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What Factors Affect Official Micro-blogging Influence—an Empirical Study Based on Data from Weibo.com

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Abstract: With several years of development, micro-blog has become a very popular social networking platform since it came to our eyes. Nowadays, many enterprises and organizations have registered official micro-blogs to expand marketing activities since they realized the importance of micro-blogging word of mouth. However, the micro-blogging influence of different official micro-blogs varies, which has great effect on micro-blogging marketing. Based on sina micro-blog, the relationship between micro-blogging influence, micro-blogging activities and social capital in the real world of enterprises and organizations is investigated in this paper. The results show that both factors have positive effects on micro-blogging influence, which means that social capital in the real world can be transferred to the micro-blogging world and positive micro-blogging activities help improving micro-blogging influence. At last, some suggests are proposed for enterprises and organizations. Registering micro-blog early and releasing or forwarding more micro-blogs helps improve the micro-blogging influence.

Keywords: official micro-blog, micro-blogging marketing, micro-blogging influence, micro-blogging activities

1. INTRODUCTION

With the coming of web 2.0 age, many kinds of user generated content (UGC) applications came to our society. At the same time, social network system (SNS) is growing at a high speed. As a typical application of SNS, micro-blog is being used by more and more users, by which the way how people live and work is changed.

Twitter (twitter.com) is the most famous micro-blog worldwide, while in China sina micro-blog (weibo.com) has greatest influence since some reasons. According to the data from CNNIC, the number of internet users in China is 608 million at the end of September 2013. And data form sina shows that there are more than 500 million registered users on weibo.com at the end of February 2013. With several years growth, sina micro-blog has become more and more mature, on which a lot of enterprises and organizations have registered their official micro-blogs as an important way of marketing. Official micro-blogs are important for their great marketing power. What we are interested is what factors have impact on this power and what measures enterprises and organizations can take to improve their micro-blogs marketing power. We know that the micro-blog influence may reflect the marketing power of official micro-blogs to some extent. This paper mainly investigates what factors have significant impact on official micro-blog influence.

2. BACKGROUND AND HYPOTHESES DEVELOPMENT

2.1 Related work

With the de[1]velopment of micro-blog, it has attracted more and more attention. Research about micro-blog or official micro-blog grew rapidly these years which covered a wide range. We find that the research mainly includes four aspects: mechanism of micro-blog and user behaviors, micro-blogging influence, micro-blogging marketing and word of mouth (WOM) value.

2.1.1 Research on micro-blog mechanism and user behaviors

Xu T etc analyzed the development stage of micro-blog in China and summarized the monetization model [1]. Sakaki T etc analyzed how the number of followers changes in a certain period and determined which

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parameters dominate popularity in the Twitter world [2]. Suh B etc found that amongst content features, URLs and hash tags have strong relationships with retweetability. Amongst contextual features, the number of followers and followees as well as the age of the account seems to affect retweetability [3]. Wu S etc found significant homophily within categories: celebrities listen to celebrities, while bloggers listen to bloggers etc [4]. Java A etc showed how users with similar intentions connect with each other [5]. Bollen J etc found how twitter mood could predict the stock market [6].

2.1.2 Research on micro-blogging influence

Bakshy E etc found that the largest cascades tend to be generated by users who have been influential in the past and who have a large number of followers [7]. Ye S etc examined the social influence of twitter using follower influence, reply influence and retweet influence and examined the correlations between different influence [8]. Cha M etc present an in-depth comparison of three measures of influence: indegree, retweets and mentions [9].

2.1.3 Research on micro-blogging marketing and WOM value

Jansen B J etc investigated the overall structure of micro-blog postings, types of expressions, and sentiment fluctuations, and discussed the implications for organizations in using micro-blogging as part of their overall marketing strategy and branding campaigns [10].

