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Abstract

The preparation of audit work papers is central to the auditing task. They provide the principle support for the auditor's report and aid in supervising and conducting the audit process. This study reports the results of a GSS mediated study of what auditors perceive to be important issues concerning the transition from a paper-based to an electronic audit work paper system. Innovation diffusion theory provides a framework for understanding these perceptions. Four auditors used a GSS to identify the factors necessary for successful implementation of this technology. These factors were matched to the constructs of diffusion theory to reveal the relative importance of and relationships among the factors and diffusion constructs.

Introduction

This study examines auditors' perceptions of the issues important to making a transition from a paper-based to an electronic audit work paper system (EWPS). An EWPS is a computer based technology that automates the process of preparation and review of audit work papers. Work papers are central to the audit process. They provide the principle support for the auditor's report and aid in the conduct and supervision of the audit. Prior audit research in the work papers area has been confined to the study of memory tasks associated with their preparation and review (Johnson, 1994; Moeckel,1990; Moeckel and Plumlee,1989).

Identifying the factors affecting the diffusion to audit teams of software designed to support the audit work paper preparation and review process is the purpose of this study. Diffusion is defined as "the process by which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas" (Rogers 1995). In this study the innovation is the EWPS. The social network is a group of audit teams. The communication channels include both formal and informal networks. Innovation diffusion research provides a framework for understanding issues that arise during the adoption process. Identifying the auditors' perceptions provides for elaborating the theoretical framework in the context of the audit task and the EWPS.

Background

Innovation Diffusion Theory

Innovation diffusion theory asserts that several factors affect the eventual adoption or non-adoption of an innovation.(Rogers 1995, Tornatsky and Klein 1982) These factors are:

- Relative Advantage – The degree to which an innovation is perceived as better than the idea it supercedes.
- Compatibility – The degree to which an innovation is perceived as being consistent with existing values, past experiences, and needs of potential adopters.
- Complexity – The degree to which an innovation is perceived as difficult to understand and use.
- Trialability – The degree to which an innovation may be experimented with on a limited basis.
- Observability – The degree to which the results of an innovation are visible to other adopters.

This model provides a perspective for understanding the adoption of the EWPS.

Audit Work Papers

The overall objective of an audit is to express an opinion on whether or not the financial statements are fairly presented in conformity with generally accepted accounting principles (GAAP). In order to express this opinion, the auditor must reduce to an acceptably low level the risk that the financial statements contain a material misstatement. In order to accomplish this, the auditor first identifies assertions for each material component of the financial statements and considers the risk of a material misstatement for each one. Audit objectives are then established related to each assertion. (Guy, et al. 1990) Specific procedures are designed that will generate "sufficient competent evidential matter" to afford a reasonable basis for an opinion on the financial statements under audit. (AU § 150.02) The working papers perform multiple functions. They "provide the principal

support for the auditor's report" (AU § 339.02), and aid the auditor in the conduct and supervision of the audit. According to AU § 339.03, "Working papers are records kept by the auditor of the procedures applied, the tests performed, the information obtained, and the pertinent programs, analyses, memoranda, letters of confirmation and representation, abstracts of company documents, and schedules or commentaries prepared or obtained by the auditor." Although the quantity, type and content of the working papers vary with the circumstances of an audit, they should always achieve certain results. They should be sufficient to show that the accounting records reconcile with the financial statements or other information upon which the auditor is reporting. According to AU § 339.05, the working papers should ordinarily contain documentation that:

a) The work has been adequately planned and supervised.
b) A sufficient understanding of the internal control structure has been obtained to plan the audit and to determine the nature, timing, and extent of tests to be performed.
c) The audit evidence obtained, the auditing procedures applied, and the testing performed have provided sufficient competent evidential matter to afford a reasonable basis for an opinion.

Many aspects of this process are being automated by the integration of new computer programs into the audit process. This study identifies factors that auditors believe impact this process.

Research Question

The focus of this research is to identify the factors that lead to successful adoption of computer based audit technology. The broader goal is to better understand how to improve the introduction of technology for core business processes.

Method

The procedure used for data collection and analysis consisted of one multi-step session using a Group Support System (GSS). The four participants were auditors who averaged 3.4 years experience and had completed an average of 40 audits. Data collection included identification of concepts, identifying categories of similar concepts, classifying the concepts into the categories, and then identifying relationships between categories. The GSS session began with the participants responding to the following framing statement in an electronic brainstorming activity:

Many auditing firms are considering moving from paper-based to computer-based systems to support audit processes. It would be useful to know what you believe are the abstract concepts or practical issues that contribute to the success of such a transition.

Data analysis consisted of coding the concepts in terms of the diffusion construct with which they were associated. This coding and the concept categorizations of the participants provided for deriving the association of each category with a diffusion construct. Using the cognitive maps showing relationships among categories and the association of categories with diffusion constructs enabled illustration of relationships among the diffusion constructs.

