

Organizational Learning for Viable Inter-organizations

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Abstract

To work against threats and to obtain new possibilities, new forms of inter-organizational collaborations are formed. Established models of organizational control are insufficient to cope with the management of such complex situations. The management literature deals mainly with one single organization although aspects of collaborative processes are discussed. Organizational learning is recommended as a tool to in the first place develop an intercultural communication competence, but also as a complement to learn more about each other. The question is how to transfer the concept to inter-organizations. The viability of an inter-organization is depending on the ability to work as a team, learn from each other and adapt to new situations. In this paper problems and possibilities with inter-organizational management and organizational learning are discussed.

Keywords Inter-organizations, Organizational learning, Management, Anticipation, Viability

1 Introduction

To work against threats and to obtain new possibilities, new forms of inter-organizational collaborations are formed.

Inter-organizations can be compared with, but are not totally equal to, virtual organizations. The following properties for virtual organizations, listed by Feltz et al (2004), are adequate also for inter-organizations. The organization is a network of independent organizations grouped under a unique identity in order to attain a common objective. Each partner focuses on its core competences in a complementary way. Virtual organizations also use information technology in an intensive manner, which not is necessary in all kinds of inter-organizations.

Although many aspects of collaborative processes have been discussed in the literature, the predominant approach in management as well as in systems science literature is that of one single organization with its boundaries and its management levels. To handle managerial questions concerning more than one organization, a new system level is established. That could be a concern of companies or some coordinative authority. The new coordinative instance, though on a higher systems level, is formed in the same principle way as a single organization.

Coordination means achieving efficiency and reliability, consent and coercion. But telling another person to achieve coordination doesn't tell him what to do. He doesn't

know whether to coerce or bargain or what mixture of efficiency and reliability to attempt (Caiden and Wildavsky, 1974).

Roe (2001) has identified four major management approaches for inter-organizational management particularly of different ecosystems. The approaches are Self-sustaining management, Adaptive management, Case-By-Case Resource Management, and High Reliability Management. High reliability organizations include for example air traffic control systems and nuclear power plants, which demands high technical competence, high performance, high complex activities, etc. Many inter-organizations are managed with case-by-case resource management as they have of a short-term character.

To exemplify the managerial problems arising with inter-organizational collaborations a project is described. It is called the CRISSI project and concerns critical situations caused by flooding. The aim is to present a model for visualization of such critical situations, and to develop a computerized system for simulation based on the model. As several authorities and organizations become involved in case of flooding, there is a problem to take in the whole situation and have a common picture when many incidents happen at the same time. Priorities are hard to make as there is a lack of efficient tools showing critical buildings and constructions such as roads, railroads, water-purifying plant, etc, in combination with actual and forecasted water-levels. Furthermore, coordination between concerned authorities and organizations is not as effective as it could be. Interviews with representatives of authorities and organizations with experience of earlier flooding have been carried through. Documentation of earlier flooding has also been examined (Asproth and Håkansson 2005a; 2005b).

A question that has arisen during the work with the project is the problem with management of such an inter-organizational issue as a flood. All involved organizations are independent and make their own decisions with a few exceptions. The decision-making is also very time-critical and there is very little time to formalize the decision process about common decisions both within and between the organizations.

The inter-organizational management of a critical situation caused by flooding is typically case-by-case. The organizations involved varies from one occasion to another depending upon where the flooding is, how big it is and which interested parts are stroked.

In this paper problems and possibilities with inter-organizational management and organizational learning are discussed.

2 Types of Organization Management

Flat and network organizations pushes decision authority to lower levels in organizations, reducing the need for several layers of management. With fewer layers of centralized, hierarchical management structure, organizations become increasingly characterized by structurally and geographically distributed human resources.

