
This is an electronic reprint of the original article.
This reprint may differ from the original in pagination and typographic detail.

Lavikka, Rita; Smeds, Riitta; Jaatinen, Miia

Coordinating the service process of two business units towards a joint customer

Published in:
Production Planning and Control

DOI:
[10.1080/09537280802707555](https://doi.org/10.1080/09537280802707555)

Published: 01/01/2009

Document Version
Peer-reviewed accepted author manuscript, also known as Final accepted manuscript or Post-print

Please cite the original version:
Lavikka, R., Smeds, R., & Jaatinen, M. (2009). Coordinating the service process of two business units towards a joint customer. *Production Planning and Control*, 20(2), 135-146. <https://doi.org/10.1080/09537280802707555>

This material is protected by copyright and other intellectual property rights, and duplication or sale of all or part of any of the repository collections is not permitted, except that material may be duplicated by you for your research use or educational purposes in electronic or print form. You must obtain permission for any other use. Electronic or print copies may not be offered, whether for sale or otherwise to anyone who is not an authorised user.

Coordinating the service process of two business units towards a joint customer

Rita Lavikka M.Sc.(Tech.)^{*†}, Professor Riitta Smeds Dr.Sc.(Tech.)^{*}
and Docent Miia Jaatinen D.Soc.Sc.^{*}

^{*}Enterprise Simulation Laboratory SimLab, Information Networks, Department of Computer Science and Engineering, Helsinki University of Technology, P.O. Box 9220, 02015 TKK, Finland

Abstract. The paper presents a new theoretical framework for coordinating an inter-unit collaborative service process towards a joint customer. To guarantee the quality and the added value of the service offering for the end customer, the two business units should organize their work as cross-functional and cross-unit business processes. The common service process is itself presented as a central coordination mechanism. It defines how tasks and responsibilities are shared between the collaborating units. The framework presents the factors supporting cooperation between the units, the prerequisites of the common service process and the ways of coordinating inter-unit cooperation. The study applies a constructive action research approach and abductive reasoning to develop the new framework through a single-company longitudinal, qualitative case study that consists of three development projects. Business unit managers can use the new framework as an analytical tool for recognizing potential factors supporting cooperation and coordination in their specific operating environments.

Keywords. Coordination; cooperation; service process; case study; constructive action research

1 Introduction

Customers want to buy services that satisfy their needs and add value to them. In practice, a company can produce added value to customers by broadening its service offering, which often means that the company takes new partners into service production. However, it is a challenge to provide a joint service offering, and it requires that cooperation between companies functions properly (Grönroos 2001).

Often cooperation between organizations needs to be developed in order to together produce services (Hoeg 2005, Simatupang et al. 2002). In addition, the production of quality services requires that no coordination gaps exist in the service processes. Hence, it is important to research how cooperation between organizations, but also between business

[†] Corresponding author. Email: rita.lavikka@tkk.fi. Tel. +358 50 384 1662. Fax: +358 9 451 4698.

units inside one company, should be supported and coordinated to produce a joint service offering.

Existing research on service management, cooperation and coordination does not provide an answer how companies can produce a joint service offering. The aim of this paper is to develop an analytical framework that combines the literature in these fields by going deeper into organization theory, process management, knowledge management and communication.

The analytical framework is tested and further refined through an in-depth case study in a company where cooperation between two business units was improved and the service processes of the units were coordinated. The units had delivered separate services and products to the same customers, but realized that the customers require a uniform service offering of the company. Through inter-unit synergies the company also wanted to improve its competitive advantage.

Thus, this study serves both a theoretical and a practical interest. The refined framework is the first attempt to integrate the theories of service management, development of cooperation and coordination in order to answer to the research problem. It also provides solutions to the challenges the case company was facing.

The study was part of the three-year long research project Co-creation of Networked Business Models (Co-Create), conducted in the Enterprise Simulation Laboratory SimLab at Helsinki University of Technology TKK.

The paper starts with the theory based on which the analytical framework was developed. Then, the methodology of the empirical study is presented. Thereafter, the case is described and the empirical data is analyzed by using the analytical framework. As the main result of this study, a new refined framework for coordinating an inter-unit collaborative service

process towards a joint customer is presented. The paper ends with managerial implications and theoretical conclusions as well as questions for future research.

2 Literature on service management, cooperation and coordination

2.1 Improving service quality

Service quality depends on the quality of both the service process and its end-result (Edvardsson & Olsson 1996). Customers perceive poor service quality, if there are coordination gaps in the service process. A coordination gap emerges when the required coordination of a task is greater than the actual coordination (Gerwin 2004).

According to Grönroos (2001), a service process involves both the production of services and their delivery, and includes interactive encounters between service provider and customer. On the other hand, Edvardsson and Olsson (1996) have defined a service process as a chain of sequential and/or parallel activities that need to function in order to produce a service. In this paper, we define a service process as a chain of sequential and/or parallel actions that constitute service encounters to solve the needs of the customer. Service encounters can include interactions between the different service providers as well as between the service provider and the end customer. The actions can take place in different operations of the company, such as service production, marketing, sales or customer service.

Grönroos (1990) argues that in order to improve service quality, the relationships between quality generating resources – *personnel, service idea, systems and customers* – have to be coordinated. Hence, coordination is essential to ensure the quality of services provided by the organization.

2.2 Enhancing cooperation between business units through integration

Axelsson and Easton (1992) claim that there is a need for integration between organizations before coordination of the operations can be started. According to them, integration means forming a whole. Integration supports cooperation, and facilitates coordination. Based on literature and the characteristics of the case study, we have chosen the following five integration factors for our study: common will, common understanding, common development projects, internal customership, and communication.

