SUPPORTING END-USER APPLICATION DEVELOPMENT WITH THE INFORMATION TRANSFORMATION-ANALYSIS-MANAGEMENT Model

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End user application development has become a dominant force in many organizations. IS departments, however, do not support end user applications since they are not characterized by good design, programming, testing, and documenting techniques. Additional problems affecting end users are the lack of good training programs and decreased worker productivity despite increased investments in hardware and software. A model for developing end user capabilities is the T-A-M model that focuses on information transformation, information analysis, and information management. By using the model, IS departments can bridge the gap between themselves and end users, and give the organization a competitive edge.

The major trade publications in late 1989 and early 1990 have reminisced about the impact of the microcomputer in the last decade and its implications for the future. It is compared with the printing press, the car, the airplane, and the television in terms of its effect on the world (Glitman, 1990). Naisbitt in Megatrends called this evolution the “Information Age” (Naisbitt, 1982). Current estimates are that 50 million personal computers are in use (Glitman, 1990) and that 45% of all capital spending is on information technology (Evans, 1989). Sixty percent of all workers are involved in information processing (Senn, 1990). A clear outgrowth of the increased reliance on computer technology is the rise of end-user computing—the development and use of computer applications without reliance on information systems departments (McLeod, 1990).

Microcomputer technology has brought us from 64K 8088-based machines to 486-based super performers. It has brought organizations world-wide communications, instantaneous information retrieval, sophisticated decision support systems, and a plethora of applications software to facilitate information processing. The increased sophistication of hardware and software has also brought about an increased sophis-
tication on the part of the end user community.

These three factors—expanded technology, sophisticated applications software, and more knowledgeable end users has brought about what Dennis Hogarth calls the democratization of data processing (Hogarth, 1988). That is, computer processing is not the province of data processing shops anymore. Complex business applications necessary for managing today’s organizations are in the hands of the end users. “These end users, not the traditional systems development staff, are now the key forces driving the acquisition and use of computer resources” (Gerrity & Rockart, 1989). This democratization is characterized by perceptions of increased productivity, a decrease in systems development backlogs, and a demand by end users to be involved in the development process. In fact, experts predict that up to 90 percent of all computer-based information processing in the 1990s will be accomplished by end users (O’Brien, 1990).

From an IS department point of view, all this hardware and software capability coupled with increased user involvement has a dark side. We have 486-based technology, but not 486-based workers. Management believes that productivity lags, training isn’t keeping up with technological advances, and end users are doing their own thing development-wise without regard for the organization’s ability to manage and control data resources. Many analysts believe that end user information processing is out of control. Specifically, organizations are facing three major problems with regard to end-user computing:

1. decreased worker productivity despite increased investments in technology

2. rising costs of training to keep workers “current” and the problem of providing the right training for the user’s level in the organization

3. lack of control over information processing within the organization as end users assume more responsibility for application development

The first problem is that organizations are making huge investments in technology that have not brought like increases in productivity. In fact, one estimate is that organizations spend $3000 per user for hardware, software, support, and training, but white-collar productivity is declining at the rate of 1% per year (Evans, 1989). Evans attributes this decrease to organizations that fail to take an organizational perspective on end-user computing. As a result, knowledge and experience in the use of technology remains isolated to individual users (Evans, 1989). The organization, as a whole, is not benefitting.

The second problem facing organizations is the cost of training for end users and the selection of correct training for each user. Training magazine estimates that $825 is spent annually per employee on computer training (Schindler, 1988). Yet this training has many times yielded button pushers who have no concept of how to make the software produce usable, reliable information. Organizations need to strike a balance in computer training. Certain minimum requirements are needed for every user, and these skills should be mandated by IS departments. According to Paul Schindler of PC Week, training should be required for each PC and each new application delivered to a user (Schindler, 1988). But computer training should also be targeted for different audiences and different levels in the organization (Wilkinson, 1989). Top managers don’t necessarily need the same quality and quantity of training as the clerical staff. Operations staff don’t need what strategic planners do. What
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