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## **Improving Usability of Social Networking Software: A Case Study of WeChat**

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## Introduction

‘Usability’ represents how adequately and readily a user without any guiding can interact with a software or web page for their demands (Shackel & Richardson, 1991). Therefore, user-friendly applications possess characteristics of satisfaction, effectiveness and efficiency. An efficient conception of the usability requires strong adaptability of the utilization and the system (Hertzum, 2010). With the rapid development of social networking, social software becomes one of the most prevalent platforms for communication, interaction and information sharing (Wilson, Boe, Sala, Puttaswamy & Zhao, 2009). In this report, usability is tested according to users’ experience value, including general function, comfortableness, convenience and so on. The usability performance is estimated by usability assessment approaches including user testing, success rate, heuristic evaluation, navigation speed and task validity. The report aims to test the usability of WeChat, with the purpose of offer suggestions in the improvement of WeChat based on the usability issues, and to estimate the performance based on interactions as well.

## Methodology

This report aims to assess the usability of the WeChat, to analyze the results and to make suggestions in order to improve the WeChat. In order to achieve this objective and discover more issues at least two approaches should be applied (Holzinger, 2005). Therefore, the methods of skilled users’ evaluation and user testing are used.

### *Experienced Users’ Evaluation (Heuristics Evaluation)*

Usability evaluation is a significant method to make sure the standard of the user experience (Schmettow, 2009). Experienced users’ assessment is an inspection method normally used to find usability issues from the viewpoint of the experienced users (Nielsen & Molich, 1990). It focuses on the complete application or website from many perspectives and represents possible issues such as language use, inconsistency and visibility of information. It can also completely investigate details such as error messages. In this process, the evaluations, which are based on Nielson’s heuristics, are collected into a table for supply more clarity and accelerate the evaluation process (Nielsen & Mack, 1994). These evaluations are categorized in 5 numerical scales to estimate every issues. The meaning of 0 is no usability issue, 1 is cosmetic issue, 2 is minor issue, 3 is major issue, and 4 is catastrophic issue (Nielsen, 1994). These classifications are explained to the users in their instructions for ensure these rules are suitable (Chen & Macredie, 2005).

### *User Testing*

User testing is the most fundamental and essential approach for usability test (Holzinger, 2005) as it discovers straightforward information about how users interact with systems and their exact issues with an interface (Vermeeren, Kesteren & Bekker, 2003). This method enables usability testers to accurately detect the commonly encountered problems, error frequency, and how long does the issue last (MacDorman, Whalen & Patel, 2011). Hence, the effect will be better if the methods of usability testing and heuristics evaluation

are combined, as each method is complementary to the other (Nielsen, 1992). The user testing aims to detect usability issues related to the WeChat interface and the interaction process.

Think-aloud is a common approach used in usability testing (Ramey, Boren, Cuddihy, Dumas, Guan, Haak & De Jong, 2006). During the testing, where the users are executing the task as section of the procedure, the users will be required to think out loud. Additionally, when the users performed the given tasks, their behaviors would be observed and recorded.

### ***Questionnaire***

There is a questionnaire to collect the data, which are users' suggestion and their emotional feedback. The information gathered from both first-time users and experienced users in order to get precise understanding on the usability of WeChat (Holzinger, 2005).

### ***Participants***

As shown in the tables below, 3 skilled users who had been using WeChat for long time were invented. The rest of 30 users, 10 of whom had used WeChat for the precise aim of this assessment. The other 20 users had previous experience with different social networking applications.

Table 1: Gender and Experience Distribution of Users

User Group	Number of Users	Gender		Total Users
		Male	Female	
Experienced	20	17	3	30
Novice	10	6	4	

Table 2: Demographic Information of the Skilled Users

Gender	Country	Major	Degree	Usage of WeChat
Male	China	Computer Science	M.Sc.	4 years
Male	China	Information Technology	M.Sc.	4 years
Male	Korean	Software Engineer	Ph.D.	2 years

## **Test Results and Analysis**

During the testing process, the number of issues were discovered by usability checklist on WeChat, and users' evaluations were collected. The usability checklist summarizes the problems encountered, which includes efficiency and level of satisfaction.

