The Interaction Between End User Computing Levels And Job Motivation and Job Satisfaction: An Exploratory Study

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End user computing is an information technology that has emerged to enable users to address for themselves information needs that otherwise would not be met. The impact that this technology has on the job users performance has not been addressed. Research in end user computing states that this technology is a user driven phenomenon that users enthusiastically embrace, yet an examination of the studies in office automation, which as a technology is very similar to end user computing, report mostly negative reactions to the technology. The answer to this difference may lie in the nature of the addition of further skills to the job. Prior research has shown that end user computing does add content to the users’ jobs. What has not been investigated is whether differing levels of end user computing activity add differing levels of content to jobs as well. Will increasing complexity in end user computing activity lead to perceived increases in job motivation and job satisfaction? This study, after categorizing users by their end user computing activity, finds that these levels of use are associated with certain job outcomes, such as increased experienced motivating potential in a job and increased job satisfaction.

End user computing (EUC), as an information systems innovation, has started gaining wider acceptance in the workplace. Utilization of end user computing technology can enable users to access and/or produce needed information in a more timely fashion than was not possible a decade ago. EUC has consistently ranked as one of the top ten issues faced by information systems managers in American industry (Brancheau and Wetherbe, 1987) and has been subsequently found to be one of the most important issues confronting managers of international information systems as well (Deans et al. 1991).

Recent end user computing research has examined issues such as user acceptance (Doll and Torkzadeh, 1988), skill requirements (Nelson, 1991), and integration of EUC into organizations (Amoroso, 1988). There has also been a great deal of research focused on understanding the impact of EUC on organizations through the information it generates for the user. The user here is defined as an individual who will utilize EUC technology as a part of a job. Insufficient emphasis has been placed on the function EUC plays in the jobs users actually perform. Competitive pressures in the marketplace, the significant decline in the cost of computing hardware and software at the low end, and the increasing trend towards transfer of data between PC and mainframe environments have lead to an increase in the impact of EUC on task environments.

In the near future, users will be regularly using computers to gather and synthesize information from diverse sources as an important activity in their jobs. With EUC, users are free to attack information problems flexibly. Given this flexibility, not all users, even those with the same basic job descriptions, will likely utilize the technology in exactly the same way. It is therefore important to understand how differing levels of EUC affect the characteristics of the jobs the users perform.
Will EUC be a significant part of a user’s job, and will the varying levels of EUC lead to differing levels of job motivation and job satisfaction of the users who utilize it as a part of their jobs?

This paper will review prior research dealing with the utilization of EUC technology and propose a framework to better understand the patterns of EUC utilization in job environments. A pilot study was performed to validate hypothesized associations between EUC utilization and job satisfaction and job motivation, and results of the study are discussed. Conclusions and directions for future research are proposed.

**End User Computing**

EUC is defined in different ways in the literature. Benjamin (1982) describes EUC to include all applications developed outside data processing or formal information systems departments. Davis and Olson (1985) describe EUC as “the capability of the users to have direct control over their own computing needs.” Hackathorn (1988) refers to EUC as “an information processing activity in which the end user has personal control over the technology.” Amoroso (1988) broadens that definition to include access to computer resources, and data and support services. For the purpose of this study, EUC will be defined as the application of computing resources for the purpose of producing information by the information consumer. This definition implies that the user is both the actor and beneficiary of the interaction with the EUC, and that the user is impacted by both the interaction itself and by the information received as a part of that interaction.

In order to perform EUC, a user must possess, in addition to the skills implicit in the performance of the job itself, an array of computing skills. This array of technological skills are an addition to job skill variety, and impact the task identity and task significance of the job. The user will also derive some degree of utility from the information produced, which, in turn may impact job performance by altering decision quality. What will be the result of this addition? How these additions affect user perceived job motivation and job satisfaction is what is to be examined in this study. Job motivation, as defined by Vroom (1964), is the process governing choices among the work options in which the user will choose to engage. Job satisfaction, as defined here, is the fulfillment of the user's job related requirements (Porter and Lawler, 1968).

In the literature, users of EUC have been previously classified according to their level of interaction with the technology. Rockart and Flannery (1983) developed a taxonomy which divides users into groups based on the level of utilization in their EUC interaction. For a summary of these groups, see Figure 1. In this study, Rockart and Flannery’s taxonomy will be utilized to define and classify users into levels EUC of utilization. When considering how users typically utilize EUC as an addition to their jobs, users perform EUC as either a nonprogramming end user, a command level user, or a end user programmer. It seems intuitive that these successive levels of EUC activity call for the mastery of greater skill complexity in the job. A command level user, therefore, requires the use of more skills to perform EUC activity than a nonprogramming end user, who in turn requires more skills than a nonuser.

The literature diverges on how a user will react to the inclusion of EUC in a job. The majority of the EUC models and studies discussed in the literature implicitly posit EUC as a voluntary activity. The user chooses to engage in the use of the technology to address an information shortage not met by “normal” information sources. The user is the focus of investigation and it is assumed that technology is “pulled” into the task environment to meet the needs of the users. With the cost of EUC technology decreasing rapidly coupled with increases in users’ levels of computer literacy, many organizations are now requiring users to adopt this technology and incorporate it into jobs.

Prior studies in office automation (OA), an information technology that is conceptually similar to EUC technology (Moore, 1987; McLeod and Jones, 1987), have shown that introduction of such systems were met with a marked negative user reaction (Patrickson, 1987; Kraut, 1987; Taylor, 1987). When the origin of the technology was internal (a “user pull”

| Level One: Nonprogramming End User - Accesses and uses software provided by others. |
| Level Two: Command Level User - Uses data on own terms, utilizes report generators and/or limited command sets. |
| Level Three: End User Programmer - Uses command and procedural languages to fulfill personal information needs. These applications may be used by others. |
| Level Four: Functional Support - Supports other users on an informal basis; Personnel programs at a sophisticated level but is not considered IS personnel. |
| Level Five: End User Support - Specializes in EUC support. Normally a member of Information Center staff. |
| Level Six: DP Programmers - Performs like normal IS staff but programs only in EUC languages. |

**Figure 1. Rockart and Flannery’s Taxonomy of Levels of EUC Activity**

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