

Identifying Mobile Devices Requirements for User Interface in Social Networking

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ABSTRACT

Mobile devices become an essential tool in human being's everyday life, they are not only used for simple communication such as calling or sending text messages; however, they are also used in applications such as accessing internet, receiving and sending emails and storing documents. Technology is improving day after day, so new technology keep emerging in order to satisfy customer demands. If the Mobile User Interface is poorly designed, it reflects badly on the company, undermines the brand, just as poor products. Poorly designed user interface can cause a user to make catastrophic errors. And also poor user interface design is the reason why so many software systems never used. The main objective of this research is to identify suitable and appropriate, user's requirements for user interface in mobile device social networking, and provides good design processes to solve the problems. The research method used to collect the data is through questionnaire; the data collected and findings are analyzed to provide conclusion, new design with regards to mobile user interface base on the user's requirements in social network, Social networks play important roles in our daily lives, such as communications, sharing information through social relations with others such as friends, family, colleagues, collaborators, and business partners.

Keywords: Security Mobile Device, User Interface, Social Network, Communication, Technology

1. INTRODUCTION

Nowadays almost everyone is using Mobile Device. They are becoming an important tool in human being's everyday life. They are not only used for mere communication such as calling or sending text messages; however, they are also used in applications such as for accessing internet, receiving and sending emails and storing documents. When examining the success of mobile device development that will enhance customer's social network experiences, some key issue need to be taken into consideration, Social values such as civil freedom, and technological matters such as User Interface (Chen et al., 2011). User Interface (UI) has a much greater role to play in the development of mobile devices that truly support users and enhance their productivity. The aim of this research is to identify user's requirements for user interface in mobile social networks, the features that they need to be add in the development of new

mobile for social networking. By identifying the most appropriate and suitable user interface requirements for mobile device, users and mobile companies can be proud. The most important part of this research is to address the user interface issues that the users of mobile social networks required. A user prefers a mobile with good and useful application; better design and mostly the ease of use (Shafiq U. R. & Coughlan J. L., 2012). Mobile manufacturing companies and its application developers are constantly working on making their product user friendly. When it comes to utilities and functionalities, most of the advanced mobiles do provide them but what is of most importance here is how easily user can learn and use the provided features (Shafiq U. R. & Coughlan J. L., 2012).

2. LITERATURE REVIEW

2.1. Industry Dynamics

When investigating the success of mobile device development that will improve user's of mobile device social network experiences; some key issues need to be taken into consideration: technological matters such as User Interface (Chen et al., 2011). A social network provides a variety of mechanisms for users to share data with other users (A. Beach, M. Gartell., 2008). People conduct communications and share information through social relations with others such as friends, family, colleagues, collaborators, and business partners. By identifying the most appropriate and suitable mobile device user interface requirements for social networking, mobile device companies or manufacture, can be happy and use it, in their development. A lot of works has been done in the past and several research papers have been published about various design issues in mobile devices, user interface and social networking (Shafiq U. R. & Coughlan J. L., 2012). So far for identifying user requirements this area is still insufficient and needs some more research to identify user's requirements with regards to mobile device user interface (Shafiq U. R. & Coughlan J. L., 2012).

Mobile devices are considered to be the most frequently used electronic items in the world after electricity. It is probably the only device that can be used by any gender with no age limits depending on its functionality (Shafiq U. R. & Coughlan J. L., 2012). Mobile Device usually is a small, portable size computing device, which allows user to input information

through touch screen or small keyboard on the device, mobile device is easily carried out but provides much computer functionality, such as processing, communication, data storage and also can connect us to a variety of information sources and enable communication nearly everywhere we go (Fei Yu., 2011). And also, A User Interface also called "UI" or simply an "interface," is the way in which a user manages or controls a software application or the activities of hardware device. A good user interface provides a "user-friendly" experience, allowing the user to interact with the software or hardware. While user interfaces can be designed for either hardware or software, most are a combination of both Tech Terms, (2009). Social networking is a web site on the Internet that brings people together in a central location to talk or exchange information, personal or public, share ideas, share interests, make new friends, through various forms of technology (Ashley A., 2013).