## ***Heuristics Evaluation Results***

The tester created a usability checklist for WeChat and the results acquired from the assessments of the experienced users, and Table 3 reveals the results of the heuristics evaluation on WeChat (Magoulas, Chen & Papanikolaou, 2003).

Table 3. Heuristics Evaluation Results

Problem Types	Cosmetic	Minor	Major	Catastrophic	Total Score
1. Visibility of system states	4	7	2	0	13
2. The match of application and the real world	8	0	0	0	8
3. User control and freedom	1	3	0	0	4
4. Consistency and Standards	3	2	0	0	5
5. Error Prevention	7	2	0	0	9
6. Recognition rather than recall	3	0	0	0	3
7. Flexibility and efficiency of use	1	1	0	0	2
8. Aesthetic and minimalist design	2	1	0	0	3
9. Help users recognize, diagnose, and recover from errors	2	0	0	0	2
10. Help and documentation	4	4	0	0	8
Number of problems discovered	35	20	2	0	57
Percentage of problems discovered	62%	34%	40%	0%	

Additionally, the experienced users draw attention to the following issues considering these heuristics:

- 1) If a user sent an “add friend” or “join group” requirement by mistakes, it cannot be revoked.
- 2) Some buttons are too small to be accurately targeted.
- 3) There no different mode is adapted to different environments, such as noisy or dark environments.
- 4) It is to undo actions is not distinctly expressed.

## ***User Testing Results***

It is not essential to test all the functions the participants performed in detail during the assessment procedure. For some of the functions which were performed the most perfectly, to test in generalities will sufficient. For the usability issues and other functions that were complex, a more detailed explanation would be more proper. Both the concise and

complex tasks must be meticulously analyzed in order to ensure there is a correct and true illustration of WeChat.

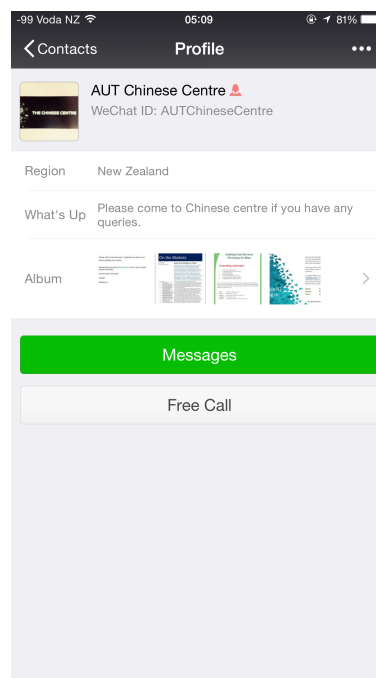
***creating an account and adding/editing personal information.***

Creating an account and editing personal information were simple task for all the participants. From the data collected and observations, users carried out the tasks easily due to the operation interface was easily visible.

***adding new contacts and chatting.***

Adding contacts and sending messages were easy tasks for all participants as well. As shown in Figure 1, the button for implementing the “send message” function is located on the contacts profile page, it enable users to locate and thus implement the task. However, due to the complex operations, such as hold to talk, release to sent and slip up to cancel, it is difficult to send voice message for some non-experienced users.