Network management feature with equality, communication and reciprocity for open ended relationship, *hierarchical management* feature with long term relationship,

downward communications, clear boundaries, reliability for closed relationship. (Obata and Shizuka, 2003)

The hierarchical type of management is characterized by a layered organizational style, employment relationship, low flexibility, routines and an administrative method of resolution. The job process in hierarchical management is reliable and rigid and the decision process is slow. The network type of management is characterized by a flat and flexible organizational style, complementary strengths, relational means of communication and a norm of reciprocity. The job process is complex and the decision process agile. (Powell, 1990; Obata and Shizuka, 2003)

There are almost as many definitions of virtual organizations as there are researchers. Bultje and van Vijk (1998) have the following definition of virtual organizations:

“A virtual organization is primarily characterized as being a network of independent, geographically dispersed organizations with a partial mission overlap. Within the network, all partners provide their own core competencies and the co-operation is based on semi-stable relations. The products and services provided by a virtual organization are dependent on innovation and are strongly customer-based.”

Virtuality, as a workplace process, requires new ways of thinking about management, communication and teamwork. (Larsen, Mc Inerney, 2002)

2.1 Systemic Management Model

Schwaninger (1990) has defined a model for objectives and control variables at different logical levels of management within an organization, i.e. a business organization. Schwaninger identifies objectives and control variables at different logical levels of management. He states (Espejo et al, 1996) that it is not possible to control the variables in one of the models with that model. Only models on a higher level have a good prediction function in relation to the model on the next lower level (see figure 1).

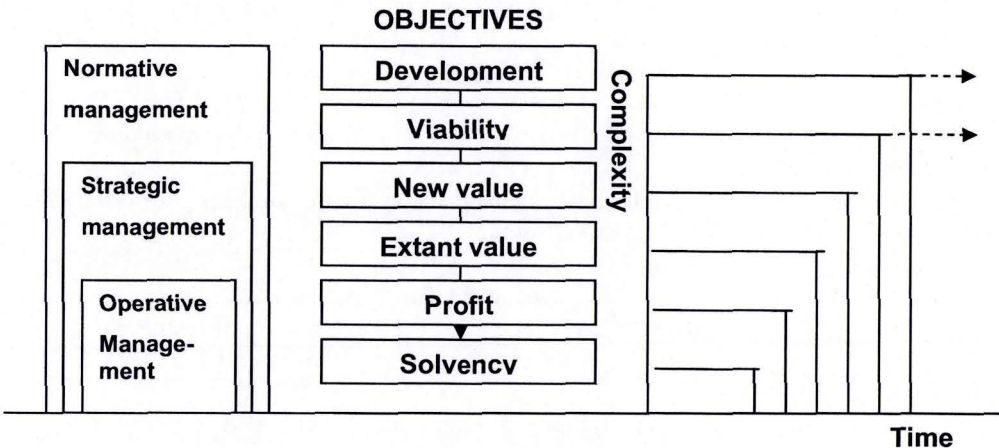


Figure 1 Objectives at different logical levels of management

Schwaninger has elaborated this model for management of business firms. The model is applicable at different recursive levels, for example a business unit, a subsidiary company and the corporation. In earlier work (Asproth and Håkansson, 2002) the possibility to use the Systemic Management Model at the societal level has been examined, which showed to be promising. The model, though promising, is developed for single organizations and need to be further elaborated for inter-organizations (see figure 1).

To sum up:

- A model for objectives and control variables at different logical levels of management within an organization,
- It is not possible to control the variables in one of the models with that model.
- Only models on a higher level have a good prediction function in relation to the model on the next lower level.
- The model is developed for single organizations and need to be further elaborated for inter-organizations

2.2 The Viable Systems Model, VSM

The Viable Systems model (Beer, 1979) is a cybernetic tool for diagnosing and designing complex systems. The model provides a useful tool to consider alternative organizational structures and meet new challenges the system is facing. A brief description of VSM is that it consists of five systems representing production (1), coordination (2), control (3), development (4), and management (5). The production system (1) and the development system (4) are interacting with the environment.

VSM can be used recursively, which means that it can be applicable on different system levels, a department within an organization as well as the whole organization. Further, it can be used at the society level.

The potential contribution of the systems approach to management research and practice turns out to be enormous, even though this is not yet widely known or understood. (Schwaninger, 2001; Beer, 1988, Espejo et al, 1996)

Achterbergh and Vriens (2002) have applied Beer's Viable System Model to knowledge management to keep organizationally viable knowledge available. This is also an important issue for the CRISSI project.

