Quality Assesment Of Mobile Touch Screen User Interface Design

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Abstract

Measuring the quality of user interface design for mobile touch screen is an essential task to ensure satisfaction of the user and also for the business development to gain competitive advantage. Good Interface design is an add-on feature for mobile market. This paper attempts to review existing metrics for evaluating quality of the of Mobile touch screen user interface design.

Keywords- Mobile screen Design, Touch Screen, Interactive Directness

1. Introduction

Now a days the use of touch screen mobiles are increasing enourmously. According to the survey made by ITU , around two hundred million people are using diverse range of touch screen mobiles. The rapid growth of touch screen models in the market raises the question of " Quality" in interface design with respect to user comfortness. In the field of HCI, relating to touch screen mobiles, user interface design having greater impact on usability. For the product designers of touch screen mobiles, it is complex task to accommodate all services, apps as icons on screen in a better way due to diversity of users in styles & designs.

Usability is commonly comprehended as a qualitative attribute that assess the quality-in-use or how easy applications are to use [1] and [2]. The word

"usability" also refers to methods for improving easy of use early design process.

Although the progress has been made in terms of technological innovations there are obvious

limitations and challenging for mobile device interfaces due to characteristics of mobile devices (i.e the size of small screens , low resolution of display, non- traditional input methods & navigational difficulties[3]. Therefore good screen design is more important issue for mobile usability.

The main objective of this paper is to i) check the quality of screen design of touch screen mobile ii) To compare the quality of TSM screen design of various models iii) Help the developers to reach the market trend .

The novelity of touch screen mobiles and quality of user interface design is becoming a main challenge in usability measurement activities for touch screen mobile devices. The following dimensions have to be considered to improve the interactivness property of screen to solve the challenges in HCI areas. And the dimensions are Interactive Directness, Technology,

Flexibility, Response time, Effectiveness, Satisfaction.

2. Literature Review

A number of models for usability measurements are available for reference .i.e A qualitative review of empirical mobile usability studies developed by K. Coursaris & J. Kim [3]. The model consists of four factors which are subdivided into 11 measures. The model is used to measure the quality of mobile usability. However, this model is not yet considers the screen design.

On the other hand, "Usability Metric Frame work for mobile phone applications "developed by Hussain and Maria Kutar [4]. Developed a frame work for accuracy of applications, in sufficient speed and safety of the user from strain injuries as well in the area of mobile phone applications and yet needs to be validated in terms of user interface design.

3. Research Approach & Objectives

In order to evaluate the GUI design to improve the interactiveness property some dimensions are taken into consideration along with some criteria such as **Interactive Directness, Technology, Flexibility, Response time, Effectiveness, Satisfaction** . Based on these s procedure a model questionnaire is prepared and given to diverse range of users and results were quantified to assess the quality of each model to make suggestions.

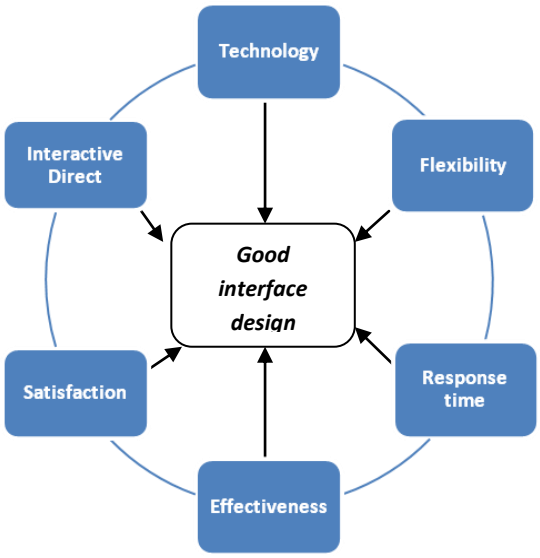

Fig-1: Dimensions Influencing Good Interface Design

3.1 Interactive direct

One important difference between user interfaces can be the "interactive directness". A user interface is 100 % interactively direct if the user has fully access in the actual dialog and application context and the screen must have, appropriate design to give feel of control, less anxiety concerning use, visual acuity, low typing requirements,replaces of national languages provide effective internationalization and accessibility etc to the interface users.

