The Effect of Applying Human Computer Interaction Principles on Systems’ Usability

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Abstract
Computers have fundamentally transformed not only the industry or the business but also all aspects of life. The fast innovations in computer technologies, having added more complexity, hinder people’s willingness to use computers. Therefore, usability of systems is an increasingly important issue of concern in the computer industry as it defines success or failure. In controlling life-critical software systems, usability becomes a matter of life and death. In most cases, usability problem results when human factor considerations are not carefully thought of during systems’ design.

The research goal is to present computer system’s usability problem, illustrate Human Computer Interaction (HCI) concept and demonstrate its effect on system’s usability.

The research targets a realistic usability problem in a GIS system. The system was not fully used to its maximum capacity. In addition, users have reported low Learnability, Memorability and Satisfaction levels while working on the system.

The research aims at providing a reliable as well as an affordable solution for the existing usability problem. A new system design, based on User Centre Design and according to HCI principles, was implemented. Then, a Usability Evaluation Experiment, based on Usability Engineering Steps, was conducted on both the current and the new proposed systems to measure the improvement in Usability Parameters.

Statistical analysis of experiment results proved that some of the research objectives have been met. The new system has significantly improved the Learnability, Efficiency, messages Comprehensibility and icons Predictability. Also, steps have been reduced to fit in some of the systems’ tasks. Accordingly, time saving has been recorded in the new system, and reasonable financial benefits were calculated.

However, the new system design could not prove a significant improvement in Memorability. A reason for that could be the extensive use of design elements, which was found unfamiliar to the GIS subjects during the test. Also, it has been found that targeting a certain usability parameter may adversely impact another such as what has occurred with Satisfaction and Memorability parameters.

The research provides some recommendations to guarantee getting better results in future development of usability evaluation. It also provides recommendations concerning the continuation of implementation of the new system. It is also endorsed to emphasise on human factors at least as equal as the other areas of concern within systems development. This will ensure more satisfaction to the user and hence, encourage him to use computers and software applications favourably.

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