Expert systems analysis essay

Lemos & Porto (1998) have written a research book on ‘ technological change at work’. They distinguish three main areas in the change of work caused by new technology: i) work tasks and skills, ii) job content and work organization and iii) supervision and control. Based on case studies and literature, they argue that new technology reduces the number of complex tasks requiring manual skills and abilities and generates new complex tasks which require mental problemsolving and interpretive skills and abilities and an understanding of system interdependencies.

Tacit skills and abilities associated with the performance of work with the old technology, however, are still required. Although characteristics and capabilities of technology will independently influence task and skill requirements, the content of jobs and the pattern of work organization will be important subjects to managerial choice in the design of work. Lemos & Porto argue that new technology should have a complementary, supportive, role in the jobs of workers, instead of playing a replacement role only. New technology asks for a detailed consideration of work content and work organization. Lemos & Porto illustrate two directions with respect to the organization of supervisory control tasks. In some instances operations managers have attempted to use new technology to make operations more visible and to improve the certainty and confidence of management decision-making.

This has resulted in a centralization of the control of work operations. In other instances managers have sought to use new technology to lay greater emphasis on the delegation of decision-making, to points close to the production process itself. This was partly due to recognition of the fact that

some new technologies eroded aspects of the role of first-line supervisors and were conducive to a degree of team autonomy among workgroups. There are many new technologies utilizing advances in computerization and automation in the day-to-day operations of manufacturing and service systems. Many of these are also components of a CIM or CISS system. For example, computers are being used to a greater extent in monitoring quality and in putting together day-to-day production schedules.

In inventory control, Automated Storage and Retrieval Systems (ASRS) can respond to computer controls and mechanically move inventory items using bar codes. Also, Electronic Data Interchanges (EDI) link a firm’s ordering system to a supplier’s computer for automatic ordering of supplies. Automated Guided Vehicles (AGV) can rout batches of items mechanically between work centers. The rapidly advancing field of Artificial Intelligence/Expert Systems (AI/ES) can aid in making complicated decisions in such areas as scheduling and routing. Computers may carry out various forms of information integration, for example, by configuring separate channels of information graphically in the configural or object display. Computers can draw inferences from raw data – using relatively lower levels of intelligence in interpolating or predicting data, or using more sophisticated algorithms and heuristics in the process of diagnosis.

Across all three functions – attention, integration, and inference -human performance data support the conclusion that higher levels of automation, supporting higher levels of situation awareness are of near universal benefit, as long as such automation is reliable. Careful task analysis can insure that highlighting and attentional cueing will guide users to the most relevant

information, while low-lighting or backgrounding of less relevant information, will still make that information accessible should it be unexpectedly needed. Both integration and inference can substantially offload human working memory demands. In operations management automation systems offer positive examples of proposed functions that will integrate information for controllers, and draw inferences about future events (prediction) that can improve decision making, while reducing workload.