A Study on Factors Affecting User's Interest in Using Social Networking Sites

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Abstract The recent advancement of social networking sites has enabled many people to stay connected anywhere in the world. People are able to make friends, keep themselves updated with the global trends, and communicate with each other using high-speed Internet fiber and wireless devices. The growth of social networking sites continues rapidly; hence, it becomes necessary to introduce new features and concepts to attract more users and stay competitive in the market. One of the marketing approaches is to understand user's emotion and the features that attract them to further use the tools. For example, Facebook introduces relationship status to induce online users to subscribe for their services. In this paper, we study several key aspects which may affect a user's emotion when using social networking sites. A user study is conducted where the users are given exposure to various social networking sites, and an in-depth evaluation is provided to further investigate our hypothesis. We take particular considerations on emoticons, attractive keywords, animated images, attractive deals/offers, colors of text and images, and the user's loyalty as well as the social networking sites' reputation. We conduct the user study on several state-of-the-art social networking sites such as Facebook, Google+, and Twitter. Experimental results show that our analysis on the key features identified has great impact on a user's emotion in using social networking sites. The outcome of our study will be important for future researchers to further research on sentiment analysis.

Keywords Web 2.0 • Social networking sites • Sentiment analysis

1 Introduction

Recent advancement in social networking sites has seen the increase of online Internet users. Users can now easily communicate with each other using high-speed wireless Internet in any location of their choice. People are able to post their

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comments and discuss on certain issues using social networking sites. The comments and posts made by users are invaluable for the commercial companies as well as governmental organizations. This information is very useful for marketing purposes, particularly when a company wishes to know their product strength and weaknesses. User's feedback from social networking sites is not only useful for marketing purposes, they can also be invaluable for predicting an election. For example, the candidacy between Barrack Obama and Hillary Clinton is widely debated during the last US general election. For a candidate to fully understand his strength and weaknesses as well as people opinion regarding certain issues, one may require this information by using a crawler to harvest the vast pool of information from social networking sites. Due to the huge amount of deep web repositories available in the web, it is impractical to manually extract and label them according to the topic of interest as this process can be labor intensive and time consuming.

Posting the user's feedback in social networking sites may require certain skills from the users. Some posts may lead to further discussion, spiraling viral marketing effect. Some posts may be regarded as irrelevant by many users; hence, they are ignored. It is noticeable that certain strategies help to improve on the readability and interest among users. Research has shown that users are not only attracted to the posting made by the users, there are also other external factors that determine the interest of users in reading the post further. One of the key strategies is to implement search engine optimization (SEO) technique, where the content of the post is changed to suit the search engine matching criteria for ranking, hence leading to higher rank in search query results. Another technique involves prominent bloggers where these bloggers (usually the experts in certain field of interest) are invited to write on certain issues pertaining to public interest, on the assumption that the public has more trust on the bloggers' opinion and feedback.

Other factors that may affect the readability of the posts are images, animated icons, highlighted texts, as well as dynamic scripts in webpage. Study has shown that these factors may indirectly attract many users in reading a post further as humans are more attracted to images which may spark their interest. However, few studies have been made to identify the general factors affecting the users' interest in social networking sites posting. In this paper, we aim to identify the factors affecting a user's interest in reading a post. While determining the factors affecting user's interest may be subjective, we aim to identify these factors correctly, by conducting extensive user study to properly verify them. This study will be conducted across all age group and level of education, equally distributed and conducted in separate sessions, in such a way that no bias is found in the results of the survey.

The paper is divided into several sections. The next section describes research related to ours, while the subsequent section explains the methodology in detail. Then, we present our experimental results, and finally we conclude our work.

2 Related Work

In the middle 2000s, wiki has been recognized by the education sector that offers collaboration and constructive learning for the field of education (Klobas 2006). Wiki is also widely used in various disciplines such as teaching and learning, with application across various levels of education stages: (1) primary schools (Dede 2005; Desilets and Paquet 2005; JISC 2009), (2) secondary schools (Lombard 2007; Lund and Smordal 2006; Prensky 2001), and even in (3) higher level education (Augar et al. 2004; Chong et al. 2011; Cubric 2007; Doolan 2007; Fard et al. 2010; Wheeler et al. 2008)

There are various types of learning activities being planned and implemented using Wiki, for example, evaluation and review of journal articles (Cubric 2007; Forte and Bruckman 2006) storytelling (Desilets and Paquet 2005), essay writing (Forte and Bruckman 2006; Wang et al. 2005), and wiki-based glossary of technical terms (Cubric 2007; Glogoff 2006; Samarawickrema et al. 2009). In 2000, five-stage model (Salmon 2000) was originally developed to support the role of e-moderator and scaffold students on a step-by-step basis to learn how to interact with other users online. It focused more on the role of tutors than the role of students.

