Transfer of Information Technology to the Arab World: A Test of Cultural Influence Modeling

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The complex societal beliefs and values of the Arab world provide a rich setting to examine the hypothesized influence of culture on information technology transfer (ITT). Two research questions arise in this context: (1) Do cultural beliefs and values affect the transference of information technology in the Arab world? and (2) Does contact with technologically advanced societies impact ITT and systems outcomes? The present study addresses these research questions by conceptualizing and testing a cultural influence model of ITT. In this model, cultural beliefs and values are one major construct while a counterbalancing variable is the external influence of technologically advanced societies. These constructs along with the variable “national IT development” form the conceptual basis for the model. This study is the second part of a program of research investigating ITT. The setting of the study was Arab society, which allowed us to test our “cultural influence” model in, perhaps, one of the more complex cultural and social systems in the world. The program of research took place in several phases. In the early phases, Arab-American businessmen and women as well as Arabs studying in American universities were studied. In the latter phases, the cross-disciplinary research team gathered primary data in the Arab cultures of Jordan, Egypt, Saudi Arabia, Lebanon, and the Sudan. Both quantitative and qualitative techniques were used to explore the phenomenon of ITT. This paper reports quantitative findings from the latter phase. Findings suggest that the model has explanatory power. Arab cultural beliefs were a very strong predictor of resistance to systems and thus ITT; technological culturation was also a factor. These results have implications for future theory-testing and for technology policy-setting by responsible Arab leaders. Additionally, there are implications for transnational firms and managers charged with introducing IT in foreign ports, subsidiaries, offices, and plants.

“Transfer means more than just technology....All too often, new technologies fail in the marketplace because of flawed assumptions about considerations totally unrelated to technical merit.” -Allan Kuchinsky (1996)

INTRODUCTION

Organizations throughout the world experience difficulty and even failure in information technology transfer (ITT), defined as the movement of information technology from creators to users (Cunningham & Srayrah, 1994). This transference of systems, whether they are developed internally or purchased in the commercial software/hardware marketplace, is plagued with problems (Kwon & Zmud, 1987). The ITT problem is even more acute in developing countries, such as the emerging economies in the Arab world (Antonelli, 1986; Goodman, 1991b; Knight, 1993; La Rovere & Goodman, 1992). Although developing countries are eager to adopt new technologies, the process of adoption has been slow and the current utilization of IT is far below that achieved in industrialized countries (Antonelli, 1986). This disparity in IT use between industrialized and developing countries can be explained in part by the high cost of building and implementing IT, but this explanation is not entirely satisfactory. Substantial anecdotal and descriptive evidence exists for failure in cases where financial hurdles have been overcome (Mahmood, Gemoets, & Gosler, 1995). While finances were not a problem for the affluent countries of Saudi Arabia and
Kuwait, they have historically used far less than their available computing capacity (Atiyah, 1989; Ibrahim, 1985; Yavas, Luqmani, & Quraeshi, 1992). With some notable exceptions (Al-Shanbari & Meadows, 1995; Kamel, 1995; Siddiqui, 1992), sporadic implementation and use are endemic throughout the Arab world (Cunningham & Srayrah, 1994; El-Sayed Noor, 1981; Goodman & Green, 1992; Odedra, Lawrie, Bennett, & Goodman, 1993).

Why is ITT so problematic in developing countries like those in the Arab world? Anthropological studies suggest that much of the technology designed and produced in developed countries is ethnocentric, that is, culturally-biased in favor of their own social and cultural systems. Consequently, developing countries encounter cultural and social obstacles when attempting to transfer technology, created abroad, into practice at home (Yavas et al., 1992).

There is a counterbalance, however, to cultural beliefs and values predisposing users to resist innovations. In anthropological studies, the assimilation of characteristics of another culture is known as “acculturation.” Extending the concept to IT, it can be argued that many individuals who have experience with technically advanced societies become technologically cultured and, thus, more accepting of IT. In the IT arena, this exposure occurs when people become informed or educated about computer systems and application software that are not widely diffused within their own culture. These experiences can be formal education experiences such as seminars and courses (Arbose & Bickerstaffe, 1982) or informal experiences such as traveling for business or pleasure. What are the effects of these two very different types of cultural variables on ITT? These constructs along with the variable “national IT development” form the conceptual basis for the cultural influence model.

