

## The Tasks of Individuals Practicing Human Factors and Ergonomics

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### Editorial

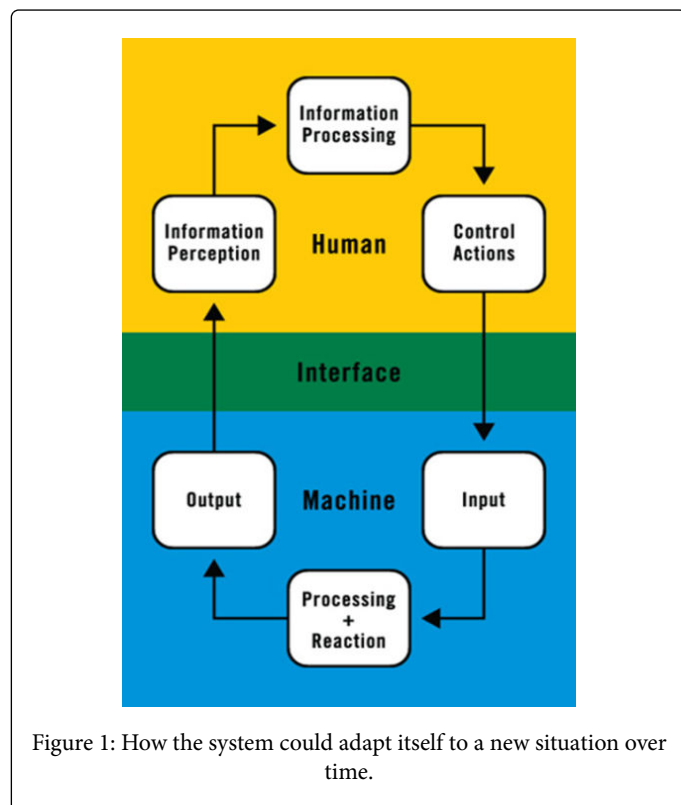
Human factors professionals and ergonomists are believed to be autonomous scientists since their area of interests cover wide range of knowledge, skills and experiences ([www.usernomics.com/human-factors.html](http://www.usernomics.com/human-factors.html)). HF/E is a multidisciplinary field of interests that involve psychology, social engineering, system design, economics, and ethnography. Professionals often used the term HF experts in the US and Canada, and in Europe they are called as ergonomists. Generally, HF/E deals with the subject matters of human-technology and environmental relationships that co-exist in independent domains mainly on behavioural, cognitive, and physical sciences. In many countries, HF/E discipline co-exists between health, safety, and productivity combining various components that affect workers' wellbeing at their workplaces. In Asia, Africa and Latin America, it is difficult to determine who is who in the HF/E profession [1-2]. It is because HF/E uses an interdisciplinary approach to evaluate parameters of a worker and his/her work environment to improve safety, health, efficiency, and robustness of work systems [3]. HF/E concepts could inevitably be applied anywhere, however, HF/E is about how people interact with the system to get information and then interpret the information they gathered to make decisions (man-machine-environment system). In figure 1, we see a person using a system, for example, and we also see how the system could adapt itself to a new situation over time. Redmill and Rajan's [4] flow chart shows how a team interact with internal and external work environment and across organizational boundaries, and how all these factors influence work performances is the study of HF/E. Whatever the case is, HF/E program provides hands-on user interface design experience for anyone looking to improve their organization through proven user interface evaluation and assessment techniques. HF/E experts study the interaction of people, technology, labour management, job-tasks and work across multiple domains that draw knowledge and skills in area of cognitive and organizational psychology, human performance, and system safety [5]. Task analysis techniques transform data into information about the cognitive demands of work, for example, but how practitioner should design the tasks to fit the employees (adapt to work environment) is important to efficiently achieve those goals of the work domain. HF/E skills and expertise are therefore used to design the man-machine system, or device-user interface, or its components with which users interact to perform specialized functions. Likewise, HF/E addresses multiple aspects of work, including job-tasks analysis, and the design of products, tools, equipment and devices that fit into the existing socio-technical and industrial culture [5]. HF/E professionals analyze the most effective methods to train practitioners by discovering the sources of expertise, and how experts carry out their work and how workers acquire expertise in their work [6]. Along the same line, Ahasan & Shahren [3] argued the need for a better tools and techniques using HF/E approach to improve cognitive matters, technical communication and

