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The Prerequisites for Learning from Collaborative Technologies

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Abstract

There has been a lot of focus on collaborative technologies as a mean of nurturing knowledge creation and knowledge sharing within organizations. The advance of the web has revitalized interests in collaborative systems to build intra-organizational learning communities. However, a number of organizations that have adopted these technologies realize that several antecedents are required for organizational learning to occur. This research focuses on identifying the different enablers of organizational learning resulting from the adoption of collaborative technologies. The research involved the study of three organizations that have implemented Lotus Notes as a means of actualizing organizational learning. The findings maintain that organizations need to interject these collaborative systems as part of a formal organizational structure for members to learn from it. Three significant constructs are identified as important stipulations for learning from collaborative technologies. These constructs are methods, staffing, and incentives. The paper will examine the role of each to organizational learning and the inter-relationships that exist among them.

Introduction

Organizational learning is defined as the realization of improvements in organizational performance as a result of experience gained through decision cycles (Argyris and Schön 1978, Fiol and Lyles 1985, Huber 1991, Epple et al. 1999). Several of these researchers argue that the acquisition of knowledge pertaining to organizational experiences and the interpretation and dissemination of such knowledge to decision-makers will improve the quality of decisions and reduce the time required for organizations to respond to various internal and external stimulus. Collaborative tools are systems designed to improve group communication by providing tools for the acquisition and dissemination of information (DeSanctis & Gallupe 1987). Different features have been supported, ranging from mere communication to more complex systems for structuring decision analysis. Interest in the technology stems from the belief that collaborative work is capable of improving organizational performance beyond the individual's efforts due to the synergy of the group (George, Easton, Nunamaker 1990). The adoption of collaborative tools, while enabling organizational learning, is not a warranty without the restructuring of organizational design to support the initiative. There are several antecedents to organizational learning, acknowledged by research in organizational development,

that need to be recognized by researchers and practitioners in the field of collaborative systems (Myers 1996, Mohrman et al. 1995, Cash et al. 1994). In the area of organizational development, it is strongly believed that knowledge management initiatives will result in learning only when organizations intervene to modify elements of organizations' structure like division of labor, power structure, coordination mechanisms, and networks of informal relationships. In this paper, we focus on identifying elements of the organization that act as catalysts for organizational learning from collaborative technologies. Three different organizations have been studied to identify these elements. Three main factors of organizational design emerged from the data collected. These are methods, staffing, and incentives.

Research methodology

This study involves three software-developing organizations that adopted Lotus Notes as a collaborative tool for knowledge creation and knowledge sharing. At all three sites, the technology was adopted to build a frame of reference for developers to utilize when collaboratively delivering solutions to customers. Data from the three sites was collected to identify the elements of organizational design that enable organizational learning from collaborative systems. The three cases studied exist in three different companies that belong to three fundamentally diverse industries—oil and gas, telecommunication and software consulting. The names for all units studied and their respective organizations have been masked to protect their confidentiality.

Case 1: The Energy Solution Group (ESG) at SCC, a leading software consulting firm. ESG develops accounting systems for customers in the energy industry. They realized the importance of capturing best practices and reusing them to develop applications at a fast rate.

Case 2: The Customer Billing Systems (CBS) at TCC, a worldwide telecommunication firm that provides local and long distance services to customers worldwide. Several attempts have been launched within the organization to capture corporate knowledge and disseminate it among the different information seekers within the organization.

Case 3: OGC an Oil and Gas Company (OGC) that operates worldwide. The department studied developed software solutions for refineries and chemical plants operation.

In our attempt to generate a descriptive theory of the organizational factors that enable the occurrence of

organizational learning from collaborative technologies, the grounded theory methodology for qualitative research was chosen to guide the data collection and data analysis of cases studied. The basic concept behind grounded theory methodology is to generate a theory from the data collected during the length of the study as opposed to deducing the theory from a set of prior assumptions. The process of generating a theory from the data implements the comparative analysis method. Comparing the similarities and differences between the different cases helps define the scope of the theory and broaden its explanatory and predicting power (Eisenhardt 1989).

The information was mainly collected through structured interviews. A set of open-ended questions were posed at the beginning of the interview to allow the interviewee to freely express beliefs and their relation to personal experiences. The questions focussed on determining the level of satisfaction organizational members exhibited with the degree of organizational learning they experienced from the use of collaborative technologies. All interviews were taped and transcribed.

The researchers alternated between the data collection, coding and the data analysis to opportunistically decide on new sources of data required for grounding the theory. The data analysis started with the transcription of every single interview and the insertion of the researchers' comments in the background of each document. Every transcribed interview was carefully read for the extraction of codes. QSR NUD*IST software was used to dissect every interview to a set of quotes categorized under a code. The package allowed the transcribed interviews to be imported as text files and subsequently each interview was browsed and every sentence categorized. This process of coding is known as *open coding* in grounded theory methodology (Strauss and Corbin 1990). The main focus was to compare and contrast the forms of enablers to learning from collaborative technologies.

