The Structural Context of Executive Information Systems Adoption

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While some firms are developing computer-based Executive Information Systems (EIS) to support key executives and managers, a large number of organizations are presently not using EIS. Our focus here is on structural factors associated with the adoption of EIS capabilities that support managerial communication, coordination, control, and planning. A national survey was conducted to collect data for the empirical study. Our analysis uses data from 210 organizations representing adopters and non-adopters of key EIS capabilities. Adopters of each of the four EIS capabilities have higher levels of environmental dynamism, heterogeneity, and hostility than their non-adopting counterparts. EIS adopters with higher levels of environmental pressures appear to be implementing distributed architectures to deliver EIS applications. Furthermore, adopters of EIS capabilities for purposes of coordination, control, and planning have larger IS departments than non-adopters. It also appears that larger organizations are implementing EIS capabilities for planning purposes to a greater degree than smaller organizations. They also have a greater proportionate representation from the for-profit sector. Implications of these findings are discussed along with directions for future research.

Executive Information Systems (EIS) have become increasingly popular. EIS can be broadly defined as a computer-based information systems for key executives and managers, providing them with sophisticated technological capabilities to support their communication, coordination, planning, and control functions. The traditional view that EIS support only senior executives is being challenged as more and more managerial levels are gaining access to EIS (Rai and Bajwa, 1997; Belcher and Watson, 1993) in firms across all key industrial sectors. Faced with external pressures, many firms are developing EIS applications simply to remain competitive in highly uncertain environments (Watson, et al., 1991). Although it was believed that only large firms are likely to undertake EIS efforts, recent developments in relatively inexpensive EIS software products are making it economically feasible for smaller firms to deliver EIS applications.

Investments in EIS are being spurred because of their suggested benefits. They provide better logistics, efficient communication with more people, and increase visibility into the organization (Rockart and DeLong, 1988). Moreover, by providing on-line access to data and information from internal and external sources, they help key executives and managers to be current with operations (Gauthier, 1989) and facilitate a better understanding of the business (McCartney, 1989). EIS can also have a significant positive impact on executive productivity (Jenkins, 1990). Studies suggest that EIS can improve productivity and decision making, save information distribution costs (Belcher and Watson, 1993), and improve response time associated with decision making (Leidner and Elam, 1993). Over the long run, EIS can lead to elimination of staff levels and administrative tasks in organizations (Wallis, 1989). Such impacts eventually lead to higher levels of orga-
Organizational effectiveness (Paller and Laska, 1990).

Numerous case studies provide valuable insights into EIS efforts (Rockart and Treacy, 1982; Rinaldi and Jastrzembski, 1986; Boltz, 1987; Houdeshel and Watson, 1987; Rockart and De Long, 1988; Paller and Laska, 1990; Fireworker and Zirkel, 1990; Barrow, 1990). More recently, Rai and Bajwa (1997) examine how organization size, aggregate levels of environmental uncertainty, and management support impact the adoption of EIS for collaboration and decision support. These and other studies (Watson et al., 1991; Mohan et al., 1990) suggest how the size of a firm, its sector (non-profit, manufacturing, or service), and its environment can affect the propagation of EIS. We extend this line of investigation by focusing on the adoption patterns of four key aspects of EIS functionality. These include EIS support for managerial communication, coordination, control, and planning. We examine the association of selected structural factors with the adoption of each of these four EIS capabilities. We also analyze how environmental and organizational structural characteristics are associated with EIS architecture choices made by organizations adopting EIS, and if their choice of a specific architecture enables or constrains the adoption of certain EIS capabilities.

Our specific research questions can be stated as:

• Does membership in industry sector play a role in the adoption of EIS capabilities by firms?
• Are specific elements of a firm’s external environment, as assessed by dynamism, heterogeneity, and hostility, associated with adoption of EIS capabilities?
• Do size-related factors (firm and IS department) play a role in the adoption of EIS capabilities?
• Do EIS architecture choices made by EIS adopters relate to environmental characteristics and size-related factors?
• Do organizations with different EIS architectures differ in their adoption of EIS capabilities?

The next section describes the research framework of our study. We then summarize the research method, data collection procedures, and sample demographics. Subsequently, we discuss the results of our analysis. Finally, we offer some concluding remarks.

The Research Framework

Figure 1 summarizes the research framework of our study. We limit our attention to the adoption of EIS capabilities and do not examine variations in implementation levels of these capabilities within organizations. In addition, we limit our attention to four important categories of structural factors. We do recognize that other structural and process-related characteristics are likely to be associated with the adoption of EIS capabilities, but for reasons of scope these factors are not examined here. We now elaborate on the theoretical underpinnings of our research framework.

EIS Adoption for Managerial Support

The common technological clusters associated with EIS can help executives and managers in executing four important functions. First, e-mail and voice-mail applications can improve the geographic reach of executives in terms of their communication with others. These technologies also expand the ability to communicate asynchronously. Thus, these technologies are targeted at enhancing management communication capabilities. Second, electronic calendars, file ticklers, and computer conferencing can improve the logistics and collaboration between executives and managers thereby enhancing management coordination capabilities. Third, man-
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