

# **Empirical Investigation of the Relationship between Use and Impacts of Collaborative Information Technologies**

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## **Extended Abstract**

### **1. Introduction**

Collaborative information technologies (CIT) to support groups working together or collaborating to accomplish tasks is becoming increasingly popular. Practitioner reports suggest that collaboration can have a significant influence on business performance and can lead to a sustained competitive advantage in a turbulent global environment (Frost and Sullivan, 2006). However, despite the large investments that organizations have been making in CIT (Hansen and Nohria, 2004), recent empirical evidence suggests that the utilization of CIT in organizations across five global regions is surprisingly limited and it generally does not meet the expectations of the practitioner and academic communities, in spite of substantial efforts of organizations to make such technologies available/accessible to their end-users (Bajwa et al., 2008). Is it plausible that CIT use may not have substantial impacts or lead to impacts that are not desirable to organizations? Our research focuses on addressing this research question through a large-scale macro-level investigation.

### **2. Research Background**

Even though the impact of IT on organizations, in general, has been widely researched and debated, the organizational impacts of CIT specifically, have not been explored in spite of the evidence that CIT use (Lotus Notes) in an organization can lead to significant organizational level impacts (Vandenbosch & Ginzberg, 1996). Moreover, the focus in the past IT studies has been on specific technologies, rather than on IT functionality that supports end-user tasks (Jasperson et al., 2005). For efficient and effective collaboration, CIT should be able to support a variety of tasks, including: communications, information and knowledge sharing, decision making, report writing/information pooling, planning, scheduling, monitoring progress, time management, issue resolution, discussion and brainstorming, and process design (Pavlou et al., 2008, Meier et al., 2007; Hansen & Järvelin, 2004, Fjermestad, & Hiltz, 2000). Based upon anecdotal evidence and secondary sources, CIT use can impact organizations in many ways. They can:

- a. Increase organizational efficiency (time savings, quick reaction to changes, faster decision making, increased productivity).
- b. Increase organizational effectiveness (more appropriate responses to changes, facilitate innovations, improve quality of decision-making, provide the right mix of products/services etc.).
- c. Lead to strategic impacts (enhance relationships between customers, suppliers, and business partners, make organizational structures flatter, and improve business process).

Although there is awareness of frequent and expensive IT failures (McManus & Wood-Harper, 2007), there is little aggregated knowledge on negative organizational level impacts of IT. CIT use can bring about negative impacts on organizations, including: increased interruption and fragmentation of work, increased information overload, decreased management control, and decreased independence.

### **3. Study Methodology**

A survey design was adopted to investigate CIT use and their organizational impacts. A review of the literature (highlighted above) was conducted to identify the types of tasks executed in collaborative environments and the organizational level impacts brought about by CIT use. Since most of our study constructs had not been explored in previous studies, initial measures were developed by a team of six researchers in five global regions. All of these researchers have been actively involved in research on CIT over the last 15 years. The survey instrument was then pilot tested in three Australian organizations. Feedback from the pilot test was used to refine/modify the study constructs and their measures.

A large-scale study was undertaken in Australia in 2008. An email along with a hard copy of the survey was mailed to 465 CIOs of the top 1000 organizations in Australia. The email provided a link to the electronic version of our survey in case the respondents preferred completing the survey electronically. A cover letter was included in the mailed surveys. The letter explained the purpose of our study. Clear instructions (including definition of IT supported collaboration, voluntary participation, confidentiality of responses etc.) for the respondents were incorporated in the cover letter and they were requested to forward the survey and the cover letter to the executive most knowledgeable about IT supported collaboration in their organization, if other than themselves. These instructions were also included on the web survey. A second hard copy mailing was sent out after about a month.

A total of 83 responses (web and traditional mail) were received. One hundred and thirty questionnaires bounced back (i.e. were returned unopened, or the email could not be delivered) possibly because the addressed executive could not be located. Ten survey responses were discarded due to substantial missing data. As a result, 73 usable responses were received from three hundred and forty surveys that reached the addressed executives. We did conduct non-response bias tests and found no significant differences in majority of the study variables between the early and late respondents.

#### 4. Data Analysis

The preliminary analysis of data (using factor analysis) identified three main types of collaboration tasks. These include: primary tasks (information and knowledge sharing, decision-making, and report writing), secondary tasks (communications, scheduling, monitoring progress), and tertiary tasks (issue resolution and brainstorming). Factor analysis of organizational impacts resulted in five categories of impacts including: strategic impacts, efficiency-oriented impacts, effectiveness-oriented impacts, work-related impacts, and isolation impacts. Our findings indicate that all the three types of collaboration tasks (primary, secondary, and tertiary) are significantly and positively correlated with efficiency-oriented impacts, strategic impacts, and effectiveness-oriented organizational-level impacts. No significant correlations were found between any of the three IT supported collaborative tasks and work-related or with isolation impacts at the organization level. In our presentation, we will discuss our detailed data analyses and the implications of our findings for research and practice.

#### 5. References

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