A study estimated that the number of unique users of online social networks worldwide was about 830 million at the end of 2009 (International Telecommunications Union, 2010) (N. Al Mutawa et al., 2012). Florence Balagtas et al., (2009) Introduces two new interface designs, Due to ease and convenience, the latest mobile development is turning towards touch screens and despite of certain limitations and some users prefer using touch screens. One interface was scroll based and the other was tab based. And it was found that scroll based user interface was very quick in navigation however in terms of layout users preferred the tab views. Though these two views have their own importance but still there is need for an interface that reduces the number of scrolls (F. Balagtas-Fernandez, J. Forrai, & H. Hussmann, 2009). For the mobile device this paper introduced how mobile devices becomes important in our daily activities, this has made the mobile devices market become very competitive, because users prefers a mobile with good user interface, better design and mostly the ease of use (Shafiq U. R. & Coughlan J. L., 2012). Another research, Multi-touch user interfaces can represent a valuable tool for enhancing human-machine interaction. The basic goal of MTUIs is to provide users with a more intuitive and direct interaction (Donato F. Andrea S. & Fabrizio L., 2010).

Mobile device interfaces use icons to represent the functionality required by users in performing their tasks. It also explained that a Well-designed icons and graphics allow the user to recognize without any problems or require additional instructions from the functions available on the mobile device (Chrysoula G., 2012). For improving the current social media tools for mobile devices has potential value, as well as security issues. Because security concerns can render such systems unsuitable for operational use, and the user interface can hinder operational efficiency due to the inheritance of a text based model for input and display (Kurkinen et al., 2010).

The success of online social networking and of mobile phone services has resulted in increased attention to mobile social networking. Matchmaking is a key component of mobile social networking (Qi Xie & Hengartner U., 2011). Furthermore, Social networks become very important and very popular and part of our daily lives for the past years, for both male and

female, some people used for their business, studies, and office work purposes, and many more. With the emergence of powerful smart phones and cheap data rates social media can now be accessed anytime and anywhere in the world without any problems (Roßnagel et al., 2011). Additional research on social network security and privacy issues, such as the way social network information is now being accessed by unauthorized peoples or used in ways for which it may have not been originally intended by the users, and present lots of these privacy and security issues, along with their design and implementation of solutions for these mobile social networking security and privacy issues Aaron Beach, Mike Gartrell, and Richard Han.

Some research focuses on conducting forensic analyses on three widely used social networking applications on smart phones: Facebook, Twitter, and MySpace. The tests consisted of installing the social networking applications on each device, conducting common user activities through each application, acquiring a forensically sound logical image of each device, and performing manual forensic analysis on each acquired logical image (N. Al Mutawa et al., 2012). Lastly, the research is on visual language interface, which allows users to create structured messages of icon strings simultaneously in a two-dimensional parallel and spatial configuration. The developed system provides drawing tools and predefined sets of icons that support a free and natural way to sketch and describe crisis situations (S. Fitrianie et al., 2008).

2.2. Hardware Issues in Development of Mobile Device

Because of its limitations in its design, mobile devices have a number of hardware issues, stemming from a need for portability, size and weight reduction and for a company to succeed; all these issues must be address firmly (Ervasti, M., & HeLaakoski, H., 2010). These issues include the following. (a) Screen Size – reduced screen size leads to tricky viewing of text and graphics that are designed for viewing on desktop computer displays, not on undersized screens designed for mobile devices. (b) Lack of Processing Power – although CPU clock speeds for mobile devices are expected to reach 1 GHz by late 2010, phone processors will be limited to around this speed according to (Aziza, H., 2010). (c) Limited Communication Bandwidth – the inadequate bandwidth provided by networks, most of which result in quite poor latency and radically fluctuating connection quality was reported by (J. Royce Fichtner, & Lou A. S., 2011). (d) Low Battery Life – because mobile devices are required to operate with limited battery charge, dealing with the amount of power consumed has become an important issue in design.

2.3. Software Issues in Development of Mobile Device

This part discusses issues regarding software applications for mobile devices. These issues include the following: (a) Navigation and Browsing Difficulties – small screens are the main cause for most navigation and browsing difficulties. (b) Visual Issues – although images and icons are commonly regarded as important types of data and information visualization in desktop computers, it is still quite restricted in mobile devices. (c) Content Layout – on mobile devices there are a number of different screen sizes and resolutions, making it

challenging to predict the sizes for which content needs to be designed.

