Exploring the Relationship Between EUC Problems and Success

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As the importance of End User Computing (EUC) to organizations increases, so does the need for understanding its problems and payoffs. This field study investigates the relationship between EUC problems and its success from an organizational viewpoint. The field test used 252 internal auditing directors from companies with a wide range of gross revenues and IS budgets, and a wide variety of industry types. The four dimensions underlying EUC problems previously proposed were confirmed: end user management and control, IS-user relationship, support and integration, and IS management control and planning. As hypothesized, EUC problems were found to be inversely related to EUC success. Among the EUC problems, IS-user relationship is found to be the most important determinant of EUC success. Implications of the findings for practicing information system managers and directions for future research are discussed.

End user computing (EUC) has been one of the most striking of many changes in how organizations use computers in the 1980s, and it continues to spread rapidly and relentlessly in the 1990s. Among both IS and business managers, EUC is recognized as one of the significant developments of the 1980s and beyond. Yet, EUC has created many problems as well as opportunities, and there are many issues to be resolved (Igbaria, Guimaraes & Davis, 1995; Van Kirk, 1995; Guimaraes & Ramanujan, 1986).

On one hand, EUC has decreased the user system request backlog problem facing the IS departments in many organizations by offloading some application developments, enhancing the work performance of end users, and providing them with a sense of control over their working environment. It has enabled end users to set their own priorities and employ resources to best satisfy their information requirements. EUC is being hailed as the driver of a revolution that will profoundly change the nature of professional work. It is expected that most organizations will continue to increase their EUC expenditures and that the number of microcomputers will increase steadily in the 1990s (Van Kirk, 1995; Caginalp, 1994; Burrows, 1994). The growth of EUC is a global phenomenon, with explosive growth in many countries (Patton, 1995; Preston, 1994).

On the other hand, EUC entails both risks and concerns. It has brought on critical issues such as managing data, training users, and managing end user activities (Igbaria, et al., 1995; Guimaraes & Igbaria, 1992; Alavi & Weiss, 1986; Magal, Carr & Watson, 1988). Because of large company expenditures on EUC technology and the expanding role of EUC as a component of departmental and corporate-wide IS activities, organizations have been trying to trim and save costs. Managers feel that moving applications into the hands of end users would cut costs and improve cooperation between IS and end
users. Both IS managers and other business managers are struggling with tighter budgets, deteriorating information structures, and escalating facilities costs. As a result, the managers have been trying to determine whether IS dollars are being well spent and whether they are getting the most out of their EUC dollars. They would like to assess the business value of IS and potential company payoffs from EUC. Despite the importance of the topic, no existing study has focused on evaluating these factors in terms of the impact of EUC on organizations, particularly its impact on a company’s payoffs and business performance. In this study, a model for evaluating EUC success based on company payoffs and performance is proposed, together with specific hypotheses.

The Theoretical Framework

Delone and McLean (1992) identified a long list of success measures for information systems, but as they pointed out, few studies addressed the impact of the systems on company performance. As information systems assume a more strategic organizational role, the ad hoc assessments of their performance commonly used in the past must be replaced by broader and more systematic evaluation, as well as better established measures. Two basic concepts reflect the corporate-wide contribution of EUC systems to the organization and specifically to its strategic planning mission. One reflects the extent of improvements in \textit{EUC capabilities to support the overall strategic management of the organization}. The other dimension focuses on \textit{how well EUC helps fulfill key company objectives}. Both reflect the overall success of EUC in fulfilling its functions. Based on an adaptation and integration of the extensive literature on systems, Venkatraman and Ramanujam (1987) conceptualized both dimensions and used them to evaluate the success of planning systems. They rationalized the two constructs as follows: “While the degree of improvement in the system’s \textit{CAPABILITIES} reflects the ‘means’ or the process aspect of the concept of planning system success, \textit{OBJECTIVES}, as a dimension, is intended to tap the ‘end’ or outcome benefits of planning” (p. 690). The nature of the items included in these two constructs are general enough to be widely applicable to any type of system capable of corporate-wide impact and/or potential strategic advantage. Therefore, we adopted the two constructs for this study.

Our model examines the relationships between EUC problems and EUC company payoffs (EUC success), as measured by EUC capabilities and objectives. This framework is proposed for linking EUC problems with success, and for examining the impact of EUC key business objectives on EUC capabilities for supporting overall the management of an organization. In general, we \textit{hypothesize that EUC related problems negatively impact EUC success or payoffs to the organization}.

EUC Problems

To more accurately assess the value of a system, its problems, as well as its success, must be taken into consideration. The problem set considered in this study was originally proposed by Guimaraes and Ramanujam (1986). Since that time, the IS literature has identified additional problems that management and end users may encounter (Goodhue, 1988; Guimaraes & Ramanujam, 1989). A list of forty EUC problems is provided in Table 1. These problems include user education and training, support, data integrity and security, cost, IS and end user department relationship, end user management control, systems quality, and capabilities for evolution and integration. In this study, we \textit{hypothesize that the intensity of the company EUC problems is inversely related to its success}.

EUC Success

Prior research has viewed EUC success from a variety of perspectives and has used varying definitions and measures of success (Igbaria, 1990; Magal, 1991; Magal, et al., 1988; Rivard & Huff, 1988). These various definitions have described success in terms of end user satisfaction (Doll & Torkzadeh, 1988; Igbaria & Nachman, 1990; Magal, 1991, Rivard & Huff, 1988); application use (Ein-Dor & Segev, 1992; Igbaria, Pavri & Huff, 1989); critical success factors (Magal, et al., 1988), and effectiveness (Amoroso & Cheney, 1991; Igbaria, 1990). However, these studies focus on individual systems and do not provide an organization-wide perspective in assessing EUC’s impact on the organization. The framework developed by Venkatraman and Ramanujam (1987) has been adopted for assessing the extent to which EUC’s multiple \textit{CAPABILITIES} and \textit{OBJECTIVES} are fulfilled. End users use computerized information systems to achieve both tangible and intangible objectives. From a company perspective, the indicator for EUC success in this case is reflected in the extent of fulfillment of six key business objectives: enhancing management development, predicting future trends, evaluating alternatives, improving short-term performance, improving long-term performance, and avoiding problem areas.

In addition, it is important to examine the degree to which EUC helps the overall strategic management of the organization. Together, they represent the ends and means (or output and process) perspectives for evaluating EUC success. EUC can be seen as a company-wide system that supports efficient and effective end users operations and the strategic management of the organization. Again, based on the work of Venkatraman and Ramanujam (1987), EUC capability to support company management along the following twelve dimensions are used in this study: anticipating surprises and crises, identifying new business opportunities, identifying key problems, fostering managerial motivation, enhancing the generation of new ideas, communicating top management’s expectations throughout the organizational structure, foster-
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