CHAPTER I: INTRODUCTION AND BACKGROUND

"Technology adoption can differ based upon the perceptions of others and how they interact within the organization."

(Segrest, Domke-Damonte, and Miles and Anthony, 1998, p. 430)

Chapter Overview

Chapter I presents the introduction, background of the study, the statement of the problem, the purpose of the study and its significance, the research questions, the conceptual framework for the study, the assumptions, a definition of terms, the limitations, and the organization of the study.

Introduction

The literature reveals a rich history of quantitative and qualitative studies conducted on the topic of the diffusion and adoption of innovations in education, business and government. The military organization, however, has not been studied as extensively. Moreover, while researchers have contributed greatly to expanding our knowledge and understanding of the diffusion and adoption process, the literature reveals, however, few perception studies conducted to better understand the diffusion and adoption process from the individual's experiential perspective in the military.

The purpose of this study was to better understand from individuals' perspectives, how the diffusion (spread) and adoption (acceptance) of SkillSoft® an e-learning program, occurred in a military organization and how and what influences affected the process. A case study approach using in-depth interviews allowed me to capture employee perceptions of how diffusion and adoption of SkillSoft® (an e-learning program) occurred and how various influences (personal, organizational, technological, mandated policy and change) affected the process.

Background to the Study

Many research studies have identified the principles, elements, and influences associated with the diffusion and adoption process. Rogers and Shoemaker (1971, p. 18) defined the diffusion process as "the human interaction in which a person communicates a new idea to another person, group of individuals, or an organization." Rogers (1983, p. 21) defined the adoption as, "a mental process through which an individual passes from first hearing about an

innovation to final adoption. Rogers (1983) and Weinstein (1981) identified the characteristics of innovation and how an innovation's "relative advantage, compatibility, complexity, trialability, and observability" could affect adoption. Studies by Rogers and Agarwala-Rogers (1976) and Schein (1985) demonstrated how the organizational climate affects the adoption process. Rogers (1983, p. 6) found that, "Uncertainty, and the new users' desire to reduce this uncertainty causes them to seek out new information, as part of the individual's innovative decision-making process." Rogers (1962), Schein (1992) and Sherry (1997/98) identified influences that might be considered when diffusing and adopting technology. These factors include user characteristics of motivation, need for control, sense of self-sufficiency, user's attitudes and concerns as well as fears or uncertainties which are not predictable, organizational factors of culture, organizational structure, leadership, the organizational policies and procedures, technology factors of observable benefit, relative advantage, complexity, compatibility, trialability, and observability.

Garvin (2000), and Senge (1990) have used diffusion and adoption theory to better understand how to effectively diffuse technology and promote learning within organizations. I also used diffusion and adoption theory as a lens through which to better understand the movement of technology (i.e. an e-learning program called SkillSoft®) through the organization, but focused on the unexplored aspect of the participant's perspective of their experience with the process.

On the following pages, a brief background history of distance learning in the military is presented which is followed by an explanation of the specific practical problem that precipitated this study.

Brief History of Distance Learning use in the Military

> The United States military has made a commitment to use distance learning alternatives to train and to educate its personnel because they are deployed around the world. The military has a long history of using distance learning and distance learning technologies. The military's use of distance learning programs began in the 1940s with print-based correspondence courses and continued through the use of television courses in the 1950s. The Air Force Institute of Technology initiated the use of interactive distance learning programs in 1973, and the military's use of distance learning continues today. Among the distance learning methods employed by the military are United States Army systems for the development, delivery, and evaluation of training courses operated within the

TeleTraining Network, the Army Logistics Management Center, and Asynchronous Computer Conferencing, a computer-based delivery system for distance learning (Barry & Runyan, 1995, pp. 38-39).

The Military Organization Studied

The agency studied is headquartered in the United States. Agency offices are located in the Midwest, on the East Coast, and overseas. The agency's mission is to support combat commands in planning, synchronizing, and executing information operations (IO). The agency accomplishes this mission by providing IO planning, vulnerability assessments, and strategies for protecting the military's information systems.

IO is a new discipline in the military, and its doctrine, tactics, techniques, procedures, and training requirements are evolving. IO tasks require the use of multiple skill sets. IO skill sets are interdisciplinary in nature, incorporating expertise in combat arms, intelligence, computer networking and security, special operations, civil affairs, public relations, and psychological operations. The skill sets of the agency's personnel tend to be technical rather than administrative. The agency's training program is organized to provide the basic, advanced, and specialty skills sets required depending on the individual's training plan. A combination of training opportunities and field experience is required for an employee to become a qualified IO subject matter expert.

