# Chapter XIII
# Employee Preparation, Participation, and Performance

**Katy E. Ellis**
*Northeastern State University, Oklahoma, USA*

## ABSTRACT

*This chapter provides a framework for technology project implementation in systems where the human is an integral element of the completed project. Unlike logically devised software codes and performance tested hardware components, human responses can be unpredictable when faced with the combined stressors of technological and organizational change, which occur when management dictates a technological upgrade. As such, the human interface is a dynamic system component that has the ability to degrade or disable system performance in ways unlike other subsystems. This leads to the idea that integrating employee preparation and participation into the design process from concept development through system deployment improves technology adoption and thereby overall system performance and acceptance of the technological enhancements. An analysis of peer-reviewed literature combined with the author's industrial experience provides a ten-step process for converting an existing manual system to an automated or computerized version with emphasis on integrating the human element.*

## EMPLOYEE PREPARATION PARTICIPATION AND PERFORMANCE

Replacement of a firm's existing manual systems with a computerized version necessitates addressing employee concerns as well as the mechanics of the replacement task itself. In this case, computerization refers to the activity of facilitating or automating procedures or activities by means of electronic computer (Webster's, 1986). Management may desire to update the existing system be-

cause there is a belief that long-term productivity and efficiency gains will outweigh the effort and cost associated with the introduction of new technology. However, if employees resist the change and refuse to use the new system, or continually bypass it in favor of familiar work routines, then it does not matter how well one designs the system or plans the system implementation, productivity gains will not occur, if the employees will not use the system (Shneiderman, 1986).

In considering the adoption of new workplace technology, employee preparation and participation in the change process may greatly enhance the performance of the new system (Lippert & Davis, 2006). With this approach, the process begins by addressing employee concerns first and then, instigates a structured approach that systematically progresses through the various design phases taking into consideration issues related to the adequacy of existing facility infrastructure, compatibility with existing computer systems, and proposed system functionality, as well as other technical nuances of the process. Therefore, this chapter addresses the problem of converting an existing manual system to a computerized system by first addressing personnel issues and second by addressing the mechanics of the conversion process highlighting opportunities for human integration.

## BACKGROUND

There are many schools of thought regarding the most critical design functions necessary for successfully deploying new technology in the workplace. It is not difficult to discern the bias presented in arguments made by hardware engineers versus software engineers or even operations managers. However, this writer agrees with Pulat's (1997) assessment of system priorities. Pulat proposed that, any complex system that includes humans as part of the system interface must address the inefficiencies of the humans by augmenting their capabilities with technology designed to overcome their inherent limitations. In other words, improvements in system efficiency gained through technology adoption will be limited at the junctures of human-machine interface. Managers that desire to maximize production efficiency can only achieve limited improvement, if they do not also address the need to optimize human performance as well.

Due to the impact that the human element can have on technology deployment and its eventual performance, the reader will note that this chapter presents a human-biased approach to the problem of replacing an existing manual system with a computerized version. The subject is introduced with a discussion on the human response to change, particularly technology driven change, but even in the detailed task-structure emphasis is given to areas that significantly impact the user interface in terms of learning time, performance speed, error rate, and user satisfaction.

## ANTICIPATING AND MITIGATING EMPLOYEE CONCERNS

Management's announcement that a new and efficient computerized system will soon replace the old manual system is likely to garner less employee enthusiasm than what is hoped for. Never mind that employees have complained for years about the inherent problems of the old system, the typical human response to management change initiatives is one of employee resistance resulting in performance degradation (Elrod & Tippett, 2002). Knowing this, management can anticipate employee response and structure the introduction of the change so that employees are less likely to reject it.

Employee resistance manifests itself in a variety of symptomatic behaviors. The evaluative study conducted by Elrod and Tippett (2002) cited behavior that ranged from a refusal to acknowledge that change was immanent up to and including out-