3.2 Technology

The screen design must be independent of the technology what the user installed in the device. Due to technology innovations , user desires one wants to change from one's technology to new one in the market for various reasons, as we know previously BADA software is popular later on market trend absorbs the Android and now it is windows 8.so, as new technology comes in to market every one wants to adopt it.hence a good interface design must be one which welcomes the change in technology.

3.3 Flexibility

3.3.1 optimized multitude menus

The major screen element is menu,menus vary in the form from very simple to very complex like single, sequential,simultaneous,hierarchical,connected menus etc. Good interface design must be characterized by flatten menu tree i.e by perception of relevant elements and hiding the irrelevant and hence optimizing the multitude.

3.3.2 Navigation

A well designed navigation system facilitates quick and easy navigation between components whose structure and relationship are easily comprehendible for dynamic interfaces navigation between screen to screen and menu by menu is necessary, so proper control over the navigation , easily reversible actions,structuring the relationships.

3.3.3 Calibration

The pen or stylus calibration over the screen must be in full control of the user since the touch panel users are belongs to different age groups,and even with different capabilities of vision,touch and tactile.

3.4 Response time

The fast responses from the screen are expected by the user. To increase the quality of response, the interfaces must provide effective feedback, guidance and assistance, and predictable system responses, easily reversible actions at dead ends, good error handing dialog boxes for all categories etc.

3.5 Effectiveness

The design of the screen should be ease to key in the data, ease to read the output,and time taken for the application must be less.

3.6 Satisfaction

It's important to think about what the user feels about the screen.Mobile users think that designing interfaces to be pretty and pleasing to the eye. More over less anxiety and feel of control gives the user more comfortness and satisfaction.

4 Results

The Experiment was conducted on the screen design of different mobiles . A survey made on n to diverse range of users. The collected information used to quantify the features and calculated spearman's rank correlation for each dimension and usability. The obtained results are tabulated.

Table 1.The Tabulated values of ID, Tech, Flex, RT, Eff, US on screen design.

Sno	Dimensions	Impact on Screen design
1	Interactive directness	94%
2	Technology	75%
3	Flexibility	96%
4	Response time	82%
5	Effectiveness	74%
6	User Satisfaction	83%

All the above features of screen design considered for intercativeness property are positively correlated with good screen design.

Chi Square Test

The test was conducted by taking the following assumption as null hypothesis.

H_0: There is no significant difference between screen design of type -1 and type-2 mobiles (considering the same product features and specification of both and branded mobiles)

Design-1 Design-2

Here one can easily observe the arrangement of icons in Design-2 in organized than Design-1.

Table 2. The tabulated values of empirical data of criteria for chi-square test.

Dimension And Device	ID	Tech	Flex	RT	EF	US
Mobile-1	90	90	83	95	85	83
Mobile-2	75	65	56	85	78	65

The degrees of freedom for above cross table is (5-1)(2-1)= 4 d.f

The tabulated value of chi square = 9.488.

Hence, the chi-tab < chi-cal, we accept the null

hypothesis. so we can conclude that the two mobiles of equal product features are maintaining the same screen design.

More over the same experiment is conducted between branded and non branded mobiles and the null hypothesis is rejected.

5. Conclusion:

This paper proposed an approach to quality of assessment for mobile screen design. In this interpretation of outcomes of both the experiments reveals that the dimensions adopted are valid and the screen design can be considered as good interface design if it have high percentage of ID, TECH,FLEX, RT ,EFF AND US. This approach is helping the software developer to guide in development of productive GUI for touch screen mobiles which gives fruitful results and a comparative study is also performed to know which brand is better than another to rate them in terms of screen design. And it also helps the users of mobile devices to choose the best one to buy.

6 References

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