Achterbergh and Vriens (2002) have identified four central processes for producing and processing organizational knowledge:

1. *Generation of knowledge*

Generating organizational knowledge can be done by acquiring external knowledge or by means of knowledge creation in a process of learning (Davenport and Prusak, 1998; Probst et al, 1998; Nonaka and Takeuchi, 1995)

2. *Sharing knowledge*

The aim of this process is to make sure that existing knowledge gets at the right place in an organization. Disseminating or transferring knowledge may be other labels for this process.

3. *Retention of knowledge*

To keep knowledge available, some kind of “organizational memory” is needed. Retention of knowledge refers to the process of storing knowledge and making retrieval possible.

4. *Application or use of knowledge*

The other three knowledge processes are subsidiary to the application of knowledge.

Instruments that facilitate the management of these processes are a core element of knowledge management.

Schwabinger (2001) states that, from a cybernetic stance, the basic faculties which distinguish intelligent organizations are

1. to adapt, i.e. to change as a function of external stimuli
2. to influence and shape their environment
3. to find a new milieu, if necessary, or to reconfigure themselves virtuously with their environment
4. to make a positive net contribution to the viability and development of the larger wholes into which they are imbedded

Schwabinger (2001) further suggests that an integration of the Model of Systemic Control (MSC), the Viable System Model (VSM), and the Team Syntegrity Model (TSM) can provide a systemic framework for the development and learning about organizations.

VSM can be used recursively, which means that it can be applicable on different system levels, a department within an organization as well as the whole organization. Further, it can be used at the society level. Though, a problem with VSM, as with most organization models, is that it is developed for one single organization (even if it is on the societal level), with its own tasks and goals.

Schwabinger (2006) has made a comparison between Beer’s Viable Systems Model and Miller’s Living System Model (Miller, 1978). Miller refers to seven hierarchical levels for his model. The hierarchical levels are 1. Cell, 2. Organ, 3. Organism, 4. Group, 5. Organization, 6. Society, 7. Supranational Systems. Although this model also is recursive, it does not take into consideration inter-organizations, i.e. several independent organizations acting together.

To sum up:

- VSM is a cybernetic tool for diagnosing and designing complex systems
- VSM can be used recursively
- It can be used at society level
- It is developed for one single organization with its own tasks and goals

2.3 Spiral Management for Multiple Organizations

Obata and Shizuka (2003) propose to combine Network Management with Hierarchical Management for dynamism, flexible and sustainable reliance. Network management contributes with equality, communication and reciprocity for open ended

relationships. Hierarchical management is featured with long term relationship, downward communications, clear boundaries, and reliability for closed relationships. The combining of management style called Spiral management combines relational, interdependence, reciprocity by network management and responsibility, reliance by hierarchical management.

To sum up:

- Spiral management combine Network Management with Hierarchical Management
- Spiral management can be used in virtual organisations
- In critical situations caused by flooding, who is responsible for the decisions?

2.4 Negotiation Support Systems

Assimakopoulus and Dimitriou (2006) bring up the need for negotiation. In earlier work Asproth (2006) has claimed the need for negotiation in inter-organizational management. The concept of Negotiation Support Systems (NSS) has been developed in later years and has increased in importance. NSS permits to join different points of view and positions, to conciliate differences and to suggest solutions for compromises. As an advanced tool in the negotiation process, it helps to identify the true interests, evaluate the importance, and to place them in the context of the confrontation with the other interests. General principles for the negotiation process are presented by Raiffa (1982) and Bacow and Wheeler (1984). Research findings on NSS success, presented by Nunamaker and Vogel (1987), include hardware and software settings in a multi-purpose and flexible way, attention to the presentation support, and the possibilities to interact with the system on each individual's prerequisites.

3 Inter-Organizational Learning

According to Zakaria et al. (2004) the human challenges of virtual team membership are:

- Creating effective team leadership
- Managing conflict and global virtual teams dynamics
- Developing trust and relationships
- Understanding cross-cultural differences
- Developing intercultural communication competence

Decision making involves processing or applying information and knowledge, and the appropriate information/knowledge mix depends on the characteristics of the decision making context. Information is central to decision making situations involving uncertainty and complexity, while knowledge is associated with problems of ambiguity and equivocality. (Zack, 2006)

Zack (2006) proposes further that computer-based decision support technologies are appropriate to supporting decision making under conditions of uncertainty and

complexity while human-centric approaches may be more appropriate under conditions of ambiguity and equivocality. Both approaches, however, must be tightly integrated for organizational learning to occur. In decision-making in critical situations caused by flooding complexity and uncertainty there is certainly complexity and uncertainty why a computer-based decision support system is appropriate, but there are also conditions that are ambiguous and equivocal.

