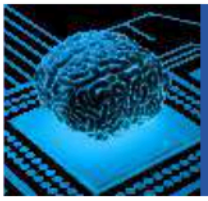

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Requirement elicitation using Online Social Networks: A Comparative Analysis of Online Financial Transaction Applications

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Abstract

Requirement engineering (RE) is an initial component of every software development life cycle. The RE process involves elicitation, analysis, specification and verification of requirements. Several stakeholders are involved in the process. Among them, the most important one is the end user. In this research, a comparison of online banking mobile application and online banking website is carried out which is based on the end user survey. Survey was conducted using Online Social Networks (OSNs). Based on the survey, the pros and cons of both mobile application and web-based application will be discussed in the result section. It has been proposed that OSNs are used for elicitation purpose, in order to, involve a large number of end users. In this research, the importance of OSNs has been described in requirement elicitation from end-user perspective.

Keywords: Requirement elicitation, OSNS, End-Users

1. Introduction

Requirements Engineering (RE) is a technical process which involve all the stakeholders including Software developers, system engineers and especially end users [1]. The whole RE process include requirement elicitation, specification, Validation, Negotiation and management. However, there is a lack of such techniques that involve end Users in the process of requirement elicitation process. The problem of involving end users is due to their diverse location, time zone and their passive interest in requirements elicitation process. In order to, involve end users in the requirement elicitation process, a novel approach has been adopted in this research which is based on Online Social Networks (OSNs). This method is relatively easy, inexpensive and interactive for end users perspective. Moreover as a case study, an online financial transaction system had been studied. A survey based analysis was carried out through Online Social Networks (OSNs) which targets the user opinion on the usage of Banking mobile application versus online banking website. Based on their feedback, a model is proposed of requirement elicitation for both mobile-based application and web-based. All of the requirement elicitation was carried out through OSNs. The benefit of involving OSNs in elicitation activity, will engage a large number of users to participate and also improve the software development. After the requirements are gathered through survey and the comment of OSNs posts, the refinement of these requirements is carried out. In the end the refined requirements are short listed and it make one step forward toward software development.

The rest of the paper organized as follows: In section 2, we have discussed the previous research work. Methodology details are given in section 3. Section 4 contains the survey results. Finally, Conclusion and Future research direction is given.

1. Related Work

Nobert et al. [2] have proposed the mechanism of requirements elicitation using Social

Networks Sites (SNS). They targeted the end users which are normally not within the reach of an organization. In this research study, Students as end users, used Facebook for RE activities in different projects.

Authors [3] observed the SNS as the means of maintain a public profile connecting many users together in a specific group or supporting a specific task. These group can also be used for RE activities too.

Lim et al. [4] developed a lightweight-based tool, StakeSource, which is based on social network analysis providing requirements engineers with a list of the key stakeholders.

Faiza et al. [5] proposed the novel requirements elicitation technique using social network analysis, in order to, design better online Social network-based software. This technique is based on the human behavior towards the adaptability of Social Networks.

Vasuki et al [6] discussed the vital need of social media approach for the software development process. Social media increase the communication among team members through tagging, posting and commenting.

Maleej et al. [7] show the importance of end users in software development process based on the continuous input of user's input during the elicitation process.

Hess et al [8] have shown the benefits of globally distributed user participation in software development. They targeted a large population of heterogeneous and globally distributed users and facilitated the interaction for requirement elicitation. This activity had been carried out using online tools.

Bably Dolly et al. [9] reviewed the use of social networking sites for requirements engineering. In today's perspectives, mobile based solutions may be handier in dealing with RE jobs than personal computers, laptops or notebook. They had compared the three popular social networking applications WhatsApp, Facebook and Telegram from different parameters like security, automatic backup, group chatting, discussions and comments on ideas etc. Although they found that all the three SNS are well suited for the job, they further investigated using WhatsApp and Facebook. The stakeholders may take the active part by sharing their contents and discussions for RE job using popular SNS like WhatsApp and Facebook.

RE is an extensive process that not only include end users but also developers and other stakeholders. All of such parties participating in the requirement elicitation process can make enhancement in such activities using popular OSNs.