2.2 Micro-blogging influence and micro-blogging activities

Micro-blogging influence is important for marketing and WOM, and it depends on the user's followers number, the mechanism of rewarding an reviewing and so on. Nowadays much work has been done on how to evaluate micro-blogging influence and some models have been put forward [8-9]. Different micro-blogging influence may come out by different model, but researchers have found that

there is a strong correlation between different evaluating results [9]. In this paper, we use the followers number as a variable of micro-blogging influence. The number of micro-blog users' followers varies, from dozens to tens of millions, leading to large rangeability of micro-blogging influence. Information from users with large amount of followers can spread to the whole micro-blog world in a high speed, while oppositely the information may only be receive by few users and overwhelmed in the sea of information.

In this paper, we consider the following three micro-blogging activities: the adoption of official micro-blog, posting messages and following other users. Enterprises or organizations can decide whether adopting the official micro-blog early, so that is an activity and it can be measured by the days it has joined the micro-blog. In micro-blog world, official users can post messages, which can be measured by the number of messages including forwarding. At last, official users can also follow others in order to expand their virtual social circle, which can be measured by number of followees. There are also other activities in micro-blog world, such as the control of message quality, but that's not what we are interested in this paper.

2.3 Official micro-blog and social capital

Official micro-blog is the micro-blog users who are not people, but enterprises or organizations who have been verified by the micro-blog platform. Taking sina micro-blog for example, official micro-blogs on weibo.com are divided into six categories as Media, Brand, Government, Website, Campus and Agency. These categories stand for official micro-blogs from different industries and their micro-blogging influence and activities may have significant difference. Since sina micro-blog has great amount of official micro-blog users, we do our research based on data form it.

Social capital may be another important factor that has impact on micro-blogging influence. For enterprises and organizations, they have different social capital in the real world, which may significantly affect their

micro-blogging influence. According to other researchers' method [11], one possible measure of an official user's social capital in the real world can be represented by the number of searching results of the user's name via search engines like Google or Baidu.

2.4 Hypotheses development

Since official micro-blog users all have been verified, they each represent an enterprise or organization in the real world. While in the real world, enterprises and organizations may have a large amount of fans, such as Nike and Xiaomi. When they joined the micro-blog, their fans may follow them probably in the micro-blogging world and they will have a lot of followers. That is to say, if an official user has more social capital in the real world, it may have more followers in the micro-blogging world. We use the number of searching results of the user's name via Baidu to represent its social capital, thus we proposed the following hypothesis:

H1: An official user whose name renders more searching results in Baidu has more followers in micro-blog.

Another factor may influence an official user's followers in micro-blogging world is its micro-blogging activities. As we discussed above, micro-blogging activities include early adoption of official micro-blog, posting messages and following other users. Earlier an official user joined micro-blog, he may have more followers. In addition, official users who posts messages more frequently are more likely to attract more followers compared to those who posts messages less frequently. Reference [2] found that in Twitter, there is a cultural phenomenon called "Follow back". When a user is followed by another user, the first user reciprocates and follows the second user. There may be such phenomenon in micro-blogging world for official users, too. Based on above discussions, the following hypotheses are proposed:

H2a: Earliness joining has a positive effect on an official user's micro-blogging influence.

H2b: Posting messages frequently has a positive effect on an official user's micro-blogging influence.

H2c: Following others has a positive effect on an official user's micro-blogging influence.

3. METHODLOGY

3.1 Data

As descripted above, the data we need includes two parts, data from sina micro-blog Weibo.com and data from Baidu searching results. Verified official users on Weibo.com are divided into six categories, including Media, Brand, Government, Website, Campus and Agency. Official micro-blogging users are listed on Weibo.com in dictionary order in each category. We chose some users in each category randomly and get our initial sample users list. Then we excluded some official users from our list, since their micro-blog name can't represent what enterprises or organizations they are. Finally our list has more than 1400 official users from all categories, shown detailed in Table 1.

Then a crawler based on Weibo.com API was developed for data retrieval. We retrieved information of the 1416 official users using this crawler. The information of each official user included id, name, number of followers (micro-blogging influence), number of followees (activity: following others), number of posting messages (activity: posting messages) and number of days since the user joined Weibo.com (activity: early adoption). At the same time, we developed another tool to get the searching results number with each official user's real name on Baidu.com (social capital). Thus we got the whole sample set with the data we need in this research. Detailed information of this data are showed in Table 2(Data on May 12, 2012).