collaboration among professionals to further improve human performance. Ahasan et al. [7] drew public attention to promote HF/E education, training, and consultancy in Malaysia. What do human factors and ergonomics society (HFES) members need to know, Cook and Gorman [8] also explained something new and provided updated information in the HFES Bulletin. The ergonomist formulation model was revised after expert discussion that may truly benefit for the Board of Certified & Professional Ergonomists [9]. Ahasan [10] argued for human factors practice in developing nations. He also raised questions about their professional liability, accountability and ethics in an editorial of the Journal of Ergonomics.

When people manipulate a device and its components, its controls can be both a help and a hindrance. It is therefore important to understand how a device reacts to input from the users. It is also important to provide feedbacks to the users about the effects of their actions. A poorly-designed tool can have adverse impact on systems performance by slowing human work performance, and in some cases, inducing human error. HF/E professionals thus evaluate devices using innovative techniques such as usability studies to determine potential sources of user error, with the goal of improving devices so that they fit the needs and workflow. HF/E experts influence policy decisions to make systems more efficient and resilient in the face of shifting demands through ethnography as inputs, or by the way of accident investigations, and/or evaluating sentinel events, for example. To understand HF/E, we need to understand the way people perceive information relating to the tools and devices they are using. In this editorial, the authors thus demonstrated their search about individuals practicing human factors and ergonomics (HF/E) to aid in gauging the confusion and conjectures of its multidisciplinary expertise. Also, the authors examined the choices of individuals practicing such skills and expertise, and suggest ways to meet ethical challenges to provide sustainable outcomes in their profession.

HF/E experts use a variety of sophisticated techniques, such as ethnographic observations of work in situ, structured interviews of practitioners, evaluation and simulation studies, to probe how work is being performed aiming to improve error free production, work safety, and human performances. HF/E experts provide the way of understanding what makes a job-task easy and efficient (<http://medicalhumanfactors.net/what-is-hfe>), and what makes it unsafe, hard, and inefficient. They explore better procedures, policies and programs. They usually design better tools, devices, and techniques to support practitioner's work in various work environments. The numbers of HF/E professionals are increasing in the last few years. International conferences and workshops are being held in many places in different times. Information and publicity towards establishing HF/E graduate program is increasing. Peoples are getting more aware of HF/E; however, many industries in many developing countries are yet to be seen implementing HF/E guidelines and

principles for improving working environment for their human resources, individual's physical and mental performances, and quality and productivity improvements. In this regard, Ahasan and Imbeau [11] published a paper emphasizing work-related research, education, training and consultancy in the International Journal of Occupational Safety and Ergonomics.



Research collaboration between academia, manufacturing industries and construction companies should be promoted through government intervention along with research funding opportunity. Promoters of HF/E must be fully aware of local, cultural and international issues that may hinder implementing HF/E principles in companies. Professionals practicing HF/E must clearly be outlined, explained, and classified. HF/E skills will not contribute to increase human performance and error free production without professional identification. Once HF/E skills and expertise are well defined, well maintained, and regulated in terms of knowing who does what under professional liability, and then our work will be shared, value added,

mature, innovative, and more productive. Once HF/E experts seriously acknowledge the importance of their accountability and professional liability, only then their skills and practices will truly be implemented for enhancing national economy and global benefits. In this context, the concept of HF/E and the tasks of individuals practicing in this area of expertise must clearly be defined and outlined. Companies will hesitate to employ HF/E experts until they are provided with clear information about what HF's skills are, and what ergonomics knowledge is for. It is important for HF/E professionals that their practices are truly implemented through individual's good work. Also, the tasks of individuals practicing HF/E should be maintained properly with the sense of accountability. The professionals should have enough knowledge and sense of professional ethics, liability, and accountability.

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