exposure of particular messages across users.

by the people individuals interact with (Huberman et al., 2009). Therefore, our findings on the effects of friend count and posting frequency may also serve as a guideline for value creation on Facebook.

Prior research has shown other negative effects of an overabundance of friends on Facebook (Tong et al., 2008). Yet, Facebook keeps on encouraging users to add new friends to their profiles. Automatically generated friend suggestions look for people with mutual friends. As people engage in more (shallow) relationships on the platform, the number of 'matches' with mutual friends increases. This may lead to a spiral growth of superficial friend connections with negative effects on the value of the overall network. Facebook as the platform provider should not artificially encourage people who already have a larger number of friends to connect to more people.

Another result of the present study is that the frequency at which people post is not directly related to the feedback they receive upon their messages. However, the results show that for people with a moderate number of friends posting more messages does reduce the feedback they receive. Meanwhile, people at the verges of the 'friend count continuum' do actually receive more feedback when they post messages at a higher frequency.

We can only speculate about the forces underlying this effect. People with a very large number of friends do not have profound relationships with them. So an explanation may be that these people can counteract the effects of unfamiliarity by posting more messages and that this, in turn, causes increased feedback. In any event, the dynamics behind this interesting effect deserves further investigation.

Further, H1, H2, and H3 hint at the presence of one or multiple optimal combinations of the number of friends and posting frequency that would maximize the feedback an individual receives upon his or her messages. While our model predicts a general relationship, future research may derive specific values.

It is a limitation of our study to omit the content of messages from the analysis. On the other hand, this allows for generalizability of the results. However, people's friend count and posting frequency predict feedback in terms of received 'Likes' far better than the number people who comment upon one's message. Comments are more profound than 'Likes' and the results show that other factors play a more important role in determining this kind individualistic interaction.

Everyday, Facebook and other OSNs such as Twitter are used by hundreds of millions of people. The rapid diffusion of these networks, however, has not let much time for the establishment of norms regarding usage. Our results show how the current practices relate to patterns of interaction. Our findings suggest a tempered approach to both the accumulation of friends and the frequency of posting messages in order to maximize the value gained from using Facebook.

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