Garrison et al. developed COI in 2000. The original conception of COI was to improve the practice of users in evaluating computer science conferences and also to help to design, facilitate, and direct higher-order learning. It is an online tool with student participation; however, it does not offer a stage-by-stage guidelines to augment interaction and learning for the users to use Web 2.0 technologies.

Four-stage online presence (4-SOP) model was developed by Goh (2010), and it is derived from theoretical lens of the five-stage model developed by Salmon (Salmon 2000; Zin et al. 2006) and Garrison et al. COI (Garrison et al. 2000; Self and Goh 2009; Zakaria et al. 2010). The themes are based on empirical data obtained from three case studies conducted based on UK context. This model consists of four stages and three online tools with user participation to provide a step-by-step guide in introducing the Web 2.0 technologies to the students. The distinctive feature of this model is to assist lecturers in planning, monitoring, and reviewing the teaching and learning process at appropriate stage. 4-SOP model also focuses on critical thinking skills as the expected learning outcomes.

3 Proposed Methodology

To conduct our user study, a few fundamental steps are required to ensure a smooth and fair study can be carried out. To achieve this, we select a participant pool of 100 web users, particularly those who are well verse with social networking sites. Participants are selected from Taylor's University, and these groups are distributed across different departments. The ages of all the participants range between 21 and

40 years old, under the assumption that these age groups are familiar with social networking sites.

We then prepare a list of questionnaires to evaluate the participants. We identified three state-of-the-art social networking sites (Facebook, Twitter, Google+) and prepared five samples for each of these social networking sites. Each samples contain a diverse content so that a proper identification can be made to distinguish the various factors identified.

We then list out the various factors from our hypothesis and filtered out the factors which are deemed irrelevant. Note that factors which are deemed technically relevant such as search engine optimization and personalization are not taken into consideration in this study. The factors which we have identified are as follows (see Figs. 1 and 2 as examples):

Once these factors are identified, we prepare the samples, identify the factors, and mark the samples containing the factors. Then, we prepare another set of similar samples without the marked factors. We then distributed these samples without the marked factors to the participants for evaluation. Samples are distributed to the participants according to their department randomly. Participants are also grouped into individual classroom so that they do not share the outcome of their survey to other participants.

During the study period, the participants are required to list down the descriptions of the factors influencing the interest of users reading a post in a separate

