Empirical research on project-level success of systems development in developing regions is lacking. Managers cannot rely on prescriptions suggested by IS projects research in developed countries to understand IS projects in developing countries without empirical evidence supporting the applicability of these guidelines. We collect data from 61 IS project leaders to test eight research hypotheses tapping the relationship between IS project characteristics and performance in a developing country. Our analyses reveal that adequacy of development tools, formal planning, management support, and participation are positively related to IS project performance. However, the data find no support for a significant relationship between members’ abilities, project uncertainty and conflict and performance. Contrary to previously reported findings, our data highlight the possible damaging effect of increased horizontal coordination in IS projects. We discuss these results and suggest directions for future research.

INTRODUCTION

The effective management of information systems (IS) projects continues to be an important issue facing organizational managers all over the world (Badri, 1992; Deans, Karwan, Goslar, Ricks and Toyne, 1991; Marchewka and Keil, 1995; Watson, Kelly, Galliers and Brancheau, 1997). This interest stems in part from the fact that the outcome of such projects can lead, in many cases, to profound organizational consequences ranging from reducing costs to creating a competitive advantage over rivals.

In compliance with this interest, some scholars have examined the salient project characteristics that determine the performance of IS projects (e.g., Saarinen, 1990; Robey, Smith, and Vijayasarathy, 1993; Kraut and Streeter, 1995; Nidumolu, 1995; Deephouse, Mukhopadhyay, Goldenson and Kellner, 1996). These empirical investigations, although significant, have come from developed regions like the United States and Western European countries thereby limiting the external validity of these studies.

Culture plays an important role in many situations and certainly in IS implementation (Odedra, 1993). Previous research found differences between developed and developing countries along certain cultural dimensions—Power Distance, Individualism, Masculinity, and Uncertainty Avoidance (Hofstede, 1980). Therefore, one cannot rely on prescriptions suggested by IS projects research in developed countries to understand IS projects in developing countries without empirical evidence supporting the applicability of these guidelines.

Empirical research on project-level success in developing regions is lacking. Previous research in developing countries (e.g., Abdul-Gader, 1990; Khalil and Elkordy, 1997; Odedra, 1993; Sideridis, 1988) focused on system-level success as opposed to project-level success. Although system-level success is an important construct, it is important to recognize that it is a different construct from IS project performance (Robey et al., 1993). Hence, there is a pressing need to study IS project performance in developing countries.

The purpose of the present study is to examine the relationship between IS project characteristics and IS project performance in Kuwait. We hope that the findings of this investigation will accomplish at least two goals. First, this study will help pinpoint some of the facilitators and inhibitors of IS project performance in Kuwait. Second, the paper will become a reference for IS practitioners and researchers to evaluate the extent to which the guidelines, proposed by similar research that has been conducted in developed countries can be applied in a developing country like Kuwait. The second goal is extremely important given the critical need for IS managers to understand global information resources management issues (Khosrowpour and Greenawalt, 1997).

BACKGROUND & PROPOSED RELATIONSHIPS

Several IS researchers have examined the relationship between IS project characteristics and IS project performance (e.g., Saarinen, 1990; Robey et al., 1993; Kraut and Streeter, 1995; Nidumolu, 1995; Deephouse, Mukhopadhyay,
Goldenson and Kellner, 1996). Two main conclusions come out of this research. First is that this research comes from developed countries like the United States and Western European countries. Second is that IS project characteristics that influence IS project performance are many.

Based on past research on IS project performance in developed countries, we identify an initial set of project characteristics that may influence IS project performance in Kuwait (Figure 1). The selected variables are horizontal coordination (Nidumolu, 1995), participation (Robey et al., 1993), formal planning (Dephousse et al., 1996), members’ abilities (Saarinen, 1990), project uncertainty (Kraut and Streeter, 1995), and conflict (Robey et al., 1993). Because of its importance for IS initiatives in developed countries (Lucas, Ginzberg, and Schultz, 1990) and certainly in developing countries (Abdul-Gader, 1990; Khalil and Elkordy, 1997), management support is also added to our list of predictor variables.

**IS Project Performance**

IS scholars used many surrogates to measure the dependent variable in IS implementation research. Usage, user satisfaction, system quality, information quality, and economic impact are examples of surrogates of systems development success used in many past implementation studies (see DeLone and McLean, 1992 for a review). As can be noticed from the reviews by DeLone and McLean (1992) and Lucas et al. (1990), past IS implementation research was concerned with success or effectiveness at the system level. Project-level success is often overlooked in IS research (Robey et al., 1993).

Although IS effectiveness is an important construct, it is important to recognize that it is a different construct from IS project performance. From an analytical point of view, the unit of analysis in IS effectiveness research is the system, whereas in IS project performance research, the unit of analysis is the development project. Further, the IS effectiveness construct is usually measured using a unidimensional index such as usage or satisfaction, while on the contrary, IS project performance is usually considered as a multidimensional construct (Henderson and Lee, 1992). Given the differences between the two constructs, one expects that the factors that influence the two constructs will also be different.

A typical view of IS project performance encompasses two dimensions (Henderson and Lee, 1992; Robey et al., 1993): work efficiency (as measured, for example, by adherence to cost and schedule constraints) and effectiveness (as measured, for example, by quality). Consistent with this conception, IS project performance, in this study, is defined as the extent to which the IS project is viewed as efficient in its work and effective in its outcome.

**Horizontal Coordination**

Horizontal coordination refers to “lateral communications through meetings and one-to-one discussions between users and IS staff” (Nidumolu, 1995; p. 195). Information is conveyed through numerous channels like interpersonal verbal, group verbal and voice messaging, printed reports, and interpersonal written communication (Lind and Zmud, 1991). Each coordination modality has its peculiar characteristics that differentiate it from the other types of media and determine its level of richness. Face-to-face interaction ranks highest and interpersonal written document ranks lowest on the richness continuum.

Previous research stressed the importance of coordination to the favorable outcome of IS projects. Kraut and Streeter (1995), for example, highlighted the importance of horizontal sharing of information for achieving the goals of the IS project. Moreover, Nidumolu (1995) underscored the importance of horizontal coordination for superior IS project performance. Thus, we hypothesize that:

H1: Horizontal coordination will be positively associated with IS project performance.

**Participation**

Robey, Farrow and Franz (1989) define participation as “the extent to which members of an organization are engaged in activities related to system development.” (p. 1174). Participation can have many favorable implications for IS project performance. Participation can result, among other things, in better assessment of users’ needs and better users’ understanding of the developed system. Some empirical evidence supports this premise. Robey et al. (1993), for example, found a positive correlation between participation and IS project