Figure 1: Contacts profile page (screenshot from WeChat)

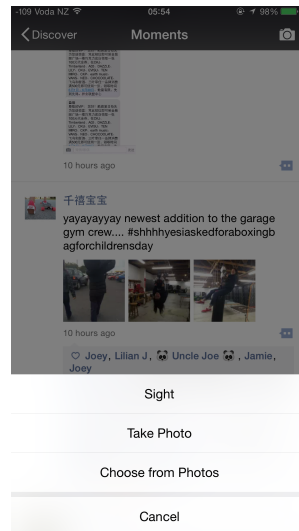


***posting and reposting “moment”.***

“Moment” function supports four post forms, including sight, photo, text and link. All participants can post sight content, photo content and links successfully; however, the majority of participants cannot post text content; since there is no button for text posting on the “moment” page (it is a hidden function), users must long press the moment posting button to enter the text posting page. As shown in Figure 2, when you click the “moment” posting

button, only four selections but no selection for post text content. This inconsistent operation causes the users to be unavoidably puzzled.

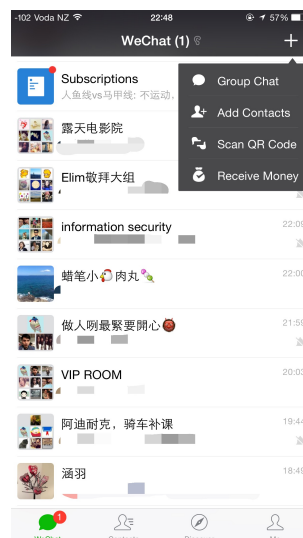
Figure 2: “Moment” posting page (screenshot from WeChat)



### *joining a group chat.*

Joining a group chat was not a big issue for most participants, except for some beginners. As shown in figure 3, the “Groups Chat” button was not clearly absolutely clear, it hidden at the top right of corner on “WeChat” page; further more, there is no detailed description for users to guide them how to use the group chat. Additionally, if users delete the chat history or change another phone, the previous group chat was unable to be found unless users save group chat to contacts.

Figure 3: “Group Chat” button (screenshot from WeChat)



### ***voice searching.***

Voice searching is a new function applied to social networking application; therefore, there are some problems with this function, such as low recognition rate and low accuracy rate. In the testing process, the voice of the majority of users would not be recognized in the first time, so they attempted to figure it out, whereas after many tries still of no avail.

### ***overall success and difficulty.***

Overall, the majority of the tasks were accomplished successfully, whereas a few of them were encountered difficulties. Table 4 below reveals the number of participants that were favorably perform in every tasks on WeChat and the success rate. Success rate represents the proportion of tasks that users implement successfully (Nielsen, 2001), and following formula is for testing success rate:

$$\text{Success Rate} = \frac{(\text{successful tasks} + (\text{partially successful tasks}) * 0.5)}{\text{total number of tasks}}$$

Table 4. Usage of and Success Rating

Task	Successful Users	Partially Successful Users	Failed Users	Success Rating
Create an account	33	0	0	100%
Add or edit personal information	33	0	0	100%
Add new contacts and chat with them	30	3	0	95%
Post and repost “moment”	13	18	2	67%
Join group chat	24	8	1	73%
Voice search	19	2	12	85%
Total success rating	Average for the most application < 50% (Nielsen, 2001)			86.7%

### ***efficiency (success rate and time taken)***

The majority of experienced users implement most of the tasks with a minimum of time on WeChat, this being between three to five minutes, in comparison to some of non-experienced users who take between eight to twelve minutes. As a result, the experienced users can be reached up to 82% success rate whereas the first-time users can only reach 63%.



### *users' satisfaction*

Table 5 below shows the results of the users' satisfaction in WeChat. In analyzing the evaluations to the nine features of WeChat, 66 percent of participants have a high level of satisfaction, in contrast, 9 percent of participants have the lowest satisfaction, and 25 percent user were neutral about WeChat. In general, although some issues were encountered when used in practice, the majority of users were content with WeChat.