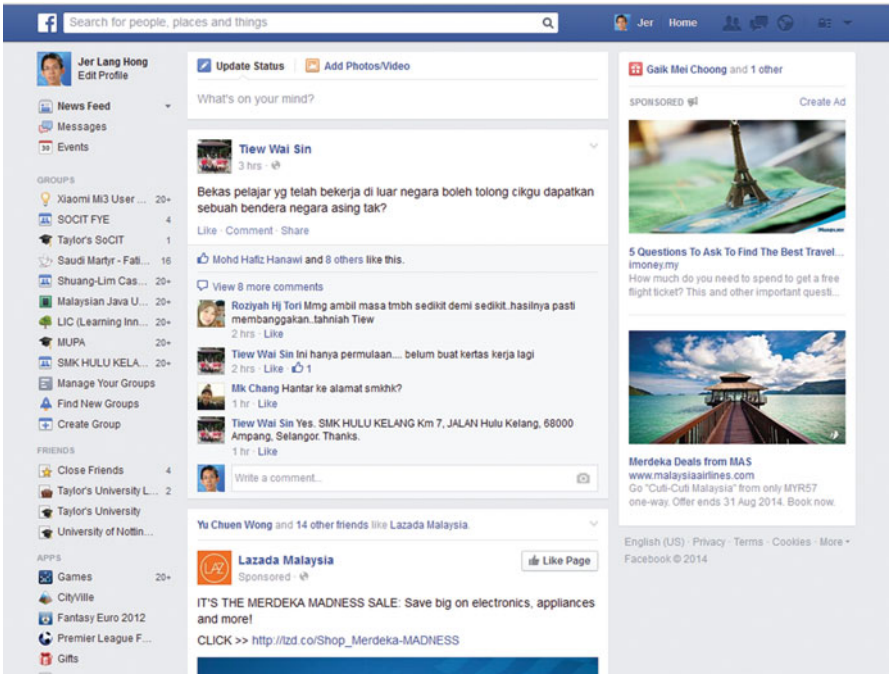

Fig. 1 Facebook example

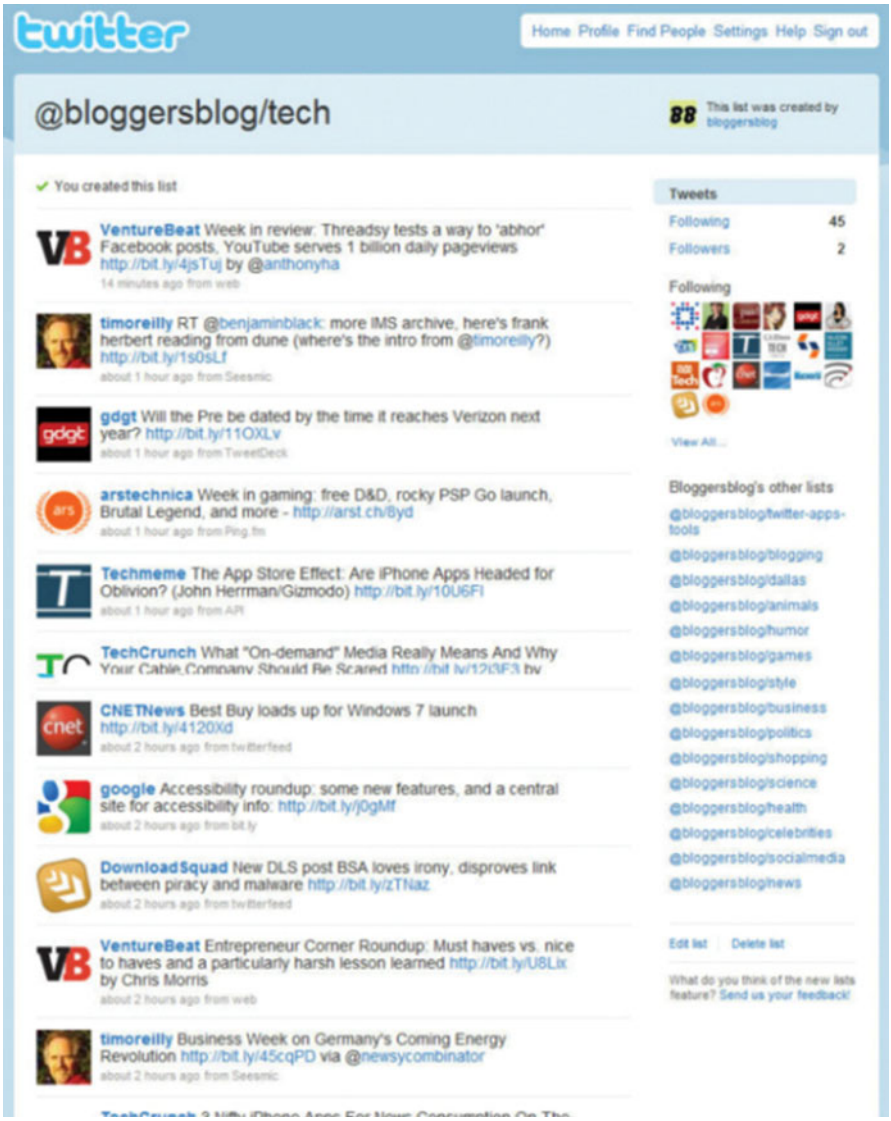

Fig. 2 Twitter example

sheet. This description will be helpful for us to identify the categories the factors are in as stipulated in Table 1. Once the users have completed the survey, the samples and the answer sheets are then taken back for evaluation. Factors that are identified correctly are marked as correct, whereas factors that are incorrectly identified are further evaluated by conducting the survey on different participants to obtain further opinion and analysis. Factors are considered incorrectly identified if more than 75 % of the participants disagree with the marked factors on the original samples. Factors that are correctly identified are factors which have at least 80 % of the participants agreeing on the test survey. Otherwise, these factors are considered subject to user's opinion.

Table 1 Factors identified as influencing a user's action for reading a post

Factor	Description
Relationship status	Attract many users who are curious about other relationship status
Smiley icon	It seems that smiley or angry icons attract users
Animated GIF	Attractive image with animation which diverts user's attention
Highlighted text	The text is specially formatted which draws user attention
Text content	User's written text content
Layout	The webpage layout for displaying contents
Color matching	The use of foreground and background color

Table 2 Gender distribution

Male	Female
50	50

4 Experiments

Once the participants have filled in the questionnaires, we compile the data and formulate it using statistical rules. We group the data according to the participants' background and age group. Tables 2, 3, and 4 summarize the demographics of the participants.

For every factor evaluated, we request the participants to identify whether they agree that the factors are affecting the readability of the post and usage of the system.