The agency is more of an operational unit (i.e., it deploys specialized teams in support of field commanders). The agency deploys teams worldwide to support its mission. The agency's organizational structure is hierarchical. The Commander has the rank of Colonel. His deputy is a GS-15, the highest pay grade for a civilian government employee who is not a member of the Senior Executive Service. The Division Chiefs are all Lieutenant Colonels. The communication channels are both formal and informal. The formal communications channels consist of traditional leader-to-leader, leader-to-subordinate, and higher-to-lower channels. In addition, there is informal peer-to-peer communication. Decision-making is delegated to Division and Branch Chiefs to better support the operational tempo (optempo) of the organization. Optempo is defined as the constant flow of work coming into an organization that is above what would be considered normal. This unit had a high operational tempo before September 11, 2001, but that optempo intensified considerably after the terrorist attacks on the United States.

Demographics of Personnel

Employees in this agency hold a variety of traditional military ranks and government civilian grades with contractors also being part of the mix of employees (Data derived from the agency's manning chart). Military ranks range from Enlisted E-4 to Officer 06. Civilian grades range from GS-7 to GS-15. Most employees are senior in grade and have many years of experience. The personnel mix of employees consists of approximately 33% military (officer and enlisted), 33% government civilians, and 33% contractors. Since the contractors were not authorized access to SkillSoft and not issued a User ID or password, then they were excluded from this study. So, for purposes of this study, the study population consisted of 176 personnel of whom approximately 50% are military personnel and 50% are civilian employees.

The youngest employee is 20 years old; the oldest is 60 based my findings. The level of education ranges from high school graduates to Ph.Ds. The skills required are primarily high tech and multidisciplinary in nature. Certain skill sets are unique to this organization and not found in the traditional military or civilian workforce. Employees are required to continually update their skills, and the focus of their professional development is on improving their job-related skills.

Sequence of Events

In the summer of 2000, the Commander of the military agency decided to introduce SkillSoft (an e-learning product), as a cost-effective way to meet employees' training requirements. SkillSoft Corporation offers a suite of courses, which feature lessons in communication, management, writing, team building, and financial affairs. The SkillSoft® program can provide professional development training to employees worldwide. Users can access these lessons from home or work through a Website or via an employee Intranet. See Appendix A for a listing of SkillSoft® courses.

The introduction of SkillSoft® marked the first time that military and civilian employees were asked to use an e-learning product for training. Management perceived that SkillSoft® was an innovation for the organization since this particular e-learning product had not been used on an agency-wide basis before. According to interviews with management, the intended audience for SkillSoft® was military personnel and civilian employees of the organization since contractors were not authorized to use it.

SkillSoft® was introduced with the assistance of representatives from SkillSoft Corporation from October to December 2000. The SkillSoft® implementation plan was intended to create

awareness, encourage trial and acceptance of SkillSoft® as a routine way of obtaining professional development training or education. Awareness of SkillSoft® was created through the distribution of flyers, e-mail messages, information papers, briefings at the Commander's Update and Non-Commissioned Officer's (NCO) meeting, and product demonstrations. (Appendix B contains a copy of the flyer used in the awareness campaign). Flyers and e-mail messages were sent to all employees. The e-mail introduced SkillSoft® and described the library of courses available, the benefits of completing SkillSoft® courses, information on product availability, and the process for obtaining access to SkillSoft® courses. The Commander and his senior NCOs made announcements at subsequent meetings stressing that SkillSoft® was free and could be accessed from home or work via the Internet or the agency's Intranet. Product demonstrations consisted of a 20-minute slide presentation about the product and included a tutorial on how to log on and use the product. The Training Branch issued SkillSoft® user IDs and passwords in December 2000.

SkillSoft® was implemented within the military agency between December 2000 and March 2001. During the week of January 11, 2001, senior management issued a policy memo that mandated that all civilian employees were to complete one SkillSoft® course by the end of their rating period. The memo also encouraged military personnel to take at least one course. The intent of the memo was to encourage use of SkillSoft®. On March 1, 2001, approximately 39 employees out of the 176 employees issued a User ID and Password had attempted or completed a course in the SkillSoft® Library of Courses (SkillSoft® User Report, March 2001). This lack of use of SkillSoft® caused management to ask, what was going on with the implementation of SkillSoft®?