3. RESEARCH METHODOLOGY

Data collection method is through questionnaires, to collect the necessary data, a survey questionnaire will be conducted; the survey activity will be conducted in very popular places such as SEGi University. This will help in getting the required information from the users of mobile device for social network. The success of any research is depended upon the correctness of the data obtained; accurate information can be collected with help of certain methods or techniques (J. Royce Fichtner, & Lou A. S., 2011).

3.1. Population and Sampling

The questionnaire was distributed to 75 people with different age groups and gender living in different areas, 67 responses was received from the participant. From the 67 responses 50 will be selected based on the completion of the questions. The respondents include students, employees and anybody that use mobile device for social networking.

3.2. Data Analysis

As mentioned in the research methodology above, quantitative data will be analyzed to obtain the desired results, about Mobile User Interface requirements using the data obtained from the questionnaire. However, the reliability, relevance and quality of research results depend largely on methodological designs used to carry out the study (Myers, 2009).

3.3. Descriptive Statistic

3.3.1 After analyzing the survey data from, Question 1 “Which of the following describes your age?” It is clear that “20 - 25” of the respondent age group take the highest tall with 42%, followed by “35-40” with 22%, “40 - 45” with 14%, “15 - 20” with 12%, then “25 - 35” have the lowest of 10% of the 50 sample population. From the figure below; we can conclude that the age groups of 20 - 25 are more active in social networking using mobile device.

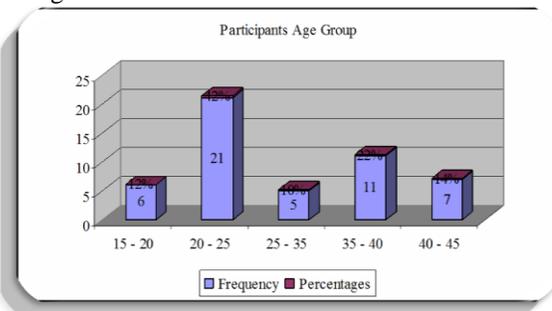


Figure 1: Participants Age Group

3.3.2 After analyzing the survey data from, question 11 “How satisfied are you with the user interface of your mobile device for social networking?” It is clear that “Partly Unsatisfied” takes

the highest tall with 48%, followed by “Neutral” with 36%, “Unsatisfied” with 10%, “Partly Satisfied” with 6%, then “Satisfied” has the lowest with 0% of the 50 sample population. From the figure below; we can conclude that most of the respondents are not satisfied with the user interface of their mobile device for social networking.

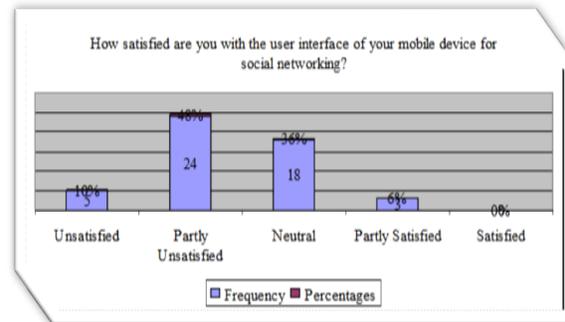


Figure 2: Mobile Device User Interface

3.4 Justification

Overall, quantitative research is highly recommended because it will show the best way to identify User Interface requirement regarding Mobile device for social networking. My research is also concerned with the User Interface that users required to be added in the mobile device application for social networking.

Table 1: Research Methodology Summary (Joseph N.P.S. et al., 2013)

Research Dimension	Explorative Research
Research Methodology	Quantitative Research
Research Validation	[1] Content Validity [2] Concurrent Validity [3] Construct Validity
Research Methods	Phase 1 : Literature review Phase 2 : Self guided mass survey (Operation Level)

4. PROPOSED SOLUTION

Importance of mobile phone is not limited to communication today. It has become a powerful platform for collaboration, sharing, internet browsing, and unlimited entertainment, engaging people in the most impressive manner. Mobile UI designs are an important factor in mobile application development (Ming, & Deng C., 2007). As mentioned in the research methods above, the quantitative data will be analyzed to obtain the desired results. Based on the research finding and analysis, the proposed solution for mobile device user interface for social network, is for the mobile companies to consider the level of different users or customers to use a different approach for developing User Interface for mobile devices, before and

after developing a new products, in order to satisfy their customers. As well as using good creative and unique insight that can seamlessly solve the difficult aspects of usability and functionality of the mobile device.

