Emotion Determination Template on Facebook to Justify Emotional Level

Teh Phoey Lee, Roxanne Wong, and Shahrinaz Ismail

Abstract—**This paper describes the research towards the measurement of users' emotional level affected by Facebook. After the calculation result of the users' emotional level, the template will provide some sort of prescriptions for users. The prescriptions provided acted like suggestion for the users to optimize their well-being. Firstly, the emotion and Facebook activity is being listed and categorized. Scenarios are then created on the questionnaire design whereby users are required to choose the first emotion that appeared to them on each of the scenarios. By then, the template is built according to the analysis result of questionnaire survey. After the development of the template, focus group interview is conducted to test the effectiveness and accuracy of the template.**

Index Terms—**Emotional level, measurement, tips.**

I. INTRODUCTION

Social network is a structure that brings individuals into a common platform and has been a trend nowadays. With the growth of Web 2.0 technology, it has resulted in over half a billion of users being present on the online social network environment [1]. The usage of social network is relatively heavy and this indicated that social media is taking over online communities' life. According to the research paper of Benevenuto *et al.* [2], social networking have become a popular medium for users to interact with each others in which it have become a more well-liked online activity compared to email. It is a fundamental part of the global online experience. This is because social networks provide an infrastructure for various activities on the Internet [3].

Facebook is chosen in this proposed project since it is one of the popular and leading social networking sites. It consists of more than 400 million active users whereby 50% of their active users logged on to Facebook daily. From the research conducted, users spend over 500 billion minutes monthly on Facebook usage [4]. Facebook consist of many architecture and can pass down varieties of behavior towards users. The workload of activities performed by each user from the social network provided us with an idea about users' behavior and usability.

This research is carried out due to the performance of social network as current trend. Social activities conducted through social network tend to devote users in expressing their emotion. Furthermore, this research and the template have not been developed by any other researcher.

II. EMOTION

Emotion is used to symbolize an individual's thought of feelings. It is some kind of self-knowledge that appear in an individual for them to identify their own perception of mood and then express their thought and feelings correspond to certain conditions or situations. In this case, Facebook actually provided a place for users to express their emotion through sharing and posting. Mayer *et al.* [5] claim that emotion is actually a signal that conveys information where different emotions can have different specific meanings. Emotional intelligence (EI) is being referred as the ability to perceived, identify, and manage one's emotion when occur [5]. Individuals who are high in emotional intelligence might get themselves skills in managing their own emotion and perhaps benefits from it. Therefore, emotional intelligence could be a crucial factor in determining different level of emotion by different individuals affected by Facebook.

Positive emotions tend to broaden an individual's momentary thought-action repertoire [6]. Users are able to analyze and react appropriately or make better decision in perceiving a certain situation. It can help to loosen the hold on negative emotions gained on an individual's mind and body. By then, it will recover the speed of cardiovascular better compared to negative emotions. Moreover, Fredrickson [7] claims that experiences of positive emotions prompt individuals to fit into their environments and participate in activities. From here, users are able to fully enjoy in the favorable Facebook activities if the users perceive that visiting Facebook generated positive emotions.

In contrast, negative emotions tend to narrow down an individual's momentary thought action [6]. Negative emotion may cause a wide range of health issues or problems for an individual. It will increase cardiovascular activities, in which will restructure blood flow to relevant skeletal muscles [7]. Negative emotions have always been given bad impression and are not favorable among users. Therefore, it is to be avoided if Facebook does impose negative emotion on users as users' health condition will be threatened in the long-term.

III. RESEARCH METHODOLOGY

Self-report method is chosen for this research because only users themselves experience their emotions while using Facebook. It consists of a broad range of assessment towards emotion where users are to identify their own emotion and rate it according to their surpassing perception and awareness. Proponents of self-report assumed that users are in honoured to examine, evaluate, and integrate

information about their own emotions [8]. However, some users might face the problem of unsure or unable to identify and rate their emotions accordingly. Likert-scale is one of the common approach used where users are allowed to rate their emotions. Checklist could also be used where a list of subsequent emotions will be listed, and then users will place check on the emotions that best describe their feelings.