Table 1. Sample List

Categories	Sample number
Media	206
Brand	501
Government	260
Website	190
Campus	105
Agency	154
All	1416

Table 2. Data description of the sample set（N = 1416）

	Minimum	Maximum	Mean	Std.Deviation
Followers	39	3357939	66822	220155
Followees	0	2000	511	566
Messages	1	62718	2550	3849
JoinedDays	59	989	492	244
SearchingResults	34	84200000	2685000	5943810

3.2 Research models

As discussed above, we can use our cross-sectional data to test our hypotheses by several regression models. Given that official users from different categories may have different relationships, we introduce five dummy variables to check that, Brand as control category. Variables included in the following models are listed in Table 3, along with their descriptions. In order to reduce data variation most of the variables are log-transformed except the dummy variables.

Table 3. Variables and descriptions

Variables	Descriptions
LnJoinedDays	Total number of days from the user joined micro-blog to the day we retrieved the data
LnMessages	Number of messages posted by the user
LnFollowees	Number of users followed by the official user
LnFollowers	Number of users who following the official user
LnSR	Number of results that Baidu returns based on searching the official user's real name
IsWebsite	Dummy variable, whether the user is from Website category
IsMedia	Dummy variable, whether the user is from Media category
IsGovernment	Dummy variable, whether the user is from Government category
IsCampus	Dummy variable, whether the user is from Campus category
IsAgency	Dummy variable, whether the user is from Agency category

Then we use the following model to test hypotheses H1 and H2:

$$LnFollowers = \beta_0 + \beta_1 LnJoinedDays + \beta_2 LnMessages + \beta_3 LnFollowees + \beta_4 LnSR + \beta_5 IsMedia + \beta_6 IsWebsite + \beta_7 IsGovernment + \beta_8 IsCampus + \beta_9 IsAgency + \varepsilon \quad \text{Model（1）}$$

4. RESULTS AND DISCUSSIONS

Table 4 list the correlations between variables of the data set. Table 5 shows results of regression model (1). From that we can see models' F-test results are statistically significant, which means the results are reliable. From the results we can see that number of messages and the total number of days the user has joined in micro-blog, have positive effect on the number of followers, as their coefficients are positive and statistically significant. While to our surprise, the number of followees has negative effect on the number of followers, since its coefficient is negative and statistically significant. Therefore, H2a and H2b are supported. Meanwhile, there is a positive relationship between number of Baidu search results and number of followers. Thus H1 is supported. Coefficients of dummy variables represent the difference of followers between official users from each category. As Brand category is control group, we can see the difference between this and other groups. Results show that official users from Agency, Website and Campus will have fewer followers than those from Brand, since the coefficients of IsAgency, IsWebsite and IsCampus are all negative and statistically significant.

Table 4. Correlation between variables

	LnFollowers	LnFollowees	LnMessages	LnJoinedDays
LnFollowees	0.240**			
LnMessages	0.646**	0.495**		
LnJoinedDays	0.521**	0.340**	0.594**	
LnSR	0.211**	0.056*	0.173**	0.106**

*p<0.05, **p<0.01

Table 5. Effects of social capital and micro-blogging activities

	Beta	VIF
LnFollowees	-0.162**	1.364
LnMessages	0.710**	2.029
LnJoinedDays	0.762**	1.731
LnSR	0.078**	1.066
IsAgency	-0.305*	1.223
IsMedia	0.110	1.244
IsWebsite	-0.433**	1.215
IsCampus	-0.684**	1.207
IsGovernment	0.147	1.529
Adj R-square	0.479	
F Sig	0.000	

*p<0.05, **p<0.01

Dependent variable: LnFollowers

Based on the discussions above, our findings are depicted in Fig 1. Our findings have important implications for practitioners. For enterprises and organizations with great social capital in the real world, they will have more followers and get the benefit better than those with less social capital if they join the micro-blogging world. So they should create their official micro-blogs positively and take advantage of the marketing power of micro-blog. While for enterprises and organizations with less social capital in the real world, they can improve their micro-blogging influence through other ways. By positively micro-blogging activities,

such as frequently posting messages and create official micro-blog early, they can get more followers and improve their micro-blogging influence.