4.1. User Interface Development Process

In general, The Process of Developing a User Interface includes the following activities or steps: (1) User Interface designers create the user interface requirement specification using text, graphic, illustrations, and relevant multimedia representation. (2) User Interface programmers then implement it according to the defined specification. (3) The created UI is verified against the UI requirement specification by UI designers to see if it meets the specification. (4) If it does not meet the UI requirement specification, one has to modify and re-implement it till the requirements are fully met. This implies that both UI designers and UI programmers have a long iteration process to go in order to meet the target UI requirement specification (Ming, & Deng, C., 2007).

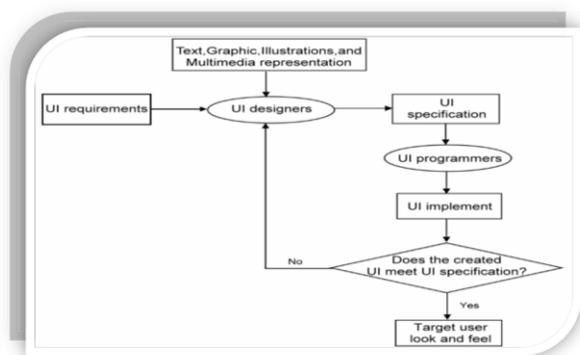


Figure 3: General flow diagram for UI development process, (Ming & Deng C., 2007).

4.2. Mobile Device System Architecture

Mobile devices offer many benefits within the workplace. They allow users to work in the office, out of the office, in conference rooms and at home while maintaining wireless connectivity to access data within the organization. As more and more companies are using the business model of working from home or a remote location for their employees, the idea of mobile devices enable this to come to be a possibility.

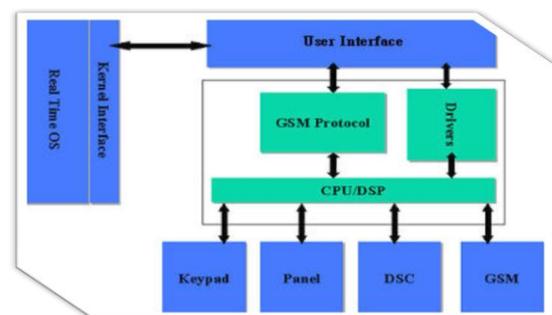


Figure 4: System architecture of mobile devices, (Ming, & Deng C., 2007).

5. RESEARCH CONTRIBUTION

Based on the research finding and analysis, the research contribution for the mobile device user interface for social network requirements, is for the mobile devices companies to consider the level of different users or customers to use a different approach for developing User Interface for mobile devices, because peoples today needs fresh concepts, feel and look, with immense simplicity and flexibility.

However, is good for the user interface designer or programmer to consider, mobile user interface design demands creative and unique insight that can seamlessly solve the difficult aspects of usability and functionality. And used the below user interface design process for the success of any mobile device user interface development.

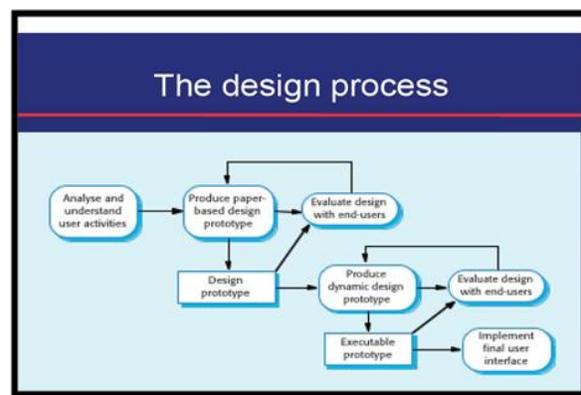


Figure 5: New mobile user interface design process

6. CONCLUSION AND FUTURE WORK

Although mobile devices were initially intended to be simple voice calling devices, they have since been transformed into small computers required to do much more than act as a communication medium. And different users of mobile device have different social network experience, to conclude that the mobile device user interface play a very important role in social networking. The User Interface of the mobile devices is very important. The aim of this paper is to identify the suitable and most appropriate mobile device user interface for social networking. There are several major items of future work leading directly from this research paper. Firstly, more research project are required to examine or identify a greater features of mobile devices that can helps users to carry out all their activities without any problem with regards to user interface and social network applications.

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