The not yet solved problems with inter-organizational management and leadership has been treated earlier in this paper as well as the need for conflict resolution. The formation of cross-cultural trust includes a reciprocal element and falls under two behavioral categories. The first is credibility where one part believes that the other part has capabilities, competence, expertise and resources to contribute to a successful outcome. The second category is benevolence, i.e. beliefs about the emotional aspects of the other part's behavior. (Johnson, Cullen, 2002)

As mention earlier it is important that group members *trust* each other and that they work in a *shared context* with *shared goals*. Additionally, *commitment* to these goals and the *identification* with the collective are important aspects that foster cooperative instead of competitive behavior (Coleman, 1999; Zand, 1997). Handy (1995), Maznevski and Choduba (2000), and Crossman and Lee-Kelley (2004), among others, claim that "trust needs touch" at least in the initial stage. Crossman and Lee-Kelley (2004) conclude that low commitment from the individual leads to low trust and that team effectiveness is inhibited, yet organizational efficacy in dispersed teams requires high mutual commitment and high trust. They also conclude that trust takes time to develop.

Holmqvist (2003) and Rashman and Hartley (2002), recommend organizational learning as a tool to in the first place develop an intercultural communication competence, but also as a complement learn more about each other. Holmqvist (2004) describes how experimental learning processes of exploitation and exploration between organizations generate intra-organizational exploitation and exploration.

To develop organizational learning within an organization has shown to be successful. The question is how to transfer the concept to inter-organizations. There might be competitiveness and conflicting interest that put hindrance in the way. Another problem with inter-organizational learning is that there is mostly a case-by-case management approach. In the critical situation case the development of the new computer-based system may be of help to learn more. So may follow ups of earlier flooding be. In the preservation case there is a need to maintain the knowledge over a longer time. People come and go in an organization and the ones that knew all about the system disappear.

Cress et al (2007), Beckman (1999), Davenport and Prusak (1998), Shum (1998) among others propose that shared databases is a form of collaborative media that can be used to collect information which is distributed among individuals and to make the contributions accessible to all. They are implemented in organizations as technical tools for knowledge management. It is of important that the new computer-based system for management of flooding contains these possibilities.

Cress et al (2007) list some hindrances for people to share their knowledge. People are afraid of perhaps making incorrect statements, or they feel that they have not reflected upon their contributions long enough to write them down. Another obstacle is that it takes time and effort to externalize knowledge, because knowledge must be written down and worked out in a way that others can understand. Additionally, unique knowledge is often considered a power resource, so contributing it to a database and sharing it with others would mean losing this power. These obstacles have also another dimension when it comes to inter-organizations. Not all of what you know feels suitable to share with other organizations.

Boh (2007) argues though that the knowledge sharing that takes place in the organization should be pervasive, and not only restricted to the use of repositories and technologies to store and transmit information. Organizations should examine different ways of organizing their work, deploying their personnel, or making use of organizational routines and organizational structure to ensure that systematic knowledge sharing takes place amongst their employees. To organize for this in inter-organizations is an issue that still remains to be solved.

In the case of critical situations caused by flooding it is important to foresee and even anticipate future events. In earlier work the critical factors for anticipation have been elaborated (Asproth, Håkansson, 2006). Spector and Davidsen (2006) have identified that organizations as well as individuals have mechanisms and structures that govern what might be regarded as lower level thinking and behavior (e.g. non-reflective reactions to recurring situations) as well as higher order thinking and behavior (e.g. reflective and proactive activity in anticipation of future occurrences). In organizational learning it is important to pay attention to not only lower level thinking, but higher order thinking and behavior.

4 Concluding Remarks

The management literature deals mainly with one single organization. To deal with inter-organizational management in a longer perspective the solution is often a new overarching system level that can act as one organization and hence be managed according to established management models. Many issues are handled with a case-by-case approach as a project. To maintain knowledge and to keep the trust and mutual understanding, there is a need for more long-lived relationships.