An organization needs *a common will* about what the organization wants to be in the future and common values that guide the organization there (Hannus 2004). *Common understanding* consisting of shared meanings about, e.g., the environment, goals, the operational models and resources of cooperation, is one premise of inter-organizational cooperation. Common understanding is created between collaborators by communication (Choo 1998, Conrad 1994) or by shared experience (Schein 1985, Weick 1995).

Common development projects can be utilized as a means to define common values or to develop a common customer-oriented way of operating (Feller et al. 2005, 2006, Hamel 2000, Hannus 2004). *Internal customership* can be practiced by defining the internal customers of the organization and providing them with quality service (Kvist et al. 1995). Åberg (2000) recommends that all the work community's modes of *communication* should be coordinated towards obtaining the goals of the organization.

2.3 Coordination of interdependencies

Different units of organizations are usually specialized in certain operations, which differentiates the units from each other. However, the units need to cooperate in order to produce quality products to customers, hence; coordination of these units' operations is needed. Van der Aalst (1999) states that in complex business processes, people need support

in coordinating their tasks, thus coordination structures and mechanisms should be defined. We define coordination as the integration of different parts of the organization in order to achieve common objectives (Lawrence & Lorsch 1986). In this paper, the operations of the company, e.g., development, production and sales of products and services, are regarded as the parts of the organization.

Thompson (1967) presented three types of task interdependences and how these interdependences should be managed. The first interdependence, pooled coupling, is the relationship between tasks that are independent but share the same resources. This interdependence should be coordinated through *rules and routines*. The second interdependence is sequential coupling in which the tasks should be performed in a certain order. In this situation, coordination is achieved by *plans*. The last interdependence, reciprocal coupling, relates to tasks that provide input for each other in a mutually interdependent way. This requires that people communicate frequently and *adjust their actions mutually* during task execution.

Mintzberg (1979, 1983) continues Thompson's work in the field of coordination by stating that there exist five coordination mechanisms suitable for coordinating work in different organizational structures: *Mutual adjustment* applies in small organizations as well as in complex operational environments, e.g., in project environments. Mutual adjustment is achieved, e.g., through unscheduled meetings, ad hoc communication, cross-functional teams or physical proximity. *Standardization* in three different ways coordinates tasks in relatively stable and repetitive situations. Standardization of *output* is needed when the detail complexity of the task increases. With the increase in cause-effect complexity, e.g., in expert organizations, standardization of *skills* is required. Standardization of *work processes* suits

for organizations having a lot of middle managers and support and where the work of personnel has become highly differentiated. (Mintzberg 1979, 1983) To Thompson's (1967) coordination mechanisms of planning, standardization and mutual adjustment, Mintzberg (1979) adds the fourth coordination mode of direct supervision. Direct supervision is suitable in small organizations in dynamic but simple environments, and when informal communication is not enough for coordination. Direct supervision can be practiced by a coach. The coach is an inspiring person that controls the performance of others and provides others with leadership and encouragement. (Mintzberg 1979, 1983)

By combining Thompson's (1967) and Mintzberg's (1979, 1983) theories of coordination, four coordination mechanisms suitable for different kinds of environments can be presented: *planning, mutual adjustment, direct supervision and standardization* of work processes, output or skills needed to accomplish the work.

The concept of coordination has been the cornerstone of organizational research since the classical contingency theorists, and it is central also in present day research. For example, Frayret et al. (2004) studied coordination and control in distributed, agent-based manufacturing systems. They found out that recent advances in manufacturing systems have led to a new form of coordination that cannot be included in the previously made classifications of coordination: coordination by mediation "in which the coordination of the activities of many centres is supported by a third party" (Frayret et al. 2004, p. 52).

2.4 The analytical framework for coordinating a collaborative service process

Based on the reviewed literature, and on the first understanding of the empirical problem, a preliminary analytical framework for coordinating an inter-unit collaborative service process is given in Figure 1. The idea of the framework is that a service offering can be

broadened and improved if the different business units cooperate towards a joint customer. Serving the joint customer is a shared goal of both units, and thus a core integrative mechanism in itself.

Cooperation requires support and coordination. The integration factors supporting cooperation are marked on the outer zone of the framework (Figure 1: outer zone): common will and values (Hannus 2004), common understanding (Choo 1998, Conrad 1994, Chein 1985, Weick 1995), common development projects (Feller et al. 2005, 2006, Hamel 2000, Hannus 2004), internal customership (Kvist et al. 1995) and communication (Åberg, 2000).

The core of the framework (Figure 1: core) addresses the coordination of the processes of the collaborating units. The coordination mechanisms are standardization, planning, mutual adjustment and direct control (Thompson 1967, Mintzberg 1983). The high quality of a broadened service offering requires the coordination of the quality generating resources: personnel, customer, systems and service idea (Grönroos 1990). These are marked on the inner zone of the framework (Figure 1: inner zone).

Take in Figure 1

3 Research approach and methods

In our research, we have applied abductive scientific reasoning (Grönfors 1985, Danermark et al. 2002, Flick et al. 2004). Following the abduction logic, we first constructed a preliminary analytical framework as a synthesis from theory and our empirical understanding about the phenomenon under study. Thereafter, we conducted a detailed case study to test the framework through deductive reasoning. The results were generalized back to theory through induction, and summarized into a new refined framework.

The refined framework aims to solve the practically relevant case company problem, but cannot as such be generalized to other empirical cases. However, it can be theoretically generalized into propositions for future research. This research approach can be called constructive research (Kasanen et al. 1993) or innovation action research (Kaplan 1998).

Our empirical research was conducted as a case study (Eisenhardt 1989, Yin 1989), during which also action research was carried out (Gummesson 2000). Thus, we can call our study constructive action research: the solution to the problem is developed together with the case company through action research. The data was collected from three developmental action research projects with the case company, realized through process simulation projects that applied the SimLab™ method (Smeds 1994, 1997a; Smeds 2003, Smeds et al. 2006, Forssén & Haho 2001).

