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Chapter VI

The Effects of E-Collaboration Technologies on Groups

Why Distributed Improvement and Learning?

The business environment since the 1990s is characterized by a tremendous explosion in the amount of information flowing within and outside organizations. Information flows internally between organizational functions (or organizational roles, usually distinguished by different job titles). Information flows outside organizations when communication takes place between the organization and one of its suppliers or customers.

As discussed in previous chapters, one of the main reasons why such an information flow explosion is taking place is the specialization of knowledge. As more and more knowledge is produced on a global scale, the scope of knowledge that is possessed by individuals becomes increasingly more specialized. Individuals strive to hold in-depth knowledge in a very limited number of fields and subjects; in other words, they specialize. Specialization seems to be, to a large extent, an involuntary phenomenon, which follows from human cognitive limitations and, perhaps most importantly, time constraints.

In the current business environment, those who do not specialize in one or a small number of fields tend to become less competitive in professional terms, because they do not have the time to acquire the knowledge and skills needed to compete with others who specialize in specific fields of knowledge.

If this conclusion sounds a bit too immoderate to you, try to think of anyone who could be a top criminal lawyer and, at the same time, an internationally renowned brain surgeon. Even if we are talking about a super-genius here, time constraints will prevent this from happening, as both specialties require years and years of study and focused practice to be properly performed.

However, as the number of different knowledge specialties increases, so does the need for organizations to hire and manage groups of experts who specialize in different subject areas. A large and diversified financial services firm, for example, may have to maintain hundreds of experts who specialize in different financial services. Each of these services (e.g., mutual fund management and securities analysis) are carried out by divisions that are made up of dozens of experts who specialize in different economic sectors and industries (e.g., Asian government bonds and domestic high-tech stocks). The existence of such knowledge variety leads organizations into a high degree of departmentalization (Hunt, 1996; Kock & McQueen, 1996, 1998a) or the organization around a heterogeneous structure of work teams (Eason, 1996) to cope with the management complexity that it generates.

Previous studies show that a high degree of knowledge specialization and the resulting high degree of departmentalization correlate with an intense flow of information. My own research on this topic suggests the existence of a very strong correlation between the number of organizational functions (e.g., mutual fund manager, market analyst, computer programmer, securities trader) in a business process and the number of information exchanges in it[1]. That is, the trend towards knowledge specialization seen today is also leading to a severe increase in the amount of information that has to be transferred in organizations.

To complicate this picture a bit, previous research has also pointed to a high correlation between knowledge and information flow[2]. That is, as the flow of information increases, so does the flow of knowledge. In fact, this seems to be caused by another interesting cognitive phenomenon. There appears to be an information exchange threshold above which knowledge needs to be exchanged, as well. The existence of such a threshold can be intuitively understood through the observation of the communication that takes place between pairs of workers engaged in a common business process. For example, let us consider two people engaged in the process of developing a new toothbrush, each of them being an expert in their own field (e.g., plastic materials resistance and oral preventive medicine). At the beginning of their interaction, these two people exchange descriptive information so that each of them can reach their own conclusions about their plans for new toothbrush features. However, at a