To manage crisis situations like floods a network of independent organizations is grouped where each partner focuses on its core competenc, which is a typical case-by-case approach. The need for a more long-lived relationship is needed, but the solution to build an overarching system level is hardly practical. Therefore there is a need for developing models for management of inter-organizations.

Management models like Systemic Management Model and Viable Systems Model are promising, but need to be tested and adapted for inter-organizations.

To maintain and develop the knowledge and to prevent conflicts and misunderstanding organizational learning is an excellent approach. New or adapted models suited for inter-organizations needs to be developed. Negotiation Support Systems can also be of help when conflicts occur.

References

- Achterbergh, J., Vriens, D. (2002) Managing Viable Knowledge, *Systems Research and behavioral Science*, Vol 19, pp 223-241
- Asproth, V. (2006) Inter-organizational management and decision-making. *Systemist*, Vol 28, no 2, pp 4-12
- Asproth, V., Håkansson, A. (2002) New Approaches to Soft Anticipatory Design for Spatial Decision Support Systems. *International Journal of Computing Anticipatory Systems*. Vol. 13, pp170-181.
- Asproth, V., Håkansson, A. (2005a) Simulation and anticipation in critical situations caused by flooding, Ed. Dubois, D. *International Journal of Computing Anticipatory Systems*. Vol. 19, pp 28-36, Liège, Belgium
- Asproth, V., Håkansson, A. (2005b) *Complexity Challenges of critical situations caused by flooding*. Systems Thinking and Complexity Science: Insight for Action, Proceedings of the 11th ANZSYS / Managing the Complex V conference. K. A. Richardson, W J Gregory, G Midgley
- Asproth, V., Håkansson, A. (2006) Simulation and anticipation in critical situations caused by flooding. *International Journal of Computing Anticipatory Systems*. Vol. 19, pp 28-36, Liège, Belgium
- Assimakopoulus, N., Dimitriou, N. (2006) A cybernetic framework for viable virtual enterprises: The use of VSM and PSM systemic methodologies, *Kybernetes*, vol 35, no 5, pp 653-667
- Bacow, L. S., Wheeler, M, (1984), *Environmental Dispute Resolution*. Plenum Press, New York.
- Bear, S. (1979) *The Heart of Enterprise*. Wiley, Chichester
- Beckmann, T. J. (1999) The current state of knowledge management. In: J. Liebowitz, Editor, *Knowledge management handbook*, CRC Press, New York (1999), pp. 1.1–1.22.
- Bear, S. (1979) *The Heart of Enterprise*. Wiley, Chichester
- Bear, S. (1988) Holism and the Frou-Frou salnder. *Kybernetics*, vol 17(1), pp 23-32.
- Boh, W. F. (2007) Mechanisms for sharing knowledge in project-based organizations, *Information and Organization*, Vol 17, no 1, pp 27-58
- Bultje, R., van Vijk, J. (1998) Typology of virtual organisations, based on definitions, characteristics and typology. *Virtual-organization.net Newsletter* 2(3), pp 7-21
- Caiden, N., Wildavsky, A. (1974) *Planning and Budgeting in Poor Countries*. John Wiley Sons, New York
- Coleman, D. Groupware, collaboration and knowledge sharing. In: J. Liebowitz, Editor, *Knowledge management handbook (Chapter 12)*, CRC Press, New York (1999).
- Cress, U., Barquero, B., Hesse, F. W. (2007) Improving quality and quantity of contributions: Two models for promoting knowledge exchange with shared databases, *Computers & Education*, Vol 29, no 2, pp 423-440
- Crossman, A., Lee-Kelley, L. (2004) trust, commitment and team working: the paradox of virtual organizations. *Global Networks*, Vol 4, pp 375-390.
- Davenport, TH, Prusak, L. (1998) *Working Knowledge*. Harvard Business School Press, Boston, MA