The culmination of the SimLab process simulation project is the simulation day, during which the participants discuss their process in a facilitated group dialogue in front of a visual process chart, prepared by the researchers based on detailed interviews. The simulation builds common understanding among the participants, creates many process improvement ideas and awakes also strategic questions concerning the business models of the participating companies (e.g., Smeds & Alvesalo 2003b). The simulation is by nature social, and does not include computations (see, e.g., Harrison et al. 2007). It enables the conversion of the participants' tacit process knowledge into shared explicit knowledge. (e.g., Feller et al. 2005).

The first and the third author of this paper acted as action researchers, developers of the process charts, and as facilitators of the simulations in the three process simulation projects.

3.1 The case study and the three simulation projects

The case study involves two business units within a Finnish media company: the *product unit* provides traditional physical products; whereas the *service unit* provides an Internet service. Both units have their own customers as well as common customers. The units have separate business models. In the beginning of the study, the personnel regarded these two issues as inhibiting factors to cooperating more intensively and gaining synergy.

The *product unit* is functionally organized, and employs over 100 people. It generates high profits. The different functions of the product unit are coordinated by regular meetings, email and daily ad hoc communication, such as phone calls and face-to-face discussions. On the other hand, the *service unit* is quite small, employing only 13 people. It does not yet generate profit as it was quite recently founded as a development unit. The employees of the service unit work near each other, hence the ways of coordination include mainly informal and ad hoc communication.

The three consecutive developmental simulation projects had a common purpose to improve cooperation between the two units in order to serve the common customers better and to find synergies. This was achieved by coordinating the work of selected collaborating operations (marketing, electronic sales and distribution and customer service) of the units. In addition, each simulation project had its own specific goals.

Before the first simulation project started, a temporary development team was organized to plan the different phases of the simulation projects. The group consisted of representatives from the case company, mainly managers and three researchers from SimLab.

The goal of the first simulation project was to build a common frame of cooperation between the business units in order to give the customers a consistent image of the products and services of the units. The customers should be served consistently, regardless of whether

they contact the customer service of the product unit or the service unit. This challenge required improving communication between the units. The participants of the simulation project represented mainly the customer service operations of both units. In addition, 20 common customers participated in the simulation day.

After the first simulation project, the units realized that a common service process could be the cooperation process that could coordinate the actions of the units. In consequence, the goal of the second simulation project was to model a common service process that would integrate the marketing and customer service operations of the units. The project also aimed at supporting the formation of common will between the two units: the units should agree with what the units want to be together in the future and how to get there. The project included personnel from the customer service as well as from the marketing operations of the units.

In the third simulation project, the common service process was extended to cover also the electronic sales and distribution operations of the business units. There was a need to understand the potential advantages of common product and customer relationship management systems in the near future. Other goals were improving communication and common understanding between the units as well as finding ways to integrate the electronic sales and distribution operations of the units. The personnel from the electronic sales and distribution operation, customer service operation and marketing operation participated in the third simulation project.

3.2 Data gathering and analysis

The data was collected from the three simulation project participants between October 2004 and November 2005. The participants included people from both units, from the

management level as well as from the operational level. Also joint customers participated in the simulation projects.

The data consists of altogether 40 semi-structured interviews, observation of the three simulation days, and three surveys. Also archival data was gathered, such as process charts and management presentations on the case company's business models and objectives, provided by the company or created during the simulation project. The collection of the data in the different phases of the simulation projects is given in Table 1.

Take in Table 1

The interviews of this study were semi-structured. They concentrated on predetermined topics selected by the researchers, but the flow of discussion was free so that relevant topics emerging during the interviews could be talked through. The topics of the interviews varied depending on the role of the interviewee in the company.

The interviews were digitally recorded. At first, they were transcribed into text files word for word and content analyzed in teams of two or three researchers, including the writers of this paper. Then, they were analyzed by marking the relevant pieces of the text and classifying them thematically.

The aim of the interviews of the first simulation project was to find out the cooperation atmosphere, how to develop cooperation between the units and what kinds of advantages could be gained from cooperation. The five interviews of the second simulation project focused on the issue of coordination. In the third simulation project, the topic of the combined

group interviews and process modelling sessions was to find out how electronic sales and distribution should be arranged and coordinated in the future.

The three simulation projects, especially the simulation days, provided an opportunity to observe the participants. The observation was holistic in nature. We made observations of the behaviour of the participants and later compared these observations with other researchers (Marshall & Rossman 1995).

Three surveys were designed to ask the participants of each simulation about their subjective evaluations on managing cooperation and ways of coordination between the two units. The questionnaires contained open-ended questions and multiple-choice questions. They were designed by the authors of this paper and tested by another researcher to improve the validity (Marshall & Rossman 1995). The participants filled in the questionnaires and returned them to the researchers before leaving the simulation. The questionnaires were anonymous in order to elicit honest opinions.

The open ended questions of the questionnaires were qualitatively analyzed, like the interviews. Altogether 83 out of 90 possible responses were obtained. Some of the respondents participated in all three simulation days.

4 Findings

The analytical framework contains three parts: the factors supporting cooperation, the coordination mechanisms and the quality generating resources. Next, the framework is applied to analyze and interpret the case study, with the objective to draw managerial implications, and to refine the framework further.

4.1 The integration factors supporting cooperation

In the beginning of the cooperation, the two business units saw each other as competitors having partly the same external customers. They had their own profit goals, which was one factor that prevented the personnel from seeing the advantages that could be gained from cooperation. Business unit management saw the improvement of cooperation as important, because the units had common customers that needed to be served consistently. However, during the simulation projects, the units did not yet see the possibility for *internal customership* (Kvist et al. 1995).