A. Questionnaire Survey

Questionnaire survey that is used in this research consists of a series of questions for gathering data and information about the emotion that present on each Facebook activity from 30 respondents. The aim of the questionnaire is to identify the variable which is the emotion appeared in users corresponding with the Facebook activities whereby the emotion will be used in developing the template for measuring the users' emotional level affected by Facebook. The various Facebook activities will be specified accordingly to come out with scenario to be included in the questionnaire. Thus, questionnaire involves structure question and choice ticking question regarding users' emotion that appear during the scenario describe from each Facebook activity. The choice ticking question comes with a checklist of emotions identified whereby users will check on the emotion that present on them based on each Facebook activity.

B. Focus Group Interview (Post-Evaluation)

Structured interview is conducted and the questions are generally open-ended questions and rating questions. Focus group interview is used to gather users' feedback about the template testing where 15 participants are being selected. Focus group interview will be designed to include Likert-scale for users to rate the relevancy of emotional level and reliability of tips which lead to the effectiveness of the template in measuring the emotional level as well as the accuracy of the tips provided towards the change in better lifestyle and also comment regarding the template.

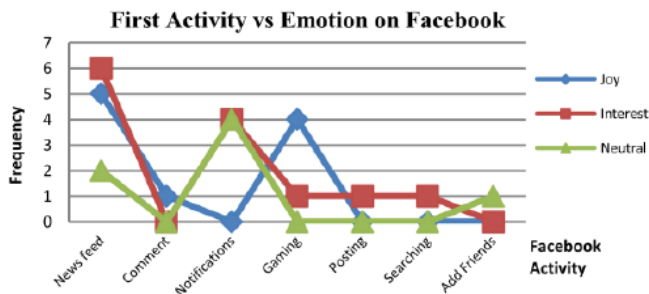## IV. DISCUSSION

A. First Activity on Facebook

Fig. 1. First activity on Facebook.

The first activity generally done on Facebook gives an overview about the first impression of Facebook imposes on users is explained on Fig. 1. Users tend to view news feed on the home page as their first activity on Facebook (43.33%) whereby the emotion of joy and interest contain the highest frequency on viewing news feed; with joy 38.46% and interest 46.15%.
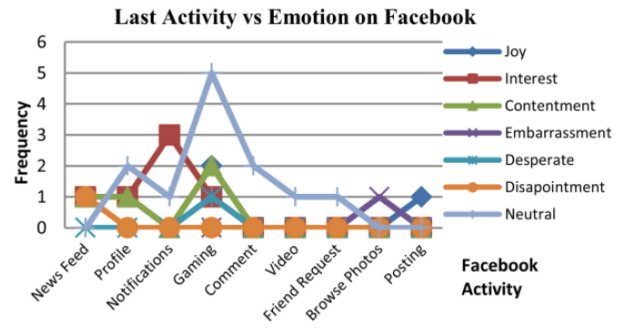
B. Last Activity on Facebook

Fig. 2. Last activity on Facebook.

Fig. 2 indicates on how the users feel on the last activity performed before they logout. After the visit on Facebook, users tend to play games as their last activity with highest percentage of 36.67% on gaming. However, the last activity on Facebook might not impose much emotion on users compared to the first activity where most of the users are neutral towards the last activity with the percentage of 40%. This may due to the duration of time spent on Facebook. When the time spent on Facebook activity become longer, the users' emotion might not be as strong as the starting activity which is first activity. Even gaming as the first activity done on Facebook, users have the emotion of 80% joy compared to 18.18% of joy and 45.45% neutral emotion for gaming as the last activity.

C. Critical Analysis

TABLE I: FACEBOOK ACTIVITY WITH ITS EMOTION AND WEIGHTAGE

Facebook Activity	Emotion	Weightage
Search for friends	Interest	6
Write message	Joy	4
Awaiting reply from message sent	Interest	5.3
Received message	Joy	4
	Interest	4
Browse and watch video	Contentment	3.3
Browse photos	Interest	4
Browse photos that user was tagged	Interest	4.7
Browse photos comment	Interest	4.4
Friends upload user's photos that user is unaware	Embarrassment	3.3
Upload photos	Joy	3.4
Photos being 'like' by friends	Joy	4.4
Browse homepage	Interest	4.7
Being added by friends	Interest	7
Friend request being accepted	Joy	6
Being tagged	Interest	4
Spam friends' notifications and inbox through tagging	Joy	6
Notifications and inbox being spam by friends tagging	Anger	2.7
Status or post being comment	Interest	5
Reading comment	Interest	4
Status or post being 'like'	Joy	4.4
Loading game	Interest	3.3
Playing game	Joy	4.4
Break record	Joy	4
Unable to break record	Sadness	3.7
Game level increased	Joy	6
Game not saved before close	Anger	5
Unlock new items in games	Joy	5.4
Create event	Joy	4.4
Being invited for event	Joy	4.4
Invitation being rejected	Sadness	5.7

