End-User Computing Success
Factors: Further Evidence from a Developing Nation

ABDULLA H. ABDUL-GADER
King Fahd University of Petroleum and Minerals

The rapid growth of end-user computing (EUC) has dramatically affected the nature of information systems in many organizations and many countries. EUC proliferation is more evident in organizations in developing countries because of steady improvement in the performance/price ratio of EUC computing technology. As organizations become increasingly dependent on EUC to fulfill their information requirements, the management of EUC resources demands a better understanding of the factors that affect EUC success. This paper attempts to measure and validate some individual and organizational factors hypothesized to affect the success of EUC in a developing country, namely Saudi Arabia. One hundred and fifty-eight end users in forty-five small organizations were surveyed. The study findings indicate that EUC success is closely associated with organization size, EUC training, source of computer application, computer literacy, top management involvement, number of system analysts, and availability of native language software. The need for a process oriented model to study organizational variables is addressed because of the importance of the time frame of the EUC adoption process.

Despite the relative novelty of end-user computing (EUC), signs of its increasing proliferation are abundant. Rockart and Flannery (1983) have reported 50 to 90% annual growth of EUC in several companies. It has been estimated the EUC will absorb 75% of computer resources by 1990 (Benjamin, 1982). In a more recent study, Ein-dor and Segev (1988) found that almost 40% of the work force of the surveyed organizations were end users.

It seems that the shift in emphasis from traditional computing practices toward EUC is not limited to the highly advanced nations. Actually, the trend may be more evident in developing nations, where the majority of organizations are relatively small. Small organizations cannot afford the high cost of expensive hardware and supportive technical staff such as system analysts and programmers. Professionals and managers are forced to rely on themselves to satisfy their computational needs on relatively inexpensive hardware.

Several studies in the Middle and Far East have described the advent of EUC in these developing regions (Abdul Ghani & Al-Sakran, 1988; Abdul Ghani & Al-Meer, 1989; Ibrahim, 1985; Tsai & Wei, 1987). In a study of the data processing environments of 200 Saudi organizations, Abdul Ghani and Al-Sakran (1988) note a growing reliance on EUC. A large percentage of the...
organizations using computers (66%) do not have formal electronic data processing (EDP) departments. Instead, these organizations depend on end-use computing, and more specifically on microcomputer based application packages. Tsai and Wei (1987) report a similar pattern in Taiwan. More than 61% of the companies use microcomputers rather than minicomputers or a mainframe. In a study of computing usage in Kuwait, another developing nation, Ibrahim (1985) points to the similarities of computing practices between developed nations and developing countries.

The studies of computing practices in developing nations have been primarily descriptive in nature. Relatively little attention has been paid to the assessment of the variables that affect EUC. This study investigates a number of individual and organizational variables that have been identified in the literature as determinants of EUC success or failure. The study is a pioneering attempt to measure the success level of EUC and the factors that influence EUC in the context of a developing country, namely Saudi Arabia.

The importance of EUC management to developing nations stems from the central role of information resources in modern economic development. It is widely accepted that computerization is critical to economic growth (Abdul-Gader, 1988; Bogod, 1979). Evidence also, however, suggests that developing countries striving towards computerization are constrained in their efforts by a lack of technical infrastructure and a scarcity of competent manpower (Abdul-Gader, 1988; Matta & Boutros, 1989). To establish the needed technical infrastructure and to adjust for the lack of skilled human resources, Saudi Arabia relies heavily on imported technology and foreign manpower. Unlike many developing countries, Saudi Arabia can be characterized by its favorable financial position. As a major crude oil exporter, Saudi Arabia is able to finance large annual computer imports. The Saudi microcomputer and minicomputer market, for example, exhibits growth rates similar to the trends in the American market (U.S. Department of Commerce, 1985).

It is of paramount importance to a developing country’s managers to identify and study the variables that may promote or hinder attaining the full potential of these considerable investments. This study examines a number of variables that have been identified in the literature as determinants of EUC success. The objective is to assess the relevance and applicability of these variables in a culture fundamentally different from those of developed countries (e.g., United States). This study would also benefit the increasing number of multinational corporations involved in business arrangements in Saudi Arabia. There are almost 300 joint projects between Saudi Arabia and the United States (Saudi Arabia Chamber of Commerce, 1988).

Previous EUC research is presented in the next session. Based on this background, hypotheses are developed and dependent and independent variables are defined. This section is followed by a discussion of the methodology used in this study. Next, the data are analyzed, and conclusions are presented.

**Background**

End-user computing is defined as the ability of the ultimate users (professional staff and managers) to directly fulfill their computational needs (Rockart & Flannery, 1983). It is difficult to develop an objective and meaningful measure of EUC success. A review of the Management Information Systems literature suggests several surrogate measures of this construct. Among the proposed measures are user information satisfaction, the impact of information systems on organizational performance, and system utilization (Cerullo, 1980; Cheney, Mann, Amoroso, 1986; Ein-dor & Segev, 1978; Delone, 1988; Hamilton & Chervany, 1981; Lucas, 1978; Montazemi, 1988; Raymond, 1987a, Welke & Konsynski, 1980).

The most frequently used measure of EUC success is user information satisfaction (Cheney et al., 1986; Montazemi, 1988; Raymond, 1987a; Raymond, 1987b). User information satisfaction is conceptualized as the end user’s attitude toward the computer applications he uses. The measurement of user information satisfaction has produced relatively rich measurement construction and validation studies (Bailey & Pearson, 1983; Baroudi & Orlikowski, 1988; Ives, Olson, Baroudi, 1983). Specific scales have also been developed for small organizations (Doll & Torkzadeh, 1988; Montazemi, 1988; Raymond, 1987b).

To measure EUC success, the user information satisfaction scale developed by Doll and Torkzadeh (1988) was chosen for this study. This scale is a modified version of the widely used instrument for measuring user information satisfaction by Ives et al. (Barki & Huff, 1985; Ives et al., 1983; Mahmood & Becker, 1985-86; Raymond, 1985). Based on a survey of 618 end users, Doll and Torkzadeh developed a Likert-type 12-item scale to measure user information satisfaction. The
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