This study is the second part of a long-standing program of research investigating ITT. The setting of the study was Arab society, which allowed us to test the cultural influence model in, perhaps, one of the more complex cultural and social systems in the world. While both quantitative and qualitative methods were used to validate and test the model, data analysis in the present study was based primarily on an Arabic-English questionnaire utilizing scenarios (N = 274).

Findings suggest that the model has good explanatory power. Arab cultural beliefs were a strong predictor of ITT. Technological culturalization offered reasonable explanatory power. These results have implications for future theory-testing and for technology policy-setting by responsible Arab leaders, as shown by Khileed (1992). Additionally, there are implications for transnational firms and managers charged with introducing IT in foreign offices and plants.

As globalization of markets and corporate multinationalism evolve, it is becoming clearer that more cross-cultural research is needed to assist managers (Burn, Saxena, Ma, & Cheung, 1993; Cash, McFarlan, McKenney, & Applegate, 1992). In a large survey of information systems executives, more than half of the respondents felt that success in global IT was key to their firms’ future (Ives & Jarvenpaa, 1991). When increasing operations in the international arena, firms must be able to exploit the power of information technology (IT) to communicate among widespread locations and coordinate activities both within and across countries. Hence, it is important for the managers of these firms to learn as much as they can about the cross-cultural adoption and use of IT (Couger, 1986; Kumar & Bjorn-Andersen, 1990).

RESEARCH BACKGROUND AND THEORETICAL FRAMEWORK

Although there is a substantial literature documenting U.S. experiences with ITT (Brancheau & Wetherbe, 1990; Cooper, 1994; Leonard-Barton & Deschamps, 1988; Moore & Benbasat, 1991; Prescott & Conger, 1995; Zmud, 1982), relatively few attempts have been made to delineate cultural and social variables that foster or impede the adoption of new information technology across national boundaries.

Groundbreaking descriptive work by Goodman and colleagues (Ariav & Goodman, 1994; Danowitz, Nassef, & Goodman, 1995; Dedrick, Goodman, & Kraemer, 1995; Goodman, 1991a, 1991b, 1994; Goodman & Green, 1992; Goodman & McHenry, 1991; La Rovere & Goodman, 1992; Mesher, Goodman, Snyder, Briggs, & Press, 1993; Nidumolu & Goodman, 1993; Odedra et al., 1993; Waleott & Goodman, 1993) has shown how IT diffusion differs significantly around the world, but these studies have not developed or tested scientific hypotheses that advance theory on the phenomenon of ITT.

Moreover, only a few studies have empirically tested cross-cultural impacts on the adoption and diffusion of new information technologies (Gefen & Straub, 1997; Hill, Loch, Straub, & El-Sheshai, 1998; Ho, Raman, & Watson, 1989; Raman & Wei, 1992; Straub, 1994). While limited in number and scope, this work suggests strongly that links between culture and IT are not mere artifacts. In studying the effect of culture on the use of e-mail and fax in Japan, for example, Straub (1994) found significant differences in beliefs about IT between Japanese and U.S. knowledge workers in both perception and use of IT. Straub, Keil, and Brenner (1997) found these same effects in a three country study including Japan as did Gefen and Straub (1997). Ho et al. (1989) and Raman and Wei (1992) concluded that culture had a marked impact on how electronic meeting systems were perceived, used, and adapted. Thus, there is evidence to support that culture may be a barrier to ITT. What, then, is the nature of these cultural obstacles to ITT?

Culture and Information Technology

First, it must be recognized that transferring technology developed in one culture to another culture involves more than merely providing instruction about technical aspects of using the equipment. Given that cultural beliefs and values...
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