- Espejo, R., Schuhmann, W., Schwaninger, M., Bilello, U. (1996) *Organizational Transformation and Learning: A cybernetic Approach to Management*, Wiley, Chichester.
- Feltz, F., Simon, G., Lambert, C., Otjacques, B. (2004) *Generic Web-based Platform for Virtual Organizations: the SICOV Case* in: Proceedings of Second IEEE International Conference on Intelligent Systems, Varna, pp 399-404.
- Handy, C. (1995) Trust and virtual organization, *Harvard Business Review*, May/June, pp 40-50.
- Holmqvist, M. (2003) A Dynamic Model of Intra- and Inter-organizational Learning. *Organizational Studies*, Vol 24, no 1, pp 95-123
- Holmqvist, M. (2004) Experimental Learning Processes of Exploitation and Exploration Within and Between Organizations: An Empirical Study of Product Development. *Organizational Science*, Vol 15, No 1, pp 70-81.
- Johnson, J. L., Cullen, J. B. (2002) Trust in Cross-Cultural Relationship. In Cannon, M. J. and Newman, K. L. (eds.), *The Blackwell Handbook of Cross-Cultural Management*. Blackwell Publishing, Malden, MA.
- Larsen, K., McInerney, C. (2002) Preparing to work in the virtual organization. *Information & Management*, Vol 3, pp 445-456.
- Maznevski, M. L., Chudoba, K. M. (2000) Bridging Space over Time: Global Virtual-team Dynamics and Effectiveness. *Organizational Science*, Vol 11, pp 473-492.
- Miller, J.G. (1978) *Living Systems*. McGraw-Hill, New York
- Nonaka, I., Takeuchi, H., (1995) *The Knowledge Creating Company*, Oxford University Press, New York.
- Nunamaker, J. F. Jr., Vogel, D.R. (1987) *Negotiation Support Systems Software and Facilities for Public Sector*. Issues, ISGSR'87, Vol. 2, pp. 846-853, Budapest, Hungary.
- Obata, K., Shizuka, H. (2003) Spiral Management for E-Business, *Journal of the Asian Design International Conference* Vol.1, G-01, 1-7
- Powell, W. W. (1990) Neither Market nor Hierarchy: Network Forms of Organization, In ed. B. Staw :*Research in Organization Behavior*, Volume12 , p300.
- Probst, G., Büchel, B., Raub, S. (1998) Knowledge as a strategic resource. *Knowing in firms*. Von Krogh, G., Roos, J., Kleine, D. (eds). Sage, London, pp240-252
- Raiffa, H., (1982) *The Art & Science of Negotiation*. Harvard University Press, Cambridge, Massachusetts
- Rashman, L., Hartley, J. (2002) Leading and Learning? Knowledge Transfer in the Beacon Council Scheme. *Public Administration*, Vol 80, No 3, pp 523-542
- Roe, E. (2001) Varieties of issue incompleteness and coordination: An example from ecosystem management. *Policy Science*, Vol 34, pp 111-133
- Schwaninger, M. (1990). Embodiments of organizational fitness. *Systems Practice*, Vol. 3, No. 3.
- Schwaninger, M. (2001) Intelligent Organizations: An Integrative Framework, *Systems Research and Behavioral Science*, Vol 18, pp 137-158.
- Schwaninger, M. (2006) Theories of Viability: A Comparison, *Systems Research and Behavioral Science*, Vol. 23, No. 1, 2006, pp. 337-349

- Shum, S. B. (1998) Negotiating the construction of organisational memories. In: U.M. Borghoff and R. Pareschi, Editors, *Information technology for knowledge management*, Springer, Berlin (1998), pp. 55–78
- Spector, J. M., Davidsen, P. I. (2006) How can organizational learning be modeled and measured? *Evaluation and Program Planning*, Vol 29, no 1, pp 63-69
- Zack, M. H. (2006) The role of decision support systems in an indeterminate world, *Decision support systems*, [doi:10.1016/j.dss.2006.09.003](https://doi.org/10.1016/j.dss.2006.09.003)
- Zakaria, N., Amelinckx, A., Wilemon, D. (2004) Working Together Apart? Building a Knowledge-Sharing Culture for Global Virtual Teams. *Creativity and Innovation Management*. Vol 13, pp 15-29
- Zand, D. (1997) *The leadership triad: Knowledge, trust, and power*, Oxford University Press, Oxford