The process of defining *a common strategic plan* for the two units started inside the company in parallel with the second simulation project. The partners agreed on the service idea, service packages and delivery channels. The objective of the common strategic plan was to define shared ways of operating, i.e., the responsibilities, roles and ways of doing business between the collaborators.

At the end of the third simulation project, the units were officially joined and *a common profit goal* was defined. The definition of a common profit goal required that the units discussed together the financial advantages that could be gained through cooperation. This brought the units closer and advanced their cooperation.

Communication between the units was improved with every simulation project. The three *developmental simulation projects* provided an intensive forum for communication (Åberg 2000) between the personnel of the two business units, which enabled them to get acquainted with each other and helped to build trust and *common understanding*. In consequence, attitudes towards cooperation turned to more positive and common will (Hannus 2004) could be recognized in the way the personnel acted. The units started to invite each other's personnel to meetings related to, e.g., marketing planning. *Common values* could not yet be

recognized during the time of the research, though in the future, when the business units start intensive cooperation in service offering, common values can gradually develop.

Knowledge about both business units' way of working and earnings logic was shared in the simulation days. This enabled the personnel of the units to discuss what the common business would be in practice. When both organizations' personnel reached a common understanding (Choo 1998, Conrad 1994, Weick 1995) about each other's businesses, it was easier to plan, model and also act according to a common service process. Reaching common understanding required that the collaborators acknowledged the expectations and goals of the other unit besides their own unit's goals and expectations.

4.2 *The coordination mechanisms*

As the result of the first simulation project, cooperation was improved by formulating *common messages to customers and defining what good service is* in practice. These efforts help coordination through standardizing output.

In addition, *common ways of operating in the customer service* were defined. The common ways of operating included serving the customers in the same way in special cases, instructing the customers consistently, telling customers the same information on both units' services and products and having access to both units' customer relationship management systems. Both business units became aware of the common resources required for producing the products and services to common customers. These improvement ideas contributed to the integration and standardization of the work processes of the two units.

The *common service process* was further modelled in the second simulation project, in order to describe in practice how the two units can cooperate and coordinate their operations and activities. The process model defined common tasks and ways of operating, distribution

of work and persons in charge. The common service process coordinated customer service, planning and implementation of marketing, and electronic sales and distribution.

In addition, in the second simulation project, the participants of the simulation day decided that *common planning meetings of marketing* should be held regularly. A common plan of action was agreed upon. It defined how the customers are served together consistently, so that common objectives could be reached and followed. *Common product and service training* was arranged twice after the second simulation project. These ideas further help to standardize work processes, and also to develop joint knowledge, i.e., to coordinate through standardization of skills.

During the second simulation project, the business unit managers also decided that *a shared customer service centre* and *a shared intranet* would be established in the future. All the customer contacts (by email, phone, via Internet) will be taken care by one customer service centre. This solution integrates customer communication through IT-enabled centralization that can later enable coordination through rules and routines.

Prior to the third simulation project, the managers of the units had decided how to continue with cooperation, and the decisions were talked through with the personnel in the third simulation day. It was decided that there will be a *person in charge* of the electronic operating environment and the *electronic sales and delivery channels* of the business units will be integrated in the future. This decision means a new direct supervision mode for the coordination of the new IT-solutions.

The *definition of the goals of cooperation* in the beginning of the third simulation project helped the personnel to start thinking about the ways of cooperating in electronic sales and distribution operation. In the absence of cooperation experience, the dialogue during the

simulation project helped the personnel to formulate and understand the common goal. The joint business goal, the “output standard”, will become a powerful coordination mechanism in the future.

4.3 *The quality generating resources*

The first simulation project built *common understanding about the customers' needs*, when common customers were giving their opinions about the service of the company in the simulation day. Common understanding about the customers' needs helped to define what good quality in service means and helped the personnel to act in a consistent way (see also Jaatinen & Lavikka 2008).

In the second simulation project, it was considered important to define *a shared service idea* to the common service process. The units wished that the shared service idea could support cooperation between the units by defining the products and services that would be provided together as well as the future customer needs those products and services were meant to satisfy. The shared service idea was planned to be realized by providing quality service together. In addition, it was also considered important that the sales staff and customer service are able to provide customers with products and services in comprehensive service modules. This requires that the *knowledge about both units' products and services is shared*.

The focus of the third simulation project was to solve the whole problem of the customer by a service module which means that the customer is offered a module that contains both products and services needed by the customer. Internal marketing was found to be important, too. The simulation highlighted that internal marketing should support the sales staff by

informing them how the products and services function, what their support systems are and who the direct competitors are.

In the third simulation project, the units realized that customers can be given better service, if the fragmented knowledge about customers is integrated into *a shared customer relationship management system*. In the future, the shared product and customer relationship management system enables higher quality and more personalized customer service, as both units have the same knowledge about each other's customers and products and are able to provide customers with exactly the needed products or services. These two systems need to be integrated to function properly together.

4.4 *The refined framework*

The analysis of the empirical case let us to refine the preliminary analytical framework. The main improvements in the refined framework are the following: Firstly, the separate service processes are considered as an integral part of a common service process around which all coordination should be designed. Secondly, we suggest that the refined framework is divided into three parts (Figure 2):

- *the factors supporting cooperation,*
- *the prerequisites of a common service process,*
- *the operations of common service process and their ways of coordination.*

Take in Figure 2

In the case study, we found two additional factors that support cooperation: *common profit goal and common strategic plan*. Thus, the refined model includes the following seven

factors supporting *cooperation*: common profit goal, common will and values, common understanding about the units' business, common strategic plan, common process simulation projects, internal customership and communication. (Figure 2: outer zone)

The quality generating resources (Grönroos 2001) could be specified, based on our case findings, as a shared service idea, common understanding about the customers' needs, shared knowledge about the products and services, and shared product and customer relationship management systems. In the case study, these four elements tied together the operations of two business units. In the new framework, we call them the *prerequisites of a common service process* (Figure 2: inner zone).