Among the Facebook activities, some consist of mainly

of neutral emotion which means that the particular activities do not affect much on users' emotion. Hence, those activities will be eliminated from the template development. Table I shows the Facebook activities with its emotion that appear the most in users based on the questionnaire survey analysis. The weightage for the corresponding emotion will be used in calculating the users' emotional level during the template development.

V. EVALUATION

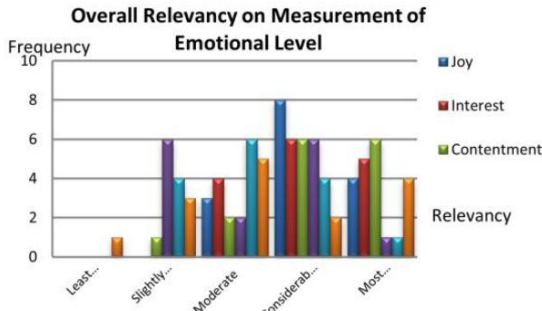### A. Overall Template Effectiveness on Measuring Emotional Level

Fig. 3. Overall relevancy on measurement of emotional level.
Note: Table value for Chi-Square = 11.070.

Fig. 3 illustrates on positive emotion. Hypothesis for positive emotion: H_0 = The effectiveness of measuring emotional level is considerably relevant. Table II remarks that hypothesis for negative emotion: H_1 = The effectiveness of measuring emotional level is moderately relevant.

TABLE II: CHI-SQUARE ANALYSIS OF EMOTIONAL LEVEL

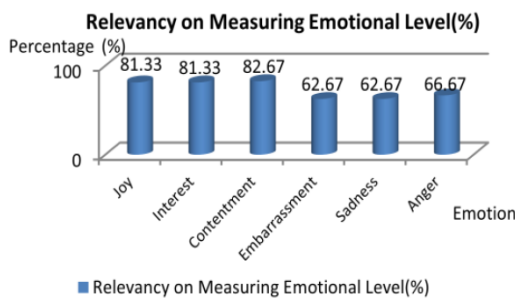| Emotional Level	Chi-Square Value (X^2)	Remarks
Joy	0.86	H_0 accepted
Interest	1.33	H_0 accepted
Contentment	0.53	H_0 accepted
Embarrassment	13.17	H_1 rejected
Sadness	3.5	H_1 accepted
Anger	3.66	H_1 accepted

Fig. 4. Relevancy on measuring emotional level (%).

Measurement on positive emotion score higher relevancy compared to measurement on negative emotion in Fig. 4. Therefore, overall template effectiveness on the measurement of emotional level is 72.89%.

B. Overall Template Accuracy on Providing Tips for Emotional Level

Fig. 5 shows the overall reliability of tips for emotion. Table III analyses the tips for emotional level. Hypothesis: H_0 = The accuracy of providing tips for emotional level is mostly reliable.
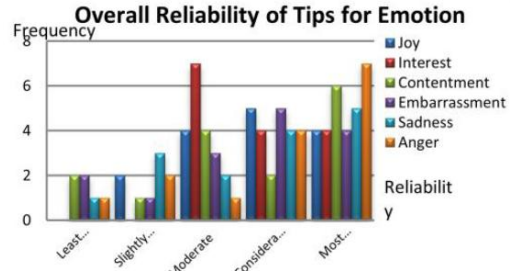

Fig. 5. Overall reliability of tips for emotion.

TABLE III: CHI-SQUARE ANALYSIS OF TIPS FOR EMOTIONAL LEVEL

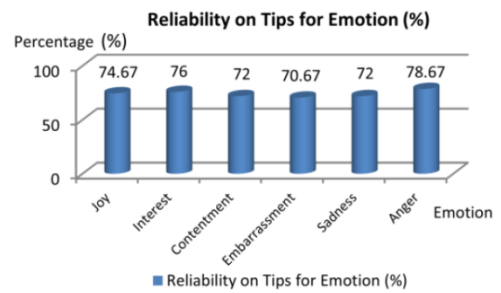| Tips for Emotional Level	Chi-Square Value (X^2)	Remarks
Joy	3.18	H_0 accepted
Interest	7.99	H_0 accepted
Contentment	2.33	H_0 accepted
Embarrassment	1.91	H_0 accepted
Sadness	4.49	H_0 accepted
Anger	2.49	H_0 accepted

Fig. 6. Reliability on tips for emotion (%).

