Ergonomic Design Issues in Icons Used in Digital Cameras in India

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ABSTRACT

This paper investigates the usability of five commonly used icons in digital cameras like landscape, video, night portrait and automatic mode. In the first phase a set of 10 open type questionnaires were applied on 110 students (75 male and 35 female) to get an insight into the type of problems with the icons. The second phase comprised of 5 ranking questionnaire. The third phase comprised of icon comprehension test for getting to know the stereotype strength of the different icons. The fourth phase was stereotypy test. The second and third phases were applied on 32 students (16 male and 16 females.). For each category of icons there was one icon which was rated best and comprehended very well. For example the icon for landscape mode which represented a mountain was ranked as the best and the stereotype strength for the same was 90.6%.

Keywords: Digital Cameras, Icon, Mental Model, Questionnaires, Stereotype

1. INTRODUCTION

With recent advances in information technology in all spheres of our life ranging from the computer to the digital camera, the challenge in front of the ergonomist is twofold. First is to increase the usability of the products, especially the ones that are small having a small surface area. The second challenge is to convey to the user as to the proper usage of the different functionality of the product. Compounding these two challenges is the new challenge of developing products like digital cameras for the global market. For example digital cameras made in Japan are being used in India. Icons and graphics are the key elements through which the user interacts with various electronic products, ranging from microwave, fridge to digital cameras. The icons are described as the small pictorial symbols used on any devices (Horton, 1994). The advantage of using icons at device interfaces is that the human brain is capable of comprehending images due to the pattern recognition attribute in the brain. These images are also comprehended much faster in the brain than the text. Icons have the capacity

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to convey the meaning of the features (Huang et al., 2002) at an user interface effectively by occupying little space, though care has to be taken so that subjective preference of icons by the target users are adhered to. Unfortunately the icons on these products are designed keeping in mind the target users of the particular country. In fact it has been observed that the users feel of the icons vary (Chiu et al., 2012), hence it’s extremely necessary to put oneself in the feet of the users when trying to design icons for a target population. When the same product is used in a different country then at times many of the icons at the product interface are not comprehensible, rendering the product useless. Digital camera is such a popular product among the India youth. Japanese cameras are flooding the Indian markets. Youths from urban area and also from rural areas are now willing to spend more on such devices, and at this juncture the usability of the icons becomes a big hindrance. Many of the functionalities of the camera are not optimally used due to bad icon design. Wogalter et al (1997), in a study on small graphical sign on elevator service panel, revealed that usage of color and proper placement of the icons increased the overall usability of the call button on each floor. Similarly, Morrow et al (1996) used different types of icons on the exact usage of medicines and was successful in reducing the number of medication errors. Interestingly apart from comprehension and identification which was found to be directly related to the performance of an icon, style of the icon also played a major role (Huang et al., 2002).

A cross cultural study on icon comprehension among different users of different countries (Piamonte et al., 2001) indicated that icon perception varied from Europe, to Asia to the Nordic countries, thus substantiating the fact that icons need to be designed for specific context, else the usability at the device interface can decline. On the other hand if such icons are designed properly not only can it enhance the usability of a product but can also help the product go global (Maguire, 1985). In another study Huang (2012) rated the consistency of performance for icon background color combination. He inferred that color combination affected rating consistency. Usability studies on photocopier icons (Howard et al., 1991) indicated that the inexperience users could not comprehend many of the symbols for the complex function of the device. Chen et al (2009) studied the demand for different types of icons for PDA interface and proposed an integrated procedure for developing icons. However there was no focus on cross cultural usability issues of these icons. In a different field Chan et al (2009) found that American traffic symbols related to safety and security were less comprehended by Hong Kong, Korean and Chinese subjects but much better comprehended by the Americans. Huang and Lai (2008) in a study on the usability of icons in the LCD screen have found that it was influenced by seven factors such as touch field, semantic quality, dynamics, hit quality, tactility, color quality and shape quality. Of these entire factors touch field was rated as the most important factor.

The literature review indicates that a significant amount of work has been done on the usability aspects of icons in isolation and on products. Some cross cultural studies on icons have also been performed. But usability of icons used on products and how that usability aspects changes when the product crosses one geographic boundary has not been done in much detail. In the Indian context such studies are missing. Digital camera and especially the low end version are very popular amongst the Indian youths, in rural and urban area. None of these cameras are manufactured in India but are all imported from the West or from the far eastern countries. Thus the purpose of this study was to look into the usability aspects of different camera icons, to gauge the extent and the exact location of mismatch.

2. METHODOLOGIES

2.1. Overview

The study was conducted at two institutes in the western and central part of the country. The reason for this was convenience, due to
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