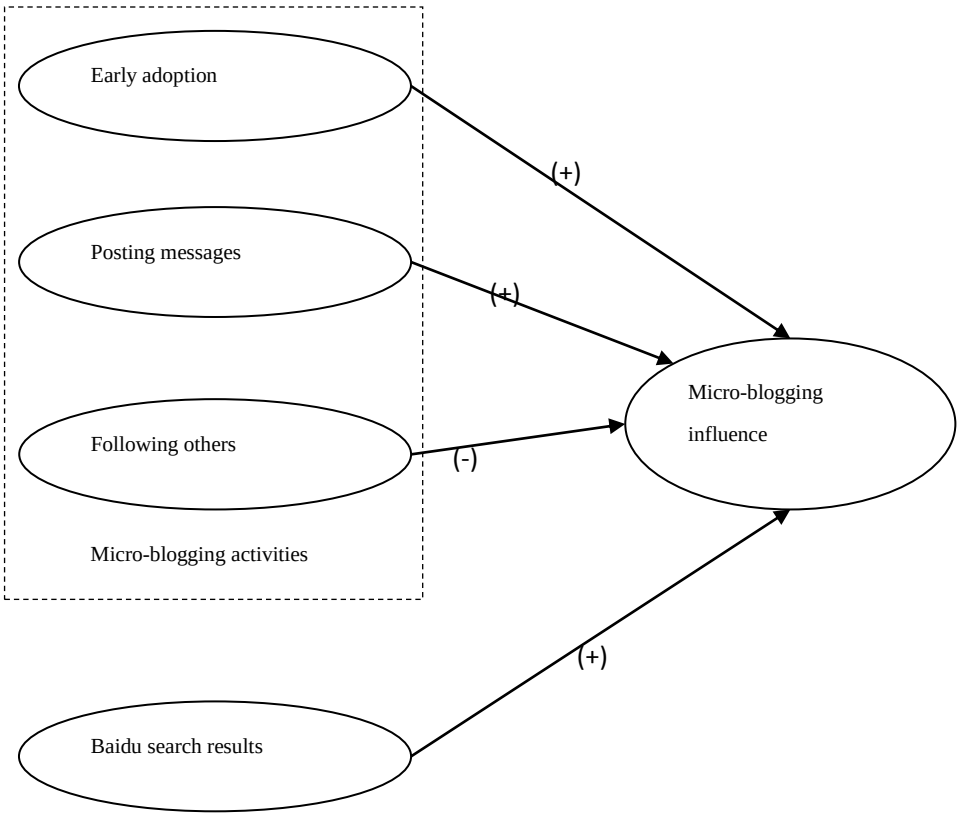

Fig. 1 Relationship results

5. CONCLUSIONS

According to the results, it can be magnificently seen what factors affect the micro-blogging influence of official micro-blog. Official micro-blog users with high social capital in the real world tend to have high micro-blogging influence in the micro-blogging world. That is to say the social capital of enterprise and organization in the real world can be transferred to micro-blogging world. Another factor that can affect an official user's micro-blogging influence is micro-blogging activities. Early joining the micro-blog and posting messages frequently can help official users attract more followers in micro-blogging world. But to our surprise following others have negative effect on the number of followers. That may because sina micro-blog is a different virtual world from Twitter and the "follow back" cultural phenomenon is not significant. In the future we will try to investigate what the reason indeed is.

The findings from this research are limited in several ways. First of all, due to the time limit, we only collected cross sectional data in this study, and the results may have been affected. In order to reduce the effect of sample selection, time series data would be retrieved in future research. Our results show that following others has a negative effect on the number of followers, which is very surprising and interesting. But we didn't explain that deeply, and in future that is what we would like to do.

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