In the case study, the common *operations of both units* were categorized into three parts: *marketing, electronic sales and distribution* and *customer service*, and their mechanisms of coordination were defined (Figure 2: core). We detected new *ways of coordination*. Two of them were used in all operations: common ways of operating, and external integrators. Common ways of operating meant that the collaborators agreed on the roles, responsibilities and tasks that needed to be accomplished, i.e., they started to standardize their joint work process (Mintzberg 1979). The external integrators, i.e., the action researchers from outside the company, gave neutral support and help in the coordination of the change effort itself. This finding represents the new coordination by mediation mode (Frayret et al. 2004).

The results indicate that in order to improve service, the separate units can coordinate their operations by modelling together a common service process that defines their common and separate activities. The common process model defines e.g. prescheduled planning meetings where the coordination challenges related to common business are discussed and solved. In addition, actors, tasks, documents and responsibilities are presented in the process model.

5 Discussion and implications

The study implies that before starting to coordinate the operations of different organizations, cooperation between the organizations should be developed. This supports the statement made by Axelsson and Easton (1992) according to which integration is needed before coordination can be performed. In the case company, it was also important for the personnel that the managers consciously decide and communicate about how to approach cooperation. The personnel needed to understand what kind of advantage is being sought by cooperation.

The common strategic plan and the common profit goal that the units created can be regarded as coordination mechanisms on the organization's strategic level. They correspond to Mintzberg's (1983) standardization of output. The operational coordination mechanisms, i.e., the common ways of operating in customer service, the common messages to customers, the definition of good service and common practices in ad hoc communication improve coordination through standardization of work processes, but also of skills and norms. A joint style in ad hoc communication improves coordination through mutual adjustment. (Mintzberg 1983)

The common service process coordinates the units' different functions towards a shared business goal. We suggest that it also is a key coordination mechanism between the strategic and the operational levels of the units. The common service process should be managed by a process owner that takes care of the continuous development of the process (Hannus 2004).

Marjanovic (2005) presents that in organizations that are still managed and coordinated functionally the aim of IT is to support the particular functions of the organization by processing data efficiently, whereas in organizations that are process-oriented, the role of IT is to enable the integration of the different functions of the organization (Marjanovic 2005).

The case company of this research was functionally organized. However, it integrated two separate business units by modelling a common service process. After that, IT was used to develop and support the common service process. This finding indicates that the case company is turning into a more process-oriented organization. An interesting research question for the future is how IT projects could support functionally organized companies to reach process orientation.

When coordinating the cooperation of two organizations it is important to remember the wider context that includes, e.g., the network of organizations, the different units of the organization and the teams and individuals in the organization. Coordination is required on all these different organizational levels as well as between these levels. More research is required to study how the coordination requirements differ on these different levels.

The new refined framework for *coordinating an inter-unit collaborative service process towards a joint customer* can be used as an analytical tool when the managers of different business units within a company try to reach inter-unit cooperation and coordination in their specific operating environment. The ways of coordination found in the case study are limited to the studied case; some other forms of coordination may better suit some other operating environment. The factors supporting cooperation and the prerequisites of common service process may also be case context specific, and require to be further studied.

The study sheds light on the fact that in the early phase of cooperation, the business units should define the common resources required for producing the products and services to common customers, as a prerequisite of their work process standardization. In addition, when developing cooperation, communication between the business units should flow freely all the time. Mutual adjustment during the dynamically uncertain change period is required to

prevent misunderstandings between partners. Another important factor, not addressed in the case study in more depth, is the involvement of personnel early enough in the collaborative process so that they get committed to changes. (Lanning 1996, Smeds 1994, 1997b) A message to managers is that successful integration of business units requires that the management is committed to the change and encourages personnel to start applying the ways of coordination agreed upon together.

The validity of our research can be evaluated against the four criteria of soundness of a qualitative study (Lincoln and Guba, 1985): credibility, transferability, dependability and confirmability.

The credibility of this study was increased by active cooperation and open communication between the management of the two business units and the researchers in every phase of the research. In addition, triangulation, i.e., the use of different research methods, increased the credibility: we gathered data by interviews, observation and questionnaires.

The transferability of our results to new cases depends on how different the “new” context is compared to the context of this study. The potential of transferability was increased by describing the case study in detail.

Dependability is related to the objectivity and stability of the research. This criterion requires that the context of the study is described in necessary detail. Specifically for this study, it has to be taken into account that the researchers were not objective outsiders but worked partly in action research together with the people from the two business units. This limitation was taken into account by cross-interpreting the empirical data with several researchers, who had not been involved in the action research.

To meet the criterion of confirmability, the methods of research, data collection and analysis were described in the paper.

6 Limitations and future research

We presented a new framework for coordinating an inter-unit collaborative service process towards a joint customer. Our research findings support the idea that a common service process between organizations is a powerful way of coordination that can unite the operations of organizations. The common service process clarifies how operations between collaborators' organizations should be coordinated.

The new, refined framework presents the prerequisites of a common service process, the ways of coordination and the factors supporting cooperation, for two business units serving the same customer. As such, it presents the theoretically interpreted solution to the inter-unit coordination problem in the case company. For empirical generalization, it should be tested in other contexts and cases. Also, it should be further studied, how action research and especially the simulation methodology have affected the results. This question links to the role of the external integrators as coordination mechanism, which requires more research.

