A Study of the Attitudes of Indonesian Managers Toward Key Factors in Information System Development and Implementation

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The purpose of this paper is to assess the behavioral attitudes of Indonesian information system managers and top level managers towards the organizational aspects of information system development and implementation. Important key factors under investigation include participation, training, top management support, feedback communication channels, and early conveying of information about the change. The study results show that both Indonesian information system managers and top managers have positive attitudes toward all key factors under study except consensus participation. Top management support is considered by all groups of managers to be the most important key factor for the successful development of computerized information systems. Training programs are ranked in the middle in order of importance. Pre-implementation training is consistently ranked higher than on-the-job training by both groups of managers. Feedback communication channels, while obtaining next to the highest mean attitude score, is ranked as the least important factor.

As the development of a world wide “information society” progresses, the governments and businesses in the developing world have increased their participation in this society dramatically. Improvements in hardware, software and telecommunications technology have facilitated the introduction and use of computerized information systems in developing countries (Thorpe, 1984). In addition to these technological improvements, Heitzman (1990) describes three institutional factors that have stimulated use of information systems in developing countries, which are: (1) the growth of multinational corporations and financial markets, (2) international agencies that try to facilitate and regulate the spread of information systems to developing countries, and (3) national programs implemented by the countries themselves.

One major concern expressed by several researchers that are familiar with the conditions in developing countries is that the organizations in the developing countries may not be prepared for computerization and do not have carefully prepared plans for developing computerized information systems (Chandler and Holzer, 1983). Another issue is whether the information systems development techniques that have been perfected in the developing countries can be applied in a different environment. Grimshaw and Ping (1992) performed an exploratory study of the influence of the cultural environment on the application of Western developed information technology (IT) theories and application methods in China. They discovered that the spread of IT in China has not followed typical growth patterns found in the West, which they believe is due to unique Chinese cultural and organizational factors and not to the technology itself. Thorpe (1984) emphasizes even if an information system is a technical success, that socioeconomic factors will determine whether a system is actually used.

Strategies for the development and implementation of information systems have been widely identified in the literature as critical to the success of development efforts. Numerous alternative approaches for systems development exist, such as...
bottom-up versus top-down, total-system versus modular, piecemeal versus systems and the “great leap forward” versus the evolutionary approaches, each with their own characteristic advantages and disadvantages (Wilkinson, 1991). In addition to the selection of the particular systems development approach that is appropriate for the organization, the feasibility (the possibility of success) of development efforts must be determined by considering economic, technical and organization aspects. A dominant component of the organization aspect of systems development is resistance to change, which is present to some degree in almost every systems development and implementation effort. (Ahituv and Neumann, 1986)

Switching from manual systems to computerized systems will most likely cause resistance to change, especially if the change is seen as a threat to the affected employee’s well being. Five methods for reducing resistance to change that were developed from the organization and information systems development research literature conducted in the “western world” are: 1. participation (consisting of three types — consultative, representative and consensus participation); 2. training (consisting of two types — pre-implementation and on-the-job training); 3. visibility of top management support; 4. feedback communication channels; 5. early conveying of information.

This study investigates if resistance to change, a potential impediment to successful information system development, has been recognized by managers in an developing country (Indonesia). The study assesses the attitudes of Indonesian information system (IS) managers and top managers toward the eight key factors (consultative participation, representative participation, pre-implementation training, on-the-job training, visibility of top management support, feedback communication channels, and early conveying of information). Positive attitudes toward these key factors are needed for a successful information system development and implementation. The attitudes of IS managers are studied because IS managers are in an excellent position to play the role of change agents. Top managers are of interest in this study because, without their help, the IS managers’ work will be less effective and more difficult.

The approach used in this study is different from the typical user attitude survey. In these studies, the attitudes of users toward specific systems or types of systems are analyzed to identify influential system and user characteristics. In our study, we have chosen to concentrate on specific systems development techniques that might be affected by cultural (American vs. Indonesian) and functional (IS vs. top managers) differences.

**Review of Organization and Information System Literature**

From the organization and information system development literature, there are five organizational behavior factors or methods affecting the eight key factors that are useful in counteracting resistance to change. These five factors are: user participation in the design process, training, top management support, encouraging employee feedback, and the early conveyance of information about changes. These actions should begin early in the systems development sequence and should continue through the implementation phase.

**Participation**

The first organizational behavior factor or method is to let personnel who are affected by the change, the ones who will operate and use the new system, participate in the design, planning, development, and implementation of the change. Baroudi, Olson and Ives’ (1986) study shows that user involvement with information systems projects will lead to a greater chance of success.

Kim and Lee (1989) surveyed Korean business firms and found that “a participative systems development strategy is most fruitful when the systems are relatively unstructured and ill-defined, or complex in nature,” (p. 16) which are characteristics often found in larger, mainframe-based information systems requiring the participation and coordination of many individuals. Change is less likely to be resisted if it originates from within the organization.

Based on his experience in developing information systems in India, Sanwal (1989) states that “Rather than rely on outsiders, the essential organizational requirement is the development of a knowledgeable end user” who is also an experienced administrator knowledgeable about his or her systems application. Internalization of the motives to change should always be attempted whenever possible in introducing and implementing change. One of the best methods of internalizing motives to change is through participation of affected personnel in the activities of the change.

In the information systems literature, participation is mentioned as having the purpose of: 1. Developing realistic expectations about system capabilities, thus reducing disconfirmation of expectations which may lead to deferred resistance to change (Gibson, 1977); 2. Providing an arena for bargaining and conflict resolution about design issues (Keen, 1981); 3. Leading to sense of ownership (Robey and Farrow, 1982); 4. Committing users to the system and reducing resistance to change (Lucas, 1974b and Markus, 1983).

Ives and Olson (1984) reviewed many of the studies on user involvement in the information systems area and found mixed results in the relationship between involvement and participation, and between participation and users’ attitudes toward the system. They suggest that the reason for the mixed results is partly due to the fact that participation was not defined carefully in those studies.

Mumford (1979) divided participation into three categories: (a) consultative participation, where design decisions are made by the systems group, but the objectives and form of the system are influenced by the needs, especially job satisfaction needs, of the user department; (b) representative participation, where all levels and functions of the affected groups are represented in the design team; and (c) consensus involvement, where an attempt is made to involve all employees in the user department, at least through communications and consultation.