Behavioral Perspective of Groupware Adoption

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INTRODUCTION

Over the past decade, groupware technologies, such as e-mail, electronic bulletin boards, and group support systems, have become an important part of the business-computing infrastructure in many organizations. This evolving software category has captured the attention and imagination of information technology professionals, line of business managers and end users, not to mention software suppliers. Organizations adopt groupware applications to enhance communication, collaboration, and coordination among group members and thus improve group performance ("Lotus Development," 1995). While some groupware applications, for example, e-mail, have been commonly accepted, many other applications, especially those that require significant collaboration and cooperation among users, are not widely used in organizations and their potential benefits are far from being fully realized (Orlikowski, 1993). Although many laboratory and field studies have consistently shown the relevance and positive impact of group support systems on group work, more research is needed in understanding how to increase the rate of diffusion and adoption of the technology (Nunamaker, 1997).

Behavioral-related elements (e.g., an individual's normative beliefs, attitude, and motivation), recognized by many, are the primary causes of users' resistance toward a newly implemented system or technology. Information technology (IT) research, however, tends to under-utilize existing knowledge in the behavioral science (Burton et al., 1993; DeSanctis, 1983; Melone, 1990; Turner, 1982). Expectancy theory has been recognized as one of the most promising conceptualizations of individual motivation (Melone, 1990; Snead & Harrell, 1995). Many researchers have proposed that expectancy theory can provide an appropriate theoretical framework for research that examines a user's acceptance of and intent to use a system (DeSanctis, 1983; Melone, 1990). This study uses expectancy theory as part of a student-based experiment to examine users' behavioral intention (motivation) to utilize a groupware application.

BACKGROUND

Groupware refers to a class of computer technologies designed to support communication, collaboration, and cooperation among a group of knowledge workers. It covers a variety of technologies, ranging from simple e-mail systems to complex workflow applications. Although the use of some groupware technologies, such as e-mail, has become ubiquitous, organizations have encountered many difficulties in adopting and utilizing more sophisticated groupware applications, such as group support systems and Lotus Notes (Nunamaker, 1997; Orlikowski, 1993).

Groupware applications are designed to support communication, cooperation, and collaboration among a group of users rather than to improve productivity of individuals. Therefore, usage and resulting benefits are only achieved if a majority of the users whose work is affected by a groupware application accept and use the system (Grudin, 1994). Otherwise, the application will not only fail to improve group performance but will also create additional communication and coordination barriers. While many factors (e.g., users' background and commitment, organizations' reward systems, work norms, and policies and procedures) can contribute to the success of a groupware application, achieving a "critical mass" of users has been recognized as one of the keys for successful groupware acceptance (Ehrlich, 1987; Grudin, 1994; Markus, 1990; Markus & Connolly, 1990). The intrinsic value of a groupware technology increases and becomes more apparent as more and more users accept the technology. Consequently, more and more functions are available to adopters, which in turn reinforce their opinion about the technology and reaffirm their acceptance decisions.

Expectancy theory is considered one of the most promising conceptualizations of individual motivation (DeSanctis, 1983; Melone, 1990). Expectancy models are cognitive explanations of human behavior that cast a person as an active, thinking, predicting creature in his or her environment. He or she continuously evaluates the

outcomes of his or her behavior and subjectively assesses the likelihood that each of his or her possible actions will lead to various outcomes. The choice of the amount of effort he or she exerts is based on a systematic analysis of (1) the values of the rewards from these outcomes, (2) the likelihood that rewards will result from these outcomes, and (3) the likelihood of reaching these outcomes through his or her actions and efforts.

According to Vroom (1964), expectancy theory is comprised of two related models: the valence model and the force model. In our application of the theory, each user of a groupware application first uses the valence model to evaluate the application's outcomes (e.g., enhanced communication, increased ability to coordinate, better collaboration, and improved competence) and subjectively assesses the likelihood that these outcomes will occur. Next, by placing his or her intrinsic values (or weights) on the various outcomes, each user evaluates the overall attractiveness of the groupware application. Finally, the user uses the force model to determine the amount of effort he or she is willing to exert to use the application. This effort level is determined by the product of the attractiveness generated by the valence model and the likelihood that his or her effort will result in a successful use of the application. Based on this systematic analysis, the user will determine how much effort he or she would like to exert in using the groupware application.

The general research question examined by this study is "Can the valence and force models of expectancy theory explain the motivation of a user to use a groupware application?" Specifically, under the valence model, we investigate the impact of the potential outcomes of a groupware application upon users' motivation to use such an application. The four outcomes of groupware applications examined by this study are (1) enhancing communications among coworkers; (2) increasing ability to coordinate activities; (3) facilitating collaboration among coworkers; and (4) improving competence of job performance. Under the force model, we investigate the extent that the difficulty of using a groupware application will affect users' motivation to actually use the application.

RESEARCH METHOD AND RESULTS

The within-person or individual focus of expectancy theory suggests that appropriate tests of this theory should involve comparing measurements of the same individual's motivation under different circumstances (Harrell, Caldwell & Doty, 1985; Murray & Frazier, 1986). In response to this suggestion, this study adapts a well-established within-person methodology originally developed by Stahl and Harrell (1981) and later proven to be valid by other studies in various circumstances (e.g., Burton, Chen, Grover & Stewart, 1993; Geiger & Cooper, 1996; Snead & Harrell, 1995).This methodology uses a judgment modeling decision exercise that provides a set

Table 1.

If you use the groupware application (e.g., Domino Discussion or Lotus Notes) to the MAXIMUM extent in your job, the likelihood that:
You will enhance your communications with your coworkers is ....:..:…..... HIGH (90%)
You will improve your ability to coordinate job-related activities is ....…...... HIGH (90%)
You will achieve a better collaboration among your coworkers is ....:…….... HIGH (90%)
You will increase your general level of competence in performing your job is ……… LOW (10%)

Table 2.

DECISION A: With the above outcomes and associated likelihood levels in mind, indicate the *attractiveness* to you of using the groupware application in your job.
-5   -4   -3   -2   -1   0   +1   +2   +3   +4   +5
Very Unattractive   Very Attractive
FURTHER INFORMATION: If you exert a great deal of effort to use Lotus Notes in your job, the likelihood that you will be successful in doing so is ....…….............. LOW (10%)
DECISION B: Keeping in mind your attractiveness decision (DECISION A) and the FURTHER INFORMATION, indicate the level of ***effort*** you would exert to use the groupware application.
0   1   2   3   4   5   6   7   8   9   10
Zero Effort   Great Deal of Effort

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