Weak and strong market tests can be applied when evaluating the results of constructive research (Kasanen et al. 1993). The weak market test is passed, if the developed solution is used by the management of the case company in their decision-making process. The strong market test is passed if the developed solution has improved the financial performance of the company. In this study, the new framework passed the weak test, because the managers of the business units approved it and stated to implement the results. Follow-up interviews should be conducted to find out, if the managers continue to use the framework in their decision-making process, and if it has had an effect on company practice and performance.

This single company case study is a start in understanding how different business units within one company can be coordinated and integrated to better serve their common customers. A highly interesting and related research question is how inter-company joint service offerings are coordinated. To what extent can the refined framework developed in this study be applied also to research and develop inter-company service provisioning processes in company networks?

Acknowledgements

An earlier version of this paper was published in the proceedings of IFIP International Federation for Information Processing, 2007, Vol. 246, *Advances in Production Management Systems*, eds. Olhager, J., Persson, F., (Boston: Springer), pp. 111-119.

The research reported in this paper has been conducted in Co-Create and Madeleine research projects at the Enterprise Simulation Laboratory SimLab, Department of Computer Science and Engineering, Helsinki University of Technology. The authors are grateful for the creative research effort of the whole research team which has made this paper possible. We also thank the anonymous reviewers of the manuscript for their constructive comments.

The research is financially supported by the following organizations which are gratefully acknowledged: Finnish Funding Agency for Technology and Innovation Tekes and partner companies.

References

- Axelsson, B. and Easton, G., 1992. *Industrial networks, a new view of reality*. London: Routledge.
- Choo, C.W., 1998. *The knowing organization: how organizations use information to construct meaning, create knowledge and make decisions*. NY: Oxford University Press.

- Conrad, C., 1994. *Strategic organizational communication: Toward the twenty-first century*. 3rd ed. Fort Owrth, TX: Harcourt Brace.
- Danermark, B., Ekström, M., Jakobsen, L. and Karlsson, J.C., 2002. *Explaining society: critical realism in the social sciences*. London: Routledge.
- Edvardsson, B. and Olsson, J., 1996. Key concepts for new service development. *Service industries journal*, 16(2), 140-164.
- Eisenhardt, K., 1989. Building theories from case study research. *Academy of management review*, 14(4), 532-551.
- Feller, J., Hirvensalo, A. and Smeds, R., 2005. Inter-partner process learning in collaborative R&D – a case study from the telecommunications industry. *Production planning & control*, 16(4), 388-395.
- Feller J., Parhankangas A., Smeds, R. 2006. Process learning in alliances developing radical versus incremental innovations: evidence from the telecommunications industry. *Knowledge and process management*, 13(3), 175-191.
- Flick, U., von Kardorff, E. and Steinke, I. (editors). 2004. *A Companion to qualitative research*. London: Sage.
- Forssén, M. and Haho, P., 2001. Participative development and training for business processes in industry: review of 88 simulation games. *International journal of technology management*, 22(1/2/3), 233-262.
- Frayret, J., D'amours, S. and Montreuil, B., 2004. Coordination and control in distributed and agent-based manufacturing systems. *Production planning and control*, 15(1), 42-54.
- Gerwin, D., 2004. Coordinating new product development in strategic alliances. *Academy of management review*, 29(2), 241-257.
- Grönfors, M., 1985. *Kvalitatiiviset kenttätömenetelmät* (Qualitative methods for fieldwork, in Finnish). 2nd ed. Juva, Finland: WSOY.
- Grönroos, C., 1990. *Service management and marketing: managing the moment of truth in service competition*. Canada, USA: Lexington Books.
- Grönroos, C., 2001. *Palveluiden johtaminen ja markkinointi* (Service management and marketing, in Finnish). Porvoo: WS Bookwell Oy.
- Gummesson, E., 2000. *Qualitative methods in management research*. 2nd ed.. Thousand Oaks, California: SAGE Publications.
- Hamel, G. 2000. *Leading the revolution*. Harvard Business School Press.
- Hannus, J., 2004. *Strategisen menestyksen avaimet. Tehokkaat strategiat, kyvykkyydet ja toimintamallit* (The keys to strategic success. The effective strategies, competences and business models, in Finnish). Jyväskylä, Finland: Gummerus.
- Harrison, J.R., Lin, Z., Carroll, G.R. and Carley, K.M. 2007. Simulation modeling in organizational and management research. *Academy of management review*, 32(4), 1229-1245.
- Hoeg, G., 2005. Taken for granted. *Best's review*, 106(1), 101-102.
- Jaatinen, M. and Lavikka, R., 2008. Common understanding as a basis for coordination, *Journal of corporate communications*, 13(2), 147-167.
- Kaplan, R. 1998. Innovation action research: creating new management theory and practice. *Journal of management accounting research*, 10, 89-118.
- Kasanen, E., Lukka, K. and Siitonen, A., 1993. The constructive approach in management accounting research. *Journal of management accounting research*, 5, 241-264.