Results

The categories resulting from the GSS session are presented in Table 1. The participants generated 75 concepts and 9 categories. Moderate agreement existed on the placement of concepts in categories, Kappa = .48, p < .05. Rankings of the categories by cognitive centrality were calculated from the individual cognitive maps. Significant agreement also existed among these ranking, Kendall W = .54, p < .05. Agreement on the categorizations and rankings implies that the participants had a shared understanding of the meaning of the categories. The group cognitive map show relationships among the categories identified by at least two of the participants are presented in Figure 1. Figure 1 indicates that Audit Efficiency and Audit Cost were the primary goals of participants, and that the System Security and Training were important constraints associated with the adoption of an EWPS.

The association of diffusion constructs and categories are presented in Table 1. Table 1 shows the categories and constructs ranked by cognitive centrality. Relative Advantage was most cognitively central, followed by Compatibility, then Complexity and Trialability. Figure 2 shows the map of relationships among diffusion constructs derived from the group cognitive map of the categories. Determining the Relative Advantage of EWPS was the primary goal of the participants. This was strongly influenced by Compatibility issues, and less strongly influenced by Complexity and Training issues. Thus, it seems that the auditors believe that systems must demonstrate a relative advantage to be adopted, i.e., relative advantage was most cognitively central. Compatibility with existing practice influences perceptions of relative advantage and also was important to the participants. The complexity and trialability were less important influences over the adoption of an EWPS.

Summary

This research reveals factors that lead to successful adoption of an electronic work paper system from the perspective of auditors. These factors suggest relationships among the diffusion constructs that may influence the adoption process.

References

References available upon request from Joseph J. Ferki (jferki@vt.edu).

Table 1. Category Definitions Ranked by Cognitive Centrality

Category Name	Category Definition	Rank	Concept
Audit Cost	Impact on clients cost, firm cost, and audit efficiency.	1	Relative Advant.
Audit Effectiveness	Issues that impact the effectiveness and quality of the audit.	2	Relative Advant
Training	Training staff at beginning and continuously.	3	Complexity
Hardware Cost	Any issues concerning the initial cost of equipment and updates.	4	Complexity
System Adaptability	Ability of system to be adapted to particular clients and to particular audit process needs.	4	Complexity
System Security	Refers to any issues related securing data or access to audit firms systems.	6	Compatibility
Transition Issues	Includes any mattes related to the initial or ongoing transition of manual audit clients to automated audit clients.	7	Trialibility
Human Resources	Issues dealing with impact of the system on the firm personnel.	8	Complexity
System Integration	Issues dealing with interfacing of audit process systems with time and billing and other information systems of the firm.	9	Relative Advant
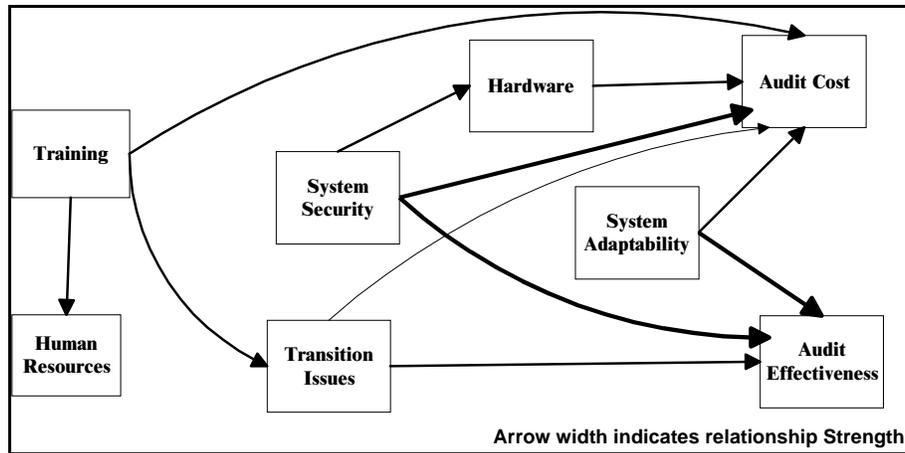
Figure 1. Category Relationships Identified by at Least Two Participants
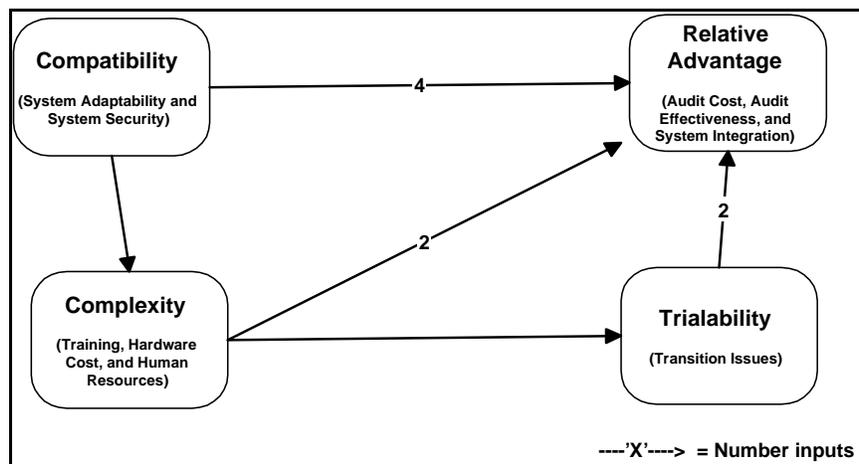
Figure 2. Relationships Between Diffusion Concepts–Derived from Cognitive Centrality Map