

Networked Organizations Through Communications Technology

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Network forms of organizations are characterized by reciprocal, lateral communication ties. They are often contrasted with hierarchies, which are vertically organized, and markets, which exhibit an atomistic structure of buyers and sellers (See Powell 1990 and Nohria 1992 for classic statements of the comparisons). Networked organizations are often viewed as more flexible and “intelligent” than hierarchies and markets. From the 1990s to the present, computer-mediated communication technology has been increasingly employed to extend the scale and scope of networked organizations in order to “connect multiple organizations and people into new entities that can create products or services” (Contractor et al., 2006, p. 682).

Key attributes of computer-mediated communication technology for networked organizations are that they: 1) reduce physical, organizational, and social constraints on communication; and 2) create a digital record of communication for processing and preservation. Widespread use of these technologies increases reciprocal, lateral communication within organizations and between an organization and its external constituents—customers, suppliers, and partners. Both internally and externally, networked organizations are characterized by the increasing use of distributed work processes and knowledge sharing processes.

Internally, employees who are separated by geographic or functional distance can use communication technology to contribute to common goals and projects. In distributed, or virtual work teams, employees use communication and project management software to coordinate their work on a common project. *Distributed work teams* can bring employee expertise to bear on a project independent of the employee’s geographic location. When employees are located across the globe, distributed work teams can make progress 24 hours a day, seven days a week. As employees on one continent are finishing their work day, they electronically hand off their work to team mates on another continent who are beginning their work day.

Effective deployment of virtual work teams requires careful attention to their *social psychology and group dynamics*. Many laboratory and field studies have demonstrated that people who work together electronically have a relatively difficult time developing common ground and interpersonal trust. See Kraut, et al., (2002) for a review. Misunderstandings and coordination difficulties can compromise work quality and delay work completion. Nevertheless, as organizations increasingly deploy employees across the globe, distributed work teams allow organizations to flexibly deploy their workers across geographic and functional boundaries.

Networked organizations make use of *knowledge management systems*, which are information technology systems developed to support and enhance the organizational processes of knowledge creation, storage/retrieval, transfer, and application (Alavi and Leidner 2001). Three *common applications* include capturing and sharing best practices, creating corporate knowledge directories, and creating knowledge networks. Capturing and sharing best practices encourages knowledge transfer and reuse among organization members, while corporate knowledge directories help map the expertise of employees. Knowledge networks provide opportunities for relevant employees or organizational units to interact and transfer knowledge electronically. In all cases, employees can contribute to and access these applications

independent of their geographic or functional location, thereby diffusing knowledge broadly across internal organizational boundaries.

Two pragmatic *challenges* for internal knowledge management systems include inducing contributions from employees and ensuring the quality of these contributions. Contributions to knowledge management systems are often represented as a public goods problem in which everyone benefits from other people's contributions but the incentives to contribute one's own knowledge are weak (e.g., Thorn and Connolly, 1990). In practice, employees contribute to these systems out of feelings of loyalty to the organization, altruism, or generalized reciprocity more than because of expectations for private gain. Mechanisms for quality control typically rely upon visibility of contributions which are subject to informal peer review.

Networked organizations increasingly use *communication technology* to reach beyond the formal corporate boundary. Whereas a focal organization has always had supply chain relationships with vendors and suppliers, current communication technologies enable one organization to virtually embed its processes (for delivering and billing goods, for example) within another organization's processes (for sales or manufacturing and inventory management, for example). For example, proprietary EDI (electronic data interchange) technology allowed more efficient supply chain management relationships, but was very expensive and available only to select organizations and industries that could afford the technology. The increasing ubiquity of the Internet now allows many more organizations to participate in supply chain networks. Inter-organizational supply-chain networks support just-in-time manufacturing and lean inventory sales from the focal organization's perspective. These networks also deliver benefits to suppliers and vendors by providing real-time information on customer requirements. General benefits to all organizations include increased bandwidth of communication across organizational boundaries and decreased response time in information exchange.

Increased networked communication can change the relationship between an organization and its customers. Some organizations use the Internet to actively involve customers in product design. Communication technology enables customers to share their innovations with other customers through discussion groups, as well as with manufacturers. "Lead users" have always been a source of product innovation, but with increasing connections among organizations and their customers, the scale and scope of customer contribution to the product design process can increase (von Hippel, 2005). Other organizations use the Internet to involve non-employees in customer support. Particularly within the computing industry, technical support activities are increasingly accomplished through voluntary technical support groups on the Internet. Whereas some organizations may assign employees to monitor electronic communication for quality control, many organizations rely upon the norm of voluntary peer review to sustain quality.

The most ambitious forms of networked organizations are those that use communication technology to link multiple formal organizations in the collaborative *design and production of complex products*. The Boeing 777, the most technologically-advanced commercial aircraft of its time, was produced by a consortium of more than six independent organizations working on three continents, who relied extensively upon communication technology to perform their work. Digital records of the work process—from design specifications to engineering analyses to contracts—were produced, distributed, and accessed via communication technologies. The resulting networked collaboration was so successful that the collaborators transitioned from digital representations directly to an airworthy prototype without building any of the heretofore required costly, full-scale mockups (Committee on Advanced Engineering Environments, 1999).

SEE ALSO: Communication Networks; Communication Technology; Internet; Interorganizational Networks; Mobility, Technology For; Organizational Communication; P2P Networking; Personal Communication by CMC; Technology and Globalization; Telework; Virtual Communities

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Biography:

Lee Sproull is the Leonard N. Stern Professor of Business at New York University. She is the author of more than seventy articles and books including recent handbook and encyclopedia articles on online communities.

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