- Kvist, H., Arhoma, S, Järvelin, K. and Räikkönen, J., 1995. *Asiakasprosessit – Miten parannat tulosta prosesseja kehittämällä?* (Customer processes – How to improve the return by developing processes, in Finnish). Jyväskylä, Finland: Gummerus Kirjapaino Oy.
- Lanning, H., 1996. *Organisaation muutoksen toteuttaminen – kehittämissuunnitelmien tyypilliset ongelmat ja niiden välttäminen.* (Implementing Change in an organization – Typical Problems of development projects and how to avoid them, in Finnish) Espoo, Teollisuustalous ja työpsykologia, Nuuka Suomi-projekti, 166/1996/Teta.
- Lawrence, P. and Lorsch, J., 1986. *Organization and environment.* Boston: Harvard University Graduate School of Business Administration.
- Lincoln, Y. and Guba, E., 1985. *Naturalistic inquiry.* Beverly Hills, CA: SAGE.
- Marjanovic, O., 2005. Towards IS supported coordination in emergent business processes. *Business process management journal*, 11(5), 476-487.
- Marshall, C. and Rossman, G., 1995. *Designing qualitative research.* 2nd ed.. Thousand Oaks, CA: SAGE Publications.
- Mintzberg, H., 1979. *The Structuring of organizations – a synthesis of the research.* New Jersey: Prentice-Hall.
- Mintzberg, H., 1983. *Structure in fives – designing effective organizations,* New Jersey: Prentice-Hall.
- Schein, E.H., 1985. *Organizational culture and leadership.* Washington: Jossey-Bass.
- Simatupang, T., Wright, C. and Sridharan, R., 2002. The knowledge of coordination for supply chain integration. *Business process management journal*, 8(3), 289-308.
- Smeds, R., 1994. Managing change towards lean enterprises. *International journal of operations and production management*, 14(3), 66-82.
- Smeds, R., 1997a. Organizational learning and innovation through tailored simulation games: two process re-engineering case studies. *Knowledge and process management*, 4(1), 22-33.
- Smeds, R., 1997b. Radical change through incremental innovations: generic principles and cultural differences in evolution management. *International journal of technology management*, 26(8), 887-902.
- Smeds, R., 2003. Guest editorial: Simulation for accelerated learning and development in industrial management”, *Production planning and control*, Special Issue: Simulation for accelerated learning and development in industrial management, 14(2), 107-110.
- Smeds, R., Jaatinen, M., Hirvensalo, A. and Kilpiö, A., 2006. SimLab process simulation method as a boundary object for inter-organizational innovation’. Paper presented to the 10th International Workshop on Experimental Interactive Learning in Industrial Management, Multidisciplinary Research on Simulation Methods and Educational Games in Industrial Management, June 11-13. Trondheim, Norway.
- Smeds, R. and Alvesalo, J., 2003a. Telepresence in cross-site business process simulation – lessons learnt in technology, social interaction and organizational learning. *Production planning and control*, 14(4), 182-192.
- Smeds, R. and Alvesalo, J. 2003b. Global business process development in a virtual community of practice. *Production planning and control*, 14(4), 361-371.
- Smeds, R., Haho, P. and Alvesalo, J., 2003. Bottom-up or top-down? Evolutionary change management in NPD processes. *International journal technology management*, 26(8), 887-902.

- Thompson, J., 1967. *Organizations in action*. USA: McGraw-Hill.
- Van der Aalst, W., 1999. Process-oriented architectures for electronic commerce and interorganizational workflow. *Information systems*, 24(8), 639-671.
- Weick, K.E., 1995. *Sensemaking in organizations*. Thousand Oaks, CA: SAGE.
- Yin, R.K., 1989. *Case study research: design and methods*. Newbury Park, CA: SAGE.
- Åberg, L., (2000), *Viestinnän johtaminen* (Communication management, in Finnish). Keuruu, Finland: Otavan Kirjapaino Oy.

Table 1. Data gathering during the three simulation projects

Project phase	First project	Second project	Third project
<i>Kick-off meeting</i>	Date: 4.10.2004 Participants: 2S, 1P	Date: 5.4.2005 Participants: 3S, 4P	Date: 12.8.2005 Participants: 1S, 2P
<i>Process modelling session</i>	Date: 8.11.2004 Participants: 3S, 2P	Date: 14.4.2005 Participants: 3S, 4P	Interviews with process modelling: Date: August-September 2005 Participants: 10S, 7P
<i>Interviews</i>	Date: March-December 2004 Participants: 4S, 10P, 3C	Date: April 2005 Participants: 3S, 3P	
<i>Simulation preparation meeting</i>	Date: 17.12.2004 Participants: 3S, 2P	Date: 2.5.2005 Participants: 3S, 5P	Date: 14.10.2005 Participants: 1S, 2P
<i>Simulation</i>	Date: 11.1.2005 Participants: 12S, 8P, 20C	Date: 10.5.2005 Participants: 9S, 17P, 1C	Date: 28.10.2005 Participants: 13S, 24P
<i>Content analysis of discussions, notes, questionnaires</i>	Date: January-February Participants: 3 researchers	Date: May-June 2005 Participants: 3 researchers	Date: October-November 2005 Participants: 3 researchers
<i>Feedback session</i>	Date: 8.3.2005 Participants: 3S, 2P	Date: 20.6.2005 Participants: 3S, 5P	Date: 28.11.2005 Participants: 3S, 7P

S = service unit representative; P = product unit representative; C = customer representative