Fig. 6 shows the reliability of the tips for emotion leads to the determination of the template accuracy. Therefore, overall template accuracy in providing tips towards the emotional level is 74.00%.
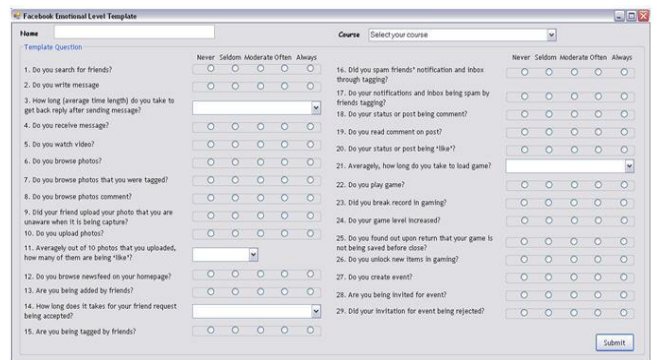
VI. IMPLEMENTATION AND TESTING

Fig. 7. Screen short of Facebook emotional level template.

Fig. 7 shows the screen short of the Emotional template. A list of question being ask based on the activities of user are requested to answer those questions. Fig. 8 shows the results of emotional level.

VII. CONCLUSION AND FUTURE WORKS

Throughout the research, activities on Facebook do bring more positive emotion rather than negative emotion. In fact, 67.57% of the Facebook activities conducted lead to the emotion of joy and interest. For the future works, it is suggested that the template include another measurement on

the percentage of potential health issues on Facebook based on users' emotional level. Inclusion of specific health suggestion is suggested instead of general health suggestion for all emotional level. It is recommended that this template developed as web-based in the future so that it can be included as one of the Facebook application. In conclusion, Facebook brings more positive emotion with percentage of 70.27% compared to negative emotion towards users whereby the tips provided helped 74% of the users towards optimization of well-being as well as change in better life style.
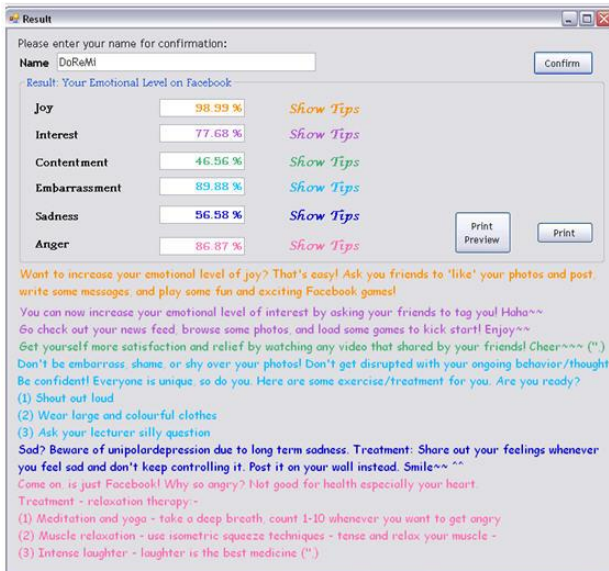

Fig. 8. Screen shot of emotional level result page.

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Teh Phoey Lee is currently holding a senior lecturer position at Sunway University. She obtained her first science degree from University Teknologi Malaysia (UTM, Johor), majoring in remote sensing. At year 2003, she obtained earned her Master of Information Technology from Universiti Sains Malaysia (USM, Penang). Subsequently in year 2011, she obtained her PhD from University Putra Malaysia (UPM, Selangor). At the very same year, she won a gold medal award from the same university at the competition of PRPI 2011 on her PhD's research outcome. She has 10 years of teaching experience, at local and internationally (guest lecturer) universities. Her research areas included Social Network Analysis, Information Retrieval and Mobile Application. She has published in several international conferences and journals, besides book's chapter, and research papers.

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