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Adoption of Internet Based Software: A Field Study

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Abstract

Information technology is being increasingly used to support new organizational forms that stress distributed collaborative work such as virtual organizations and dynamic network organizations. In particular, telecommunications technology is being used to support organizations where two or more organizations or organizational units are required to collaboratively work on a project. Recent advances in telecommunications technology has made the support of collaborative work using Internet based software possible. This study assesses the factors that may influence the adoption of Internet based collaboration software by distributed teams. A research model depicting the potential factors that may influence the adoption of Internet based collaboration software by distributed teams to perform collaborative work is presented. The methodology is experimental in nature with geographically distributed participants carrying out collaborative teamwork using Internet based collaborative work software. The results of the study will be presented at the convention.

Introduction

Traditionally, group and collaborative work in organizations is supported by groupware and related software implemented over local area networks. Groupware is software applications targeted at groups and organizations and is a merging of computers, databases and communication technology [1].

Telecommunications technologies that may support the work of distributed teams include the Internet and Internet based software such as meeting software, audio and video conferencing software, Internet enabled groupware, messaging, application sharing software, remote access software, etc. In addition to these technologies, a host of supporting technologies such as satellite communications, high bandwidth communication media, Internet access technologies, telecommunications devices etc., are necessary to provide telecommunications infrastructure. Although it is acknowledged that the supporting telecommunications technologies may have an impact on the use of Internet based collaboration software, a study of such issues requires substantial financial and technical resources, and is beyond the scope of this research.

Internet based Collaboration software that can potentially be used to support collaborative work include asynchronous communications tools such as electronic mail, as well as synchronous communication tools such as chat, file transfer, audio conferencing, shared whiteboards and application sharing. A whiteboard is a shared area on a computer screen where users can concurrently draw using a mouse or type using a keyboard [2,3,4]. Application sharing enables users to share a software application that is running on one of the users computers [2,3,4]. Since telecommunications technology to support both asynchronous and synchronous communication as well as collaboration is now available, it is suggested that Internet based collaboration software coupled with other telecommunications software such as electronic mail and discussion boards can be used to support distributed collaborative work.

When Internet based collaboration software is available for use by distributed groups to perform collaborative work, the following question should be addressed:

What are the factors that influence the adoption and use of Internet based collaboration software by distributed teams?
This study attempts to answer the above question regarding the factors that influence the adoption of Internet based collaboration software to support distributed work.

**Theoretical Background and Research model**

The technology acceptance model (TAM) proposed by Davis (1989) [5] is a widely accepted model of information technology (IT) usage, having received empirical support from various studies [5,6,7,8]. According to this model, users intent to use IT is impacted by attitudes which include perceived usefulness and perceived ease of use [9]. In other words, the technology acceptance model says that the perceived characteristics of the technology will have an impact on the users acceptance of the technology. In addition to perceived ease of use and perceived usefulness, the perceived relative advantage [9] will also have an impact on the users adoption of the technology.

Since the technology under consideration in this study is telecommunications technology that can act as a communications medium, according to communications theory, the users perceptions of the communications media will have an impact on the acceptance and use of the technology [10]. Also, when studying the effect of a communications medium, according to media richness theory [11], the perceived richness of the medium will have an impact on the use of the communication medium. So to summarize, it is expected that the perceived characteristics of the technology will have an influence the use of Internet based collaboration software.
In addition to technology factors, social and control factors such as certain characteristics of the individuals adopting the technology may also have an influence on technology use (e.g. 7, 8, 9, 12, 13, 14, 15). Prior experience has also been found to be a determinant of behavior [16, 17, 18, 19, 20] and hence prior experience with computers is expected to have an impact on the acceptance of the technology. The use of technology will also be impacted by the self-efficacy [21] of the users [13]. Other characteristics of the individual that may have an impact on the adoption of Internet based collaboration software include the perceptions about group work and demographics, which will be treated as control factors.

The adoption of Internet based collaboration software can be assessed in terms of the extensiveness of the use of the software [2]. In addition, Davis (1989) [5] used self-reported use of technology to assess users acceptance of information technology. These two measures of adoption are employed in this study.

**Proposed Methodology**
The proposed methodology is quasi-experimental in nature simulating geographically distributed participants collaboratively working using Internet based communication and collaboration software. The study of the factors that influence the adoption of Internet based collaboration software will be facilitated by two sites running Internet based telecommunications software that can support collaborative work: messaging applications, threaded discussion groups, audio conferencing, chat, whiteboard and application sharing. These sites will be supported by a dedicated Internet server.

The subjects are MBA students enrolled in two geographically separated sections of a graduate information systems class. The subjects participate in the experimental study as part of their course work. The study group serves as a surrogate for inter-organizational and intra-organizational teams working collaboratively. Subjects are assigned a group task which is to be completed primarily through the use of Internet based software that can support collaborative group work. Using the software, the subjects interact with each other, simulating the interaction of geographically distributed team members. Project groups of four or five members are randomly assigned with each group being made up of members of the two classes offered at both sites. The group members will have access to collaboration software at their respective locations which enables them to communicate with their team mates and perform collaborative work. Conferencing and meeting software will facilitate meetings between users who are physically located at geographically distributed locations.

The individual characteristics of the participants that may influence adoption is measured using an instrument that is administered before the start of the experiment. Users perceptions of the technology will be measured after their initial exposure to the technology, but before they use it to perform the experimental task. The technology use is measured using a questionnaire administered after task completion, but before project submission. The instruments to be administered to the subjects are being derived from existing validated instruments drawn from the literature. The instruments will be adapted suitably with respect to their focus and context to customize them for this study.

In addition to the questionnaires, subjects are required to keep a detailed log of their activities pertaining to the project. It is expected that the contents of the logs will provide qualitative data, which could potentially enrich the study, as well as provide explanation for any unknown occurrence.

**Present Status of the Study and Convention Deliverables**

The field study and data collection are over. Ten groups of three to four members participated in the study. Data analysis is in progress. Further details of the study, as well as complete results will be presented at the convention.

**References**

References available upon request from first author.