Findings

In spite of the notable enthusiasm about the tool as expressed by developers in all three organizations, organizational learning in the form of knowledge creation and knowledge sharing is limited. All developers interviewed assert that knowledge sharing and possibly knowledge creation occur among members of certain projects but never rise to the organizational level. This has been attributed to a number of deficiencies in the organizational design that did not allow for learning to occur beyond the boundaries of projects. These deficiencies were reported in all three sites and in fact echoed by several developers in each site. The strong evidence discerned in the data collected is also supported by researchers in the field of organizational development (Myers 1996, Mohrman et al. 1995, Cash et al. 1994). In

this area of research, it is strongly believed that knowledge management initiatives will result in learning only when organizations intervene to modify elements of organizations' structure like division of labor, power structure, coordination mechanisms, and networks of informal relationships. In this paper we focus on three main elements of organizational design: methods, staffing, and incentives.

Methods

The existence of collaborative technologies within the organizations studied is not perceived as a strong advocate for learning at the organizational level. The fact that there is no formal methodology for synthesizing and aggregating the bulk of knowledge residing in the shared databases makes it hard for developers to learn from the experience of others outside their immediate group. Developers complain that information available through the knowledge base is not at a level of abstraction that redeems its reuse within different contexts. In addition, there is no effort to consolidate different pieces of information within a domain to build a coherent domain model that members can rely on as a frame of reference. One developer explains the problem saying:

A lot of the elements that comprise the database are very line specific to [one of their customers]. We have made it available to some of the other projects and subsequently lost connection with those other projects with respect to how they are using that same database and how they are modifying it. Some effort could probably be spent to go and reconsolidate all the different copies of this that are out there and develop maybe a cohesive, complete version of the same data base.

Thus, the fact that tools exist and that organizational members use them to communicate their experiences do not warrant that organizational learning will occur. Unless there is a method to process information residing within the memory into a high level abstract design that can be easily adapted to different situations, learning will be purely opportunistic.

Staffing

The problem of consolidating information within organizational memories to augment learning gives rise to another problem regarding roles and responsibilities. With the ever increasing workloads of organizational members and the growing trend in decentralization, the responsibility of synthesizing information becomes an issue. Without the existence of a specific role for

knowledge management, the initiative will be viewed as an additional burden to the existing workloads. Several developers interviewed justify their lack of support for abstracting information to allow its use by other groups saying:

Outside the group it gets a little more difficult. Time is chargeable. I can say I'm working and couldn't take three hours away from my client and the work that I'm supposed to be doing to go help someone who has nothing to do with my client. Time becomes an issue of chargeability, who's paying for that, and is it causing you to neglect your client?

I don't think people have time in some cases to share information unless they're in a close knit functional group to communicate what's going on, to share in some of the things that are going on.

Information sharing becomes more difficult at a departmental level because you end up having project teams that are so concentrated on working on their own projects, trying to deliver their actual software piece. We don't really allow that much time for developers to work on solutions so that they can be shared across the whole department.

The lack of a role for managing knowledge assimilated by collaborative technology sends a message to organizational members that the initiative behind organizational learning is not a priority to top management. As one developer explains:

A lot of these things have good intentions but they never, never get off the ground because people just don't have the time and management is never dedicated. If they really think something is really important, they usually dedicate someone to the cause and make that part of their job description and review their performance on that particular topic. That if they really want something changed.

Incentives

The lack of organizational incentives for managing information residing within the databases of collaborative tools further aggravates the impact of the lack of defined roles. The three organizations studied did not have any formal mechanisms for rewarding members who contributed information to knowledge bases to invigorate organizational learning. Though the organizational culture of all three sites nurtured a personal drive within developers to share information and contribute to organizational memories, the effort of transforming idiosyncratic experiences to meaningful cues is still patriotic. It becomes apparent that learning requires a motivation of both the knowledge generators and the knowledge users. As one developer explains:

If we were set up to seriously invest in organizational learning then part of the process would be providing incentives to both knowledge creators and knowledge users because you need both. You need people to go out there and find the right information to take decisions, and you need people to take the time to take what they have and abstract it to make it reusable and stick it into our repository.

Conclusion

Though collaborative technologies have been highly touted for their ability to foster organizational learning, this paper argues that such claim is highly speculative. The adoption of collaborative tools must be surrounded by formal mechanisms that support organizational learning. In a study of three organizations that adopted Lotus Notes to foster organizational learning, evidence from the data collected asserts that collaborative tools must be supported by three important elements of organizational design:

1. formal methods to synthesize knowledge,
2. organizational roles to manage knowledge and
3. incentives to motive the creation and use of knowledge.

References available upon request from author.