Abstract— Human computer interaction is concerned about the physical and mental activities between computers and humans. In terms of HCI perspective, one of the main problems that web developers, software developers, and hardware developers encounter in software design stage is a lack of experimental researches on the human factors. Mainly, developers are focused on the quantities and contents of the applications, but they are underestimating the importance of user experience and capabilities. There has been a research on the usability. However, there is still a gap in the design area called human factors which particularly needs careful consideration and findings. Thus, this research primarily investigates on how to understand and uncover the human factors in any application or software design. At this time, there are no accurate and particular models and methods on identifying and analyzing the human factors, therefore, we present new design model as our empirical research model called “Intensive Prototype Model” in order to enhance and facilitate the design process. We also propose unique and relative analysis methods: user-centered design, online survey, distributed survey and so on which they can assist the designer on identifying human factors regarding to application and software design. Finally, we discuss the key principles of this research to support the early stage of application design and to anticipate the human needs and requirements in computer interaction.