The table below summarized our findings (Table 5).

We then evaluate the factors influencing user's interest by social networking sites' tool. The tables below present the statistics by social networking sites' tool (Tables 6, 7, and 8).

As can be seen from the tables presented above, each of these social networking sites has different statistics for the different factors identified. This is due to the factors that these social networking sites have different designs and they are built for different groups of users. It is noticeable that Facebook ranked highly in relationship status, smiley icon, and animated GIF factors. This shows that Facebook is actually a platform for social network, where users tend to use it to make friends, and networking. On the other hand, Twitter scored highly on text-related factors (highlighted text and text content), which indirectly shows that it is a platform where user reads tweets to get an update on current issues rather than knowing other user's profile. Google+ scores highly on animated GIF, smiley icon, highlighted text, and text content. This is due to the fact that Google+ is a content-based social networking platforms, where users get update on current news and issues.

Table 3 Age group classification

Age group	Numbers
20–25	46
25–30	38
30–35	12
35–40	4

Table 4 Number of participants by department

Department	Numbers
School of Computing and IT	25
School of Engineering	15
School of Business	25
School of Biosciences	5
School of Hospitality and Tourism	15
School of Pharmacy	5
School of Architecture	5
School of Communication	5

Table 5 Statistics on factors identified as influencing a user's action for reading a post (general)

Factor	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
Relationship status	0	0	2	12	86
Smiley icon	0	2	6	25	67
Animated GIF	0	0	4	18	78
Highlighted text	0	4	10	21	65
Text content	0	3	8	43	46
Layout	0	9	8	42	41
Color matching	0	4	5	64	27

Table 6 Statistics on factors identified as influencing a user's action for reading a post (Facebook)

Factor	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
Relationship status	0	0	0	7	93
Smiley icon	0	0	3	12	85
Animated GIF	0	0	2	9	89
Highlighted text	0	7	8	16	69
Text content	0	2	8	36	54
Layout	0	4	6	38	52
Color matching	0	0	7	27	66

Table 7 Statistics on factors identified as influencing a user's action for reading a post (Twitter)

Factor	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
Relationship status	0	12	78	10	0
Smiley icon	4	10	9	12	65
Animated GIF	2	7	11	12	68
Highlighted text	9	13	8	18	52
Text content	0	1	7	15	77
Layout	0	7	27	54	12
Color matching	2	18	24	46	10

Table 8 Statistics on factors identified as influencing a user's action for reading a post (Google+)

Factor	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)
Relationship status	5	5	60	6	24
Smiley icon	0	6	21	18	55
Animated GIF	0	0	14	22	64
Highlighted text	2	8	12	25	53
Text content	0	3	7	37	53
Layout	0	9	25	45	21
Color matching	0	8	28	41	23

Twitter scores very low on relationship status; this is particularly due to the fact that the users who tweet online wish to made their opinion known to others, in addition to update their friends on their status. It is certainly not a platform for making friends as in Facebook, rather it is a platform to post short messages so that other followers can update on their friend status. Twitter also scores lowly on layout and color matching. This came as no surprise to us as we find that Twitter website design is purely simple, and it does not contain much information besides tweets. Similar to Twitter, Google+ also scores lowly on relationship status, layout, and color matching. This is particularly due to the fact that Google+ is a platform for discussing certain issues. Also, the low score on layout is also due to the different layouts provided by Google+, which allows user customization. The fact that Google+ allows user customization indirectly results in higher score for other factors. This is because Google+ provides a well-designed template for formatting text and image contents, which is not provided in other social networking sites.

Finally, Facebook scores generally high on all the factors. From the participant feedbacks, we find that Facebook provides many more features compared to the latter two platforms, particularly the relationship status feature. In addition to that, a user is able to find similar information in Facebook compared to the other two platforms; thus, the need for using Google+ and Twitter may not be necessary. We also find that most users generally disagree that color matching in a website design does

affect the readability and use of social networking platforms. This is particularly true as different users have different attractions to certain colors; hence, it may be unwise for a social networking developer to design their website for different groups of users.

5 Conclusion

In this paper, we have studied on the various factors affecting a user's interest in reading a particular post. We have identified several factors in our research study, and among them are images, animated icons, dynamic scripts, and attractive text contents. We have conducted an extensive user study to verify our hypothesis. Experimental test shows that our observation is correct based on the survey results conducted on the test participants. The outcome of our study will be very helpful for the future designer of social networking sites and also researchers working on viral marketing and online poll prediction. We also hope to extend our research study to other social networking sites, such as Pinterest and LinkedIn.

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