2. Methodology

Often end user involvement in requirement elicitation is a challenging task. In our proposed model, we adapt a methodology close to the WinWin Spiral model for collecting the requirements of software system from users, customers, and other stakeholders. In a WinWin spiral model, the negotiation activities are being added to the front of each development life cycle [10]. The methodology adapted for the research included the questionnaires from the end user. Today, software based interaction is becoming more important in web-based application and mobile applications as well.

As our case study, we took online financial transaction system. Our first part of the questionnaire involves the end user feedback on either He or she is more interested in web-based application or mobile-based application. Moreover, which one is easy, secure and user friendly. In the second step, we had proposed how the requirement elicitation would be carried out, in order to, improve mobile application and website too. All this process was carried out on the Facebook. We chose Facebook due to its popularity and its use. Requirement elicitation for each application for both web-based and a standalone mobile-based was conducted separately. Post was generated by the author on different famous forums to increase the user involvement. Groups and pages like Chinese Government Scholarship (CSG) [11], Scholarship Network [12], Seekers [13] was selected independently by us to post the questionnaires. Feedback was also collected through comments and replies to comments as well. The post may be a “poll” or a link of Google form. Data was collected individually collected and processed for web-based application and mobile-based application. On

the basis of results and feedback, a three stage model is propose to improve both platforms (i.e. Mobile-based and Web-based) involving end users a prominent stakeholders.

These stages of model are as follows:

Stage 1: Initial Analysis of the System

In this stage, the initial analysis of each system whether mobile-based application or web-based platform is carried out. The strategic implications of the system should be discussed and decided by the stakeholders, which may include system owners and managers.

Stage 2: Key User requirements elicitation using OSNs

This is an important step and the heart of proposed model. It involves the interaction with a large pool of users through OSNs. Moreover harvesting on the user's provided feedback is carried out extensively for the refinement of the requirements.

Stage 3: Refinement of the requirements

After taking user's feedback, these claimed user requirments should be analyzed. Some discrepencies among user requirements could happen, should be discussed and resolved by stakeholders and developers. Finally, a formal system is launched.

3. Results and Discussions

At first we would like to discuss the results of our online survey based on user's feedback on online transaction system. The questionnaire was created using Google forms and it was then dissipated on Facebook. Almost 50 people responded to the questionnaire. The questions and their feedback as follows.

Q.01) What do you use the most for Internet Banking?

Choice 1: Mobile application
Choice 2: Bank Online Website
The feedback for 1st question is shown in Figure 01.

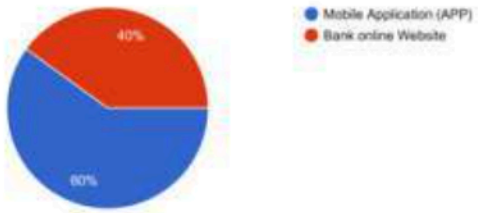

Figure 01. Feedback from 1st Question

It can be viewed from the result graph that 40% people have shown interest in online banking website while more than 50% persons preferred to use mobile application for online transactions.

Q.02) What is more friendly to use you think?

Choice 1: Mobile application
Choice 2: Bank Online Website
The feedback for 2nd question is shown in Figure 02.

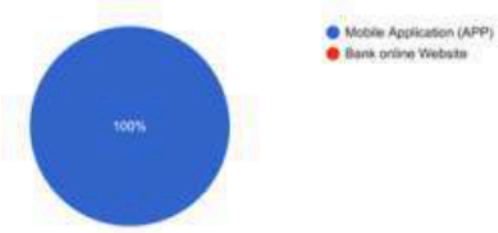

Figure 02. Feedback from 2nd Question

It can be viewed from the survey result that mostly people find mobile application, an easy mode for online transactions.

Q.03) Which one is more secure you think?

Choice 1: Mobile application
Choice 2: Bank Online Website
The feedback for 3rd question is shown in Figure 03.