The Chief of Training wanted to better understand why employees were trying SkillSoft®, so he could find ways to encourage other employees to try the product. The Chief of Training (personal communication, 5 March 2001) preliminary findings indicated that, one employee said he liked being able to take training whenever he wanted too, another employee said that she liked being able to access the program at home or at work while another said he preferred attending traditional classroom instruction and was not interested in completing a SkillSoft® course. And a few employees said they were not aware of, had not tried, or had not yet decided to use SkillSoft®.

So by mid-March 2001, the project leader (personal communication 16 March 2001) suggested that there appeared to be something going on with implementing SkillSoft® within the military organization based upon the low numbers of employees using the product. The project leader wanted to know, what was going on in the agency with the use SkillSoft®? Were employees aware of SkillSoft® and what was influencing the employee's' decision to try and use SkillSoft®? The Chief of Training (personal communication 16 March 2001) wanted to know how people felt about SkillSoft®. My research problem originated from the business questions that arose within the military agency so my research problem became, awareness of SkillSoft®, trial, evaluation and use of SkillSoft®, and influences on awareness, trial and use of SkillSoft®?

Statement of the Problem

The literature reveals how and why the diffusion and adoption process occurs within education, business, and government agencies but few studies have described and provided a better understanding of how it occurs within military agencies from an individual perspective. Past research by Rogers (1995) has indicated that as a new product is introduced to a group of individuals, there appear to be varying degrees of awareness, interest, and trial of that product among potential users. This same process has been revealed to occur in many organizations. The diffusion and adoption process as it is called, also has been shown to be affected by personal, organizational, technological and change influences. The military agency's practical problem of identifying why employees are trying and what was influencing their trial of SkillSoft® appears to be a diffusion and adoption problem. So, my research problem was to better understand how the awareness, interest, trial, evaluation and use of SkillSoft® was occurring in this military agency and the influences on that process.

Purpose of the Study

The purpose of this study was to better understand from an individual perspective, how the diffusion (spread) and adoption (acceptance) of SkillSoft® occurred in this military organization and how and what influences affected the process.

Significance of the Study

This study is significant because few researchers have described how the diffusion (spread) and adoption (acceptance) of an e-learning product occurred among employees of a military organization as perceived by members of that organization. Presenting the study participants personal images of the process adds a unique perspective on how the diffusion and

adoption process occurs in a military organization that has been lacking in the literature. Relating personal perceptions of the influences that affected interviewees' awareness, interest, trial, evaluation and use of SkillSoft® provides an irreplaceable account of how various influences (personal, organizational, technological, mandated policy, change) may have affected the process. This study captured the perspectives of a student e-learning experience in a military organization, which was recommended as a future research initiative by Bonk and Wisher (2000).

Research Questions

1. How did the diffusion (spread) and adoption (acceptance) of SkillSoft® occur among individuals within one military agency as perceived by members of the agency?
2. How did various influences (personal, organizational, and technological) affect the process?

Conceptual Framework for the Study

I used Rogers and Shoemaker stages of adoption to breakdown the adoption process occurring within the agency into stages for better data collection and analysis. Rogers and Shoemaker (1971, p. 101) described the five stages of the adoption process as:

(1) Awareness. The primary function of the awareness stage is to initiate the sequence of the later stages that lead to the eventual adoption or rejection of the innovation.

(2) Interest. The main function of the interest stage is to increase the individual's awareness of and level of information about the innovation.

(3) Evaluation. The individual applies the innovation to his/her present and anticipated future situation, and then decides whether or not to try it.

(4) Trial. The main function of the trial stage is to demonstrate that the new idea is in the individual's own situation and determine its usefulness for possible complete adoption.

(5) Adoption. At this stage, results of the trial are considered. On this basis of the trial, the decision is made to adopt (or reject) the innovation.

Using diffusion and adoption theory as a conceptual framework enabled me to shed new light on how the stages of the diffusion and adoption process occurred within a military organization from an individual perspective.

Assumptions of the Study

The following assumptions guided this study of the diffusion and adoption process:

(1) The easier an idea is to explain, to demonstrate the way it functions, or to associate it with other familiar concepts or existing technology, the more rapidly it is adopted by individuals.

