

Beyond Transactions

Design Issues for E-collaboration in Supply Chains

E-collaboration – Information technology (IT) is common for sharing information and knowledge. Often systems or specific applications tend to provide a universal solution, available for everybody – fitting nobody. Here are some thoughts resolving the social knot in e-collaboration, which for a long time has been troublesome for designers of e-collaboration tools.

Modern business environments contain a move towards networking activities, service orientation, mobile business activities, use of grid computing, virtual markets, etc. which means that social and behavioural conditions and patterns become important modern business environments. New ways of organizing work, stress that action patterns among work staff crosses different organizational borders, and reaches in and out of different business networks utilizing modern technology. Interestingly, these new ways of organizing the work setting in firms stress the perception of e-collaboration.

One dimension in e-collaboration which quite often is neglected is how firms utilize its social capabilities to

establish a strong business relationship with a supplier or customer. Information system researchers have long advocated that performance in automation and strategy based on management principles are not sufficient enough for the functionality of firms.

More Than Doing IT

The main point is that e-collaboration not only contains formal prescriptions for all the different kinds of operations that firms in supply chains perform. Looking into the future and considering the global environment for businesses means that people at all levels, from the top management to the floor need not only to Do IT, they also need to Act IT and Learn IT in order to perform e-collaborations. This is not entirely new for industries as a whole, but it seems extremely difficult to implement. What does it mean from a design perspective?

Act IT: Information Management

Information management activities are usually based on two directions: functional information management and procedural information management.

Functional Information Management

The central idea of the functional dimension is related to the idea of information being a key resource for organizations. Basically, the information infrastructure is organized like an input-output system. The utmost importance is to serve organizational goals by maintaining a relevant IT platform to users involved in business processes. Structured information sharing is certainly most important for operational efficiency in the resource-based view of information management. In the case of designing an e-collaboration platform this base for information sharing contribute as an operational know-how instrument, which in an e-collaboration setting will diminish the uncertainty of what collaborative actors actually collaborate on.

Procedural Information Management

Opposite to the resource based view on information management, procedural information management deals with factors that relate to firm management levels and external dimensions of the firm. Among the most important factors are availability of information and information quality, which heavily depend on reliable structures of information bases in functional units located in different



places in a supply chain. An orientation of information management in a procedural style aim, among others, at: strategic decisions of IT and IS infrastructures, defining the role of IS, systems development issues, maintenance issues and changes in platforms and services. In relation to the resource-based view, which considers information merely as a technical artefact this dimension of information management advocates for human intervention in IT based activities.

Do IT: Issues in Integration of Information Flow

Basically, one major key issue is to conceptualize the information flow internally and between firms. The conceptualization will affect as well as control the set up for the IT infrastructure. Three central aspects of the internal/external relationships are cooperation, coordination and communication. In general these factors are:

- Cooperation refers to the undertaking of complimentary activities to achieve mutual benefits;
- Coordination is the management of interdependencies between participants in a relationship;
- Communication is the formal and informal sharing or exchange of meaningful and timely information between parties, facilitating the capacity of these norms to serve as a conduit between the other norms.

Firms do not operate in a business relationship without serving their own purpose. The activities undertaken are clearly defined in contract regulations between parties and the activities are strategically based decisions. E-collaboration should not be considered as a tool to enable automated transactions; rather tools should enable innovative processes by facilitating formal and informal knowledge sharing.

Learn IT: The Network of Knowledge

One major outcome of a knowledge network is effective management of different planning and innovation activities. The problematic situation in defining and setting up a network of knowledge is to draw a common cognitive map of network constituents. It is important to realize that a network of knowledge exceeds the rudimentary requirements of information sharing in supply chains to include information such as; product, customer, supplier, process, competitive and marketing information. The technical pattern in a network of knowledge should provide a stable infrastructure that supports the stakeholders in their collaborative task patterns. The technical stabilization may

be rewarded by the procedural direction of managing information. Thereby, the supply chain as a network of knowledge will establish operations that in nature are socio-technically based on a common cognitive understanding of knowledge.

E-Collaboration Design Issues

Based on the reasoning of Do IT, Learn IT and Act IT, e-collaboration can be seen as a tool to support different kinds of business to business e-commerce, team work, virtual supply chain management and other types of linkage activities, preferably over the

web. E-collaboration revolves around these three different vehicles that they are contributing with information systems properties in both an attributive and relational manner. The key in e-collaboration is the collaborative task. People can add bits and pieces of information from different places with different actors into a common task. Due to innovations in communication technology virtual teams can collaborate geographically and organizationally dispersed. Depending on the scope of collaboration the different tools that can be used range from e-mail systems via video conferencing to advance IT based audiovisual applications. The more the system characteristics are unified or overlapped the more the collaboration activities can benefit from discussion and sharing of information and knowledge instead of just exchange knowledge. Typical supply chain activities that may benefit from e-collaboration are forecasting and common planning.

One of the main contributions of e-collaboration is the management of product development life cycle information, which is crucial when lead times are constantly shortened. Through time and space independent e-collaboration applications stakeholders can discuss and optimize project work tasks as well as deliveries at any time at any location. However, this requires not only sophisticated IT tools but also well-defined management structures of the collaboration activities. E-collaboration is about the support or enabling of formal and informal knowledge sharing that businesses use during social interaction and business transactions.

The negative side of e-collaboration that requires consideration is how to deal with misunderstandings and conflicts,

which cannot be treated in same manner as in on-site collaboration. A basic e-collaboration design process that actually deal both with social issues and business transaction issues can be formulated as a three step method that in its initial state do not distinguish between the human stakeholders and technical artifacts:

- **Enrolment of stakeholders and or technology.** How to establish a stable network of alliances? This is an act of agreements which specifies any role assigned to the e-collaboration context. In this phase, communication norms should be defined, and also cultural, individual-collective issues needs proper attention.

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- **Adaptation of technology and or processes.** Basically, this is a process of requirements elicitation and stakeholder input. Technology and business processes need to be aligned and if changes occur on one side, the other has to adapt.
- **Stabilization of the network of actions.** The previous phases should ideally have defined the socio-technical system of e-collaboration. In this phase, the network is in operation and functioning according to the result from initial phases. This should be considered as the network of knowledge is extended and not isolated or frozen in any way.

Considering the differences in apprehension that stakeholders may have for e-collaboration contexts the conclusion that e-collaboration is extremely dependent how designers as well as researchers can distinguish between social activities, business activities and the contingencies of information technology support to such activities. Returning to the simple but illustrative model for constituents of e-collaboration, it is here suggested that the model can be used as a way to articulate the socio-technical dependencies that comprise e-collaboration. Specifically, the distinction between “the socio” and “the technical” is depending on the differentiation of knowledge that is used in the different areas of collaboration.

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