Table 5. Users' Satisfaction According to Features of WeChat

Features of WeChat	Strongly Agree	Agree	Neutral	Disagree	Strong Disagree
Provides good understanding of the content	9	12	11	0	1
Provides easy search criteria	12	7	11	2	1
Buttons were visible and finger-friendly	0	9	9	15	0
Buttons and contents are structured and organized	11	7	9	4	2
Good operability	7	10	13	2	1
Good feedback on errors	13	7	9	1	3
Visual comforting	14	10	3	5	1
Humanization	15	9	9	0	0
In whole, the site is satisfactory	6	14	10	2	1
Overall satisfaction	66%		25%	9%	

## **Suggestions and Relevant Theory**

The results of usability testing represent that the non-skilled users had more obstacle in implementing some tasks than the experienced users; however, these obstacle could be addressed with time. To address the usability issues of interactive application, the first consideration is users' satisfaction, not only for non-experienced users but also to retain existing users of the application; therefore, there are some suggestions as follows.

### *Use consistent and transparent terminology*

This is connected with participants' confusion over the model "discover" for posting status which was unusual to them. Contents of the application should be represented in transparent language. The function of "Group Chat" and "Join Private Group" are used for

joining a group chat; however, different words may appeared vague to some of the user. A precisely button for group chat would guide them clearly what to do (Shneiderman, 1986).

### ***Improve button placement***

When the buttons that are around the edge of the screen, the thumb cannot control to sweep the buttons, which are outside the thumb zone as the limited range of our thumb. In addition, the buttons are crowded together led to error operating. The research represents that users error decreased as the button size increased (Parhi, Karlson & Bederson, 2006). Users can click the button faster without carefully physical adjustment to increase accuracy. Similarly, another research revealed that success rate raised as the size of button increased (Park, Han, Park & Cho, 2008). Therefore, the buttons should be enough big to be touchable by fingers on mobile phone (Cooper, Reimann & Cronin, 2007). Additionally, some buttons should be easily positioned for easy operation. For instant, “Group Chat” button was not obviously visible, gather with other buttons hidden at the top right of corner on “WeChat” page. The button should be located in somewhere visible and convenient for users (Jacob, 1995).

### ***Improve speech recognition***

In the process of speech recognition, the users felt strongly frustrated after several attempts and they refused to try again. The low recognition rate can cause various issues that negatively impacts users experience. Therefore, enhancing every function to increase users’ satisfaction is an urgent affair (Hassenzahl, 2008).

### ***Improve functional interface***

Some hidden functions confuse the users, such as posting text contents. Some function requires repeatedly click to implement, such as voice note, users need click four clicks to find this function. There are also many features that are buried, not one or two clicks away from the main interface, these features will probably be comparatively rarely used, and obstacle operation. Application should design for the ordinary people, 80 percent of user cannot be expected to like 20 percent user who are able to operate complex application skillfully (Denny, 2011). A significant design rule is — never take more than three of clicks to access a function. The value of functions decrease, while the functions are buried and need to take a long time to find them (krug, 2006).

## Conclusion

This report represents the significance of evaluating first time usage as unfavorable first impressions may dissuade users from returning to the social networking software. Therefore, it is significant that social networking software should improve usability according to the usability guidelines in order to keep users. In general, despite the minor problems and usability issues encountered while performing the tasks in this testing, WeChat is highly usable. In the experiments, 61 percent of the issues were detected during the skilled-users' assessment were cosmetic in nature, and these problems should be addressed if adequate time was available. The problems that were detected by the first-time users were 34 percent minor and 4 percent major, and no catastrophic usability issues were discovered. Hence, there is a requirement to improve the fields which participants indicated as being difficult for purpose of narrow down usability issues and optimize user satisfaction. Therefore, following the suggestions summed up above on how to improve the usability and the interaction device should address many of the usability issues.

In general, through this study, I have learned that the impacts of usability test on interaction improvement and principal theory of human computer interaction. Further studies can be implemented by considering the following issues for purpose of address the deficiency that happened in this report: 1) Selecting different age group of participants, such as the users who under 20 or over 60. 2) Selecting a balanced gender percentage. 3) Selecting different social networking software as case study to enriched the findings.

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