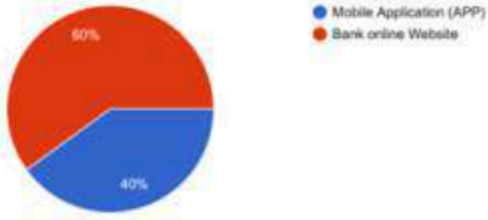

Figure 03. Feedback from 3rd Question

The survey result depicts that most of the people find Bank online website a more secure way for online transactions. However, most of them use mobile applications but they thought it would be much risky to use.

Q.04) Which one more irritates you while doing financial transaction?

Choice 1: Mobile application
Choice 2: Bank Online Website
The feedback for 4th question is shown in Figure 04.

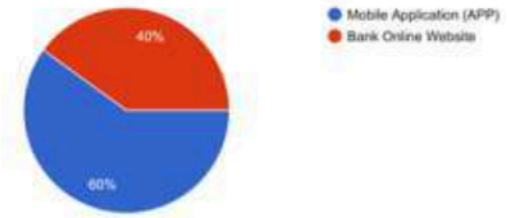

Figure 04. Feedback from 4th Question

Most of the people said that using mobile application for online banking irritates them too much.

Q.05) Do you satisfied with the Banking website for financial transaction?

Choice 1: Yes
Choice 2: No
Choice 3: Partially satisfied
The feedback for 6th question is shown in Figure 06.

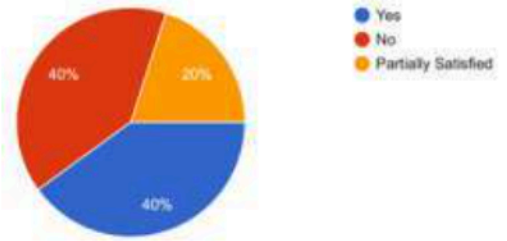

Figure 06. Feedback from 6th Question

The results show that half of the people are satisfied with online banking using banking website and half of them seems to be unsatisfied.

Q.06) Do you think any further improvement can make the mobile application more sophisticated?

Choice 1: Yes
Choice 2: No

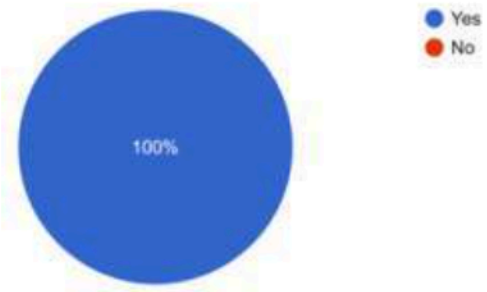

Figure 07. Feedback from 7th Question

All most all people in the survey suggested that there is need to improve online banking.

Q.07) Do you think any further improvement can make banking website more sophisticated?

Choice 1: Yes
Choice 2: No

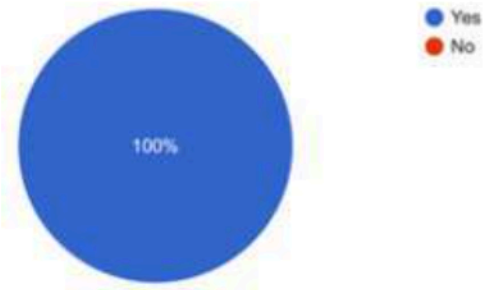

Figure 07. Feedback from 7th Question

Based on the results, a separate process for requirement elicitation for financial mobile-based application and we-based platform. These elicitation is carried out in terms of ease of use, interaction level, security, privacy and adaptability.

5. CONCLUSION and FUTURE WORK

In this research, the importance of requirement elicitation is discussed using OSNs. As a case study, a comparison of online banking mobile application and online banking website is carried out which is based on the end user survey. Survey was conducted using Online Social Networks (OSNs). Based on the survey, a model is proposed for requirement elicitation for both mobile application and web-based application. This model involves three stages for requirement elicitation from end user. In the end the result of financial application survey is discussed thoroughly. Through this survey, it has been observed that mobile application is a user friendly platform, while online website is a secure one for online financial transactions. This research can be extended towards other e-commerce or educational online system using OSNs, It would help involvement and interaction of users on a large scale.

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