Chapter 7.8
Trans-Disciplinary Collaboration and Information Systems

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INTRODUCTION

In the era of globalization, the use of technologies like the Internet has created possibilities for individuals to interact across geographical locations. Businesses are grasping the benefits of collaboration and gaining from extending it inside and outside traditional boundaries (Doz & Kosonen, 2007; Evans & Wolf, 2006). It is common nowadays to see a manufacturing process being undertaken by a number of groups from suppliers and several tiers that connect across supply chains (Christopher, 2005). Information systems and information technologies support these activities by facilitating the streamlining and automation of interorganizational information flows (Galliers, 1999). However, despite the increasing availability of systems and technologies to facilitate collaboration and online work, it is far from clear what type of impacts such systems are generating in the work of individuals (Meng & Agarwal, 2007), and how they can support collaboration outside organizational boundaries. To foster collaboration, managers need to enable coordination between groups and to ensure their autonomy, while at the same time guarantee delivery of value to the business. How can businesses develop collaborations and with them obtain competitive advantages? What are the roles that information systems and technologies can play?

Evans and Wolf (2006) present two key examples of business collaboration (i.e., the Linux community and the Toyota production systems) which show how traditional business practices need to be challenged if not transformed radically. According to them, organizations should devise simple and modular tasks so that different suppliers (or internal teams) can undertake them with few guidelines. Collaboration needs to be kept simple and open. It needs to be fuelled with a high number of small-scale interactions inside and outside organizations with simple (i.e., standard)

technologies to support them. Work needs to be made visible so that information about it can be continuously updated and shared. A number of options (e.g., for production or service processes) needs to be maintained so that innovations do not focus only on what works well at a particular moment in time, but what could be valuable for the future. Organizational structures should be replaced by networks of leaders who act as connectors between individuals.

But even if the above strategies are adopted, Evans and Wolf (2006) also highlight that collaboration needs an appropriate work environment where trust is the norm. Trust enables individuals to exchange information and share the intellectual property of their findings. With trust, it is understood that rewards are going to be shared and that it is more important to "get on with the job" in case there are problems to be solved than to claim for individual compensations. Trust will also ensure that even those who compete (inside or outside organizations) can work together to develop solutions to common problems. The more collaborative work is developed, a higher degree of trust exists, and a higher number of opportunities can flourish to convert solutions in innovations. The issue of trust will be revisited later in the chapter.

One key issue related to collaboration is about developing it between individuals from different disciplines. Unfortunately in the business world collaboration is still often seen as an activity that can gather individuals from similar backgrounds who "speak" the same language (Evans & Wolf, 2006) or understand each other without much difficulty. If this is not the case, how can we develop collaboration? It is necessary to draw on areas where collaboration has been around for longer. We now move to explore a number of collaboration issues with reference to trans-disciplinary research (Fuqua, Stokols, Gress, Phillips, & Harvey, 2004; Gibbons, Limoges, Nowotny, Schwartzman, Scott, & Trow, 1994; Nowotny, Scott, & Gibbons, 2003).

WHEN COLLABORATION TRANSCENDS DISCIPLINES

Fuqua et al. (2004) draw from several examples in which scientists from disciplines like medicine, genetics, forensics, sociology, and psychology collaborate to research on this area. For Fuqua et al. (2004), trans-disciplinarity occurs when a research effort:

Involves integrating two or more disciplines to produce novel, integrated hybrids of ideas, theories and methods. This is different from cross-disciplinary work, where according to Rosenfield (1992), people can work with others in an independent or sequential way (i.e., they use the research of others once it is finished), or they can work jointly but from each of their respective disciplinary perspectives in order to address a common problem. Trans-disciplinary activities involve producing new frameworks that draw together discipline-specific theories, concepts and approaches. Thus, a distinguishing feature of trans-disciplinary work is the creation of a shared products which help addressing problems "transcend the individual disciplinary perspectives of each team member." (Fuqua et al., 2004, p. 1459)

The benefits of conducting trans-disciplinary collaboration are related to an increase in the degree of appreciation of complex situations and a higher degree of validity and usefulness of solutions (Gibbons et al., 1994). Not only a problem is seen from a variety of perspectives from disciplines and experts across the globe, but also different approaches can be employed to address it. In addition, there are different criteria to assess the success of collaboration (e.g., from different disciplines), and this can be used to address any potential problems that the audiences of the collaboration (e.g., the public) might have with the collaboration products (Gibbons et al., 1994; Nowotny et al., 2003). In other words, in