(2) Individuals go though different stages of awareness, interest, evaluation, trial, and adoption when considering a new idea.

(3) There is always some uncertainty when considering new ideas and an individual's desire to reduce this uncertainty causes him or her to seek out new information as part of the decision process.

(4) An organization's culture can both hinder and encourage the diffusion and adoption process. That culture can hinder the process by failing to have policies that encourage the adoption of a new practice or new technology and by failing to provide adequate time during work hours to adopt a new practice or technology. An organization's culture can encourage the process through supportive policies, managers who encourage the adoption of a new practice or technology, and by allowing employees to experiment with a new practice or technology during work hours.

(5) Individual, organizational, and technological influences can affect the individual's willingness to adopt an innovation by both encouraging and hindering the diffusion and adoption process.

(6) Individuals must have a reason to change. As they progress through the diffusion and adoption process, many employees will try to understand how they can benefit from the change to the new way to obtain training through the use of distance learning alternatives.

Definition of Terms

(1) *Adoption* in an organization is the decision to make full use of an innovation (Rogers, 1995, p. 389) Conceptually defined, adoption means that employees will routinely use SkillSoft® as another means for obtaining training or education (in addition to or in lieu of attending traditional classroom instruction).

(2) *Change* involves the replacement of an already existing idea with another idea. Unlike innovation, which implies adoption of an idea perceived as new, change does not

necessarily involve a new idea. The idea being adopted may be perceived as new or may be familiar (Rogers & Agarwala-Rogers, 1976, p. 153).

(3) *Communication* is a process in which participants create and share information with one another in order to reach mutual understanding. A typical communication model consists of a source, an encoder, a message, a channel, a decoder, and a receiver. However, communication in organizations is operationally defined as the process by which an idea is transferred from a source to a receiver with the intent of changing the receiver's behavior or opinion of the idea (Rogers & Agarwala-Rogers, 1976, pp. 9-10).

(4) *Diffusion* is the spontaneous spread (dissemination) of new ideas or concepts from one person or group to another. For the purposes of this study, the terms diffusion and dissemination are interchangeable. Diffusion occurs over time and at different degrees of interest and understanding by the individuals involved in the process (Rogers, 1983, pp. 5-7). Conceptually defined, diffusion means the spread of an innovation (SkillSoft®) from management or employees to other employees. The diffusion process informs, encourages, and promotes the understanding of distance learning alternatives.

(5) *Distance learning* is a system and a process that connects learners with distributed learning resources. The terms distance learning and distance education are synonymous for purposes of this study.

(6) *Implementation* occurs when an individual "puts the idea into use" (Rogers, 1983, p. 20). Conceptually defined, implementation of SkillSoft® means that employees are using SkillSoft® to obtain training or education.

(7) *Innovation* is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 1995, p. 11).

(8) *Shared vision* is a state of mind (a shared mental model) among all or most of the individuals within an organization that the change to the new idea is agreed upon and should be implemented (Senge, 1990, pp. 206-207).

Limitations of the Study

This research was limited to one organization that was diffusing, adopting, and implementing SkillSoft®. The research was further limited by the degree of access granted by individuals within and the management of the organization. The study was also limited by the willingness of the participants to tell their stories of diffusion and adoption. This study communicates the

viewpoints of the participants in the study. Assuming the study participants' truthfulness, the study's findings were based upon their perceptions and thoughts.

Organization of the Study

This dissertation is divided into five chapters.

Chapter I presents the introduction, background of the study, the statement of the problem, the purpose of the study and its significance, the research questions, the conceptual framework for the study, the assumptions, the definitions, the limitations, and the organization of the study.

Chapter II is a review of literature relevant to this study. Included are: the introduction, research related to this study, a summary, gaps in the research, and where this study fits into the literature.

Chapter III presents the method for the study. Included are: the chapter introduction, the research questions, the research design, the case study description, the methods and procedures, the conduct of the interviews, the researcher's role, the data analysis, the interpretation, validity and reliability, and the researcher's biases.

Chapter IV presents the research findings of the study. Included are: the chapter introduction, interview topics, interview questions, participant's response, the researcher's analysis, and a summary of the key findings.

Chapter V presents the insights, contribution, and recommendations for future research arising from this study. Included are: a restatement of the research questions and method, review of the findings by research question, insights, contribution to literature, and questions for future research.