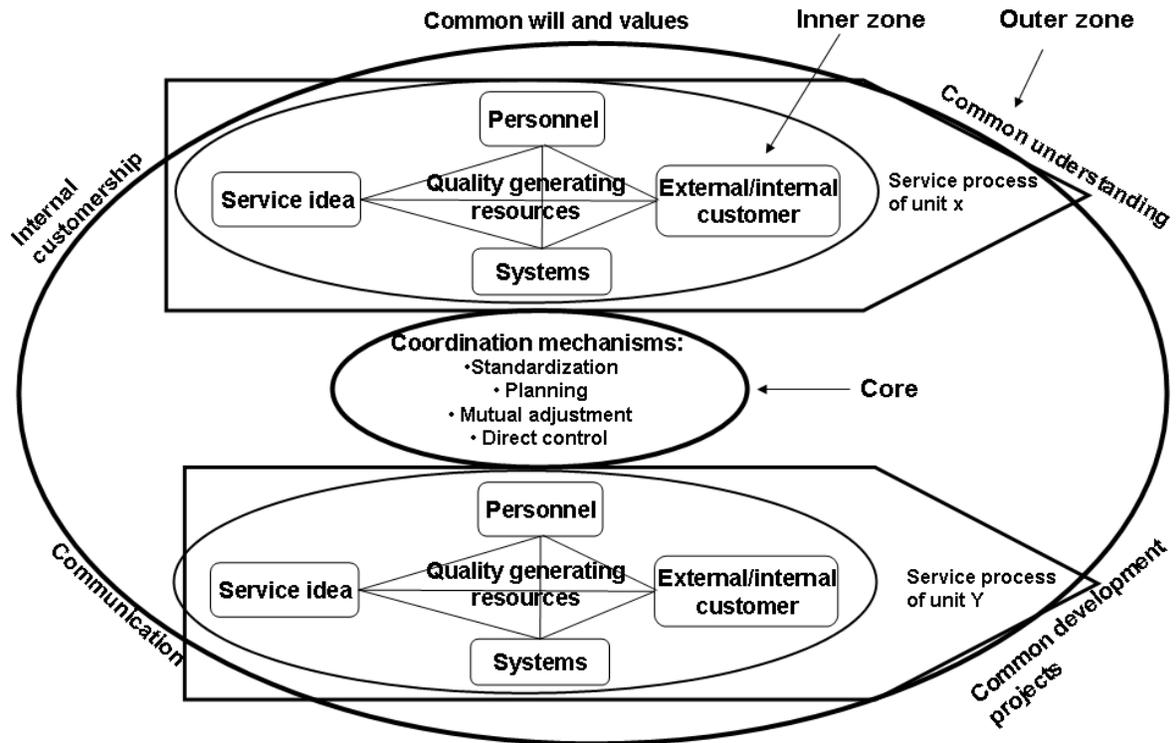


Figure 1. The analytical framework for coordinating an inter-unit collaborative service process (developed by the authors)

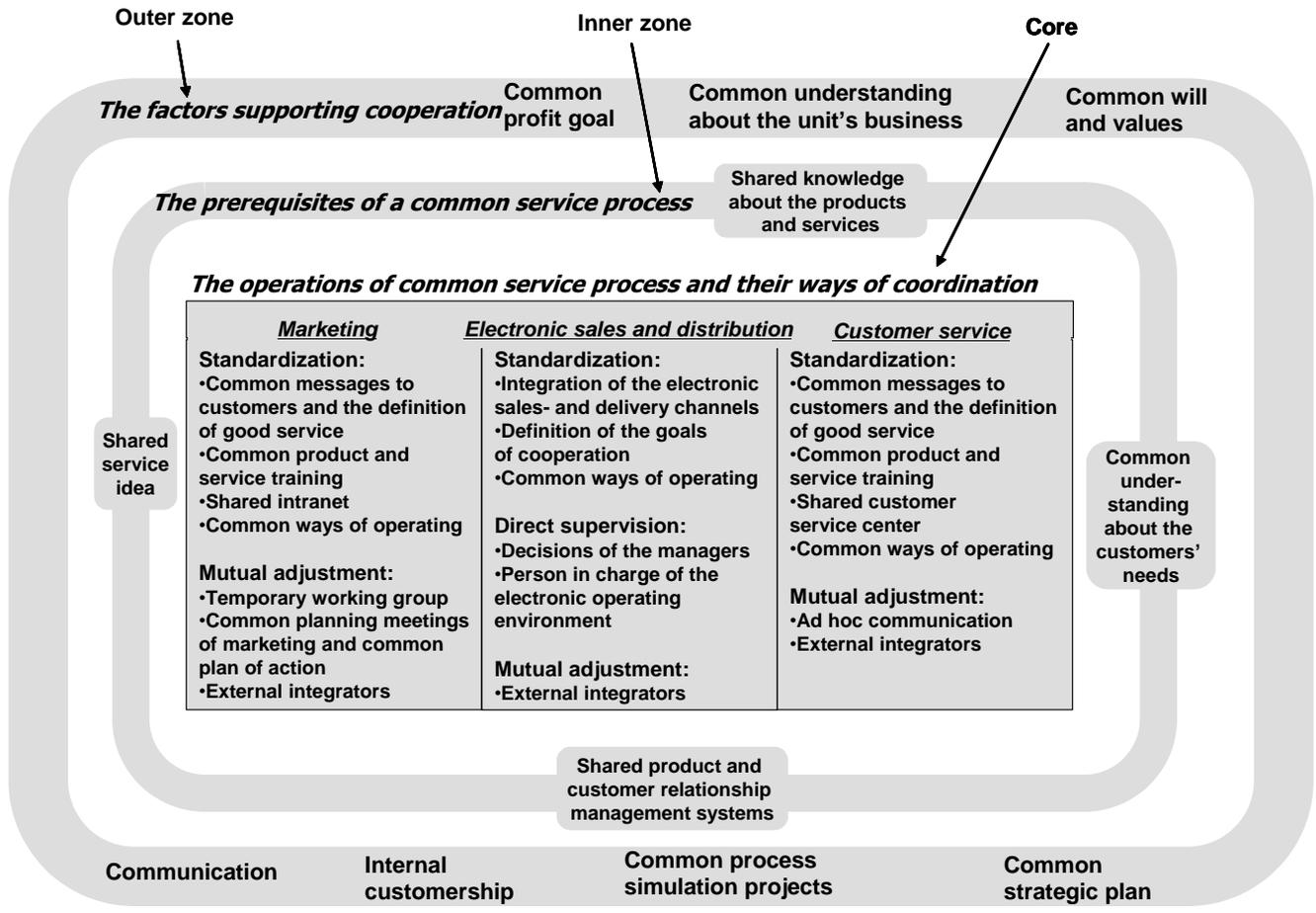


Figure 2. The refined framework for coordinating an inter-unit collaborative service process towards a joint customer