



Commitment Management in the Context of Parallel Business Transactions

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Abstract

In order to maintain market position, one of the critical issues facing companies is how they can improve their commitment management. In this paper, the concept of commitment management is used to understand how suppliers and customers create mutual commitments in business agreements, and how these commitments are fulfilled. In a number of empirical case studies, commitment management problems have been the direct consequence of deficiencies in the infrastructural support. One example of such lacking infrastructural support are IT systems intended to support this commitment management process. This is of particular interest in a context of commitments created in parallel business transactions that compete for the same delivery capacity. The aim of the paper is to describe, analyse and propose solutions to some of these problems. This paper proposes a necessary extension to a framework for business interaction between suppliers and customers. This extension is based on business action theory, workpractice theory and ideas from yield management.

Keywords: Business transaction, commitment management, parallel coordination, delivery capacity, norms

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1 Introduction

There is a growing awareness of the significance of social interaction in business transactions for creating and developing sustainable business relationships. Modern marketing theories are often rooted in the area of relationship and service marketing (Gummesson, 2002; Grönroos, 1997). Important aspects of these theories are social interaction, commitments (or promises) and trust.

The notion of commitment used in this paper is described as an obligation for social actors to act in certain ways in the future. Commitments are created with the help of communicative acts, like promising and ordering, and are established in agreements between social actors that binds actors to a future expected cooperative behaviour (Habermas, 1979, pp. 84-87). This means that the way the actors agree and fulfil these commitments is essential in order to develop and sustain social relationships. In

a business transaction mutual commitments between suppliers and customers are created in a business agreement that is expected to be fulfilled in the course of the business transaction. The business agreement implies that the actors are bound to a certain future behaviour and that resources are needed to fulfil these commitments. This implies that capacity of the supplier must be reserved (allocated) and that the customer must guarantee that he can pay for the product. This means that patterns of communication between social actors that are used to negotiate, fulfil and evaluate agreements and the allocation of delivery capacity are essential aspects in order to understand the notion of commitment management.

Trust is one way through which people can cooperate with others to actively serve one another's purposes, and promising is thought to be the best vehicle for generating trust. It is also understood that conflicts occur and trust is eroded when explicit and implicit agreements are violated (Coote et al, 2002). Relationship marketing theories have a focus on the importance of commitments for creating trusted business relationships. (cf. Håkansson & Snehota, 1994). Trust can be defined as the credibility or the belief that another party can be relied upon to fulfil their written and spoken promises (Coote et al, 2002). Other researchers in the relationship marketing area that emphasise the importance of commitments (or promises) are Gundlach & Murphy (1993, p. 39) who describe the "promise principle" as providing the moral basis for contract law. They say that "individuals can voluntarily impose obligations on themselves under which they can choose to join together for mutual advantage.

In order to develop IT systems that support desired patterns of interaction several frameworks have been presented by a number of scholars; refer to for example Ahlström (2000) who provides an overview of some frameworks. These frameworks acknowledge the need for going beyond traditional ISD-methods when developing IT systems for business interaction. A well-known reference model for electronic markets has been presented by Schmidt & Lindemann (1998). Within the language action perspective (LAP) there are several business interaction frameworks, see for example Auramäki et. al (1992), Dietz (1999), Goldkuhl (1998), Weigand & van den Heuvel (1998), and Medina-Mora et al (1992); all building on the speech act insights from Searle (1969) and Habermas (1979, 1982). These LAP-approaches are important since they emphasise actions, communication, interactions and commitments in the relationships between customers and suppliers.

In these approaches there is an emphasis on action patterns constituting *the* successful business transaction. For example Goldkuhl & Lind (2004, p. 8) define the business transaction at the instance level. "A business transaction concerns a particular transaction occasion". According Goldkuhl and Röstlinger (2006, p. 47) there is an important distinction between process type and its different process instances. "A process instance (as a constellation of objects and actions) is conceived as a transaction. A workpractice comprises usually several transactions of the same type over time." (ibid., p. 47). Goldkuhl and Röstlinger (ibid.) also claim that it is important to distinguish between such conditions which function on instances of transactions (transactional conditions) and conditions which function on types of transactions (infrastructural conditions). This implies that infrastructural conditions (or the infrastructure for short) should support several recurrent instances of the same type. In the Media-Reference-Model (MRM) by Schmidt & Lindemann (1998) the role of infrastructural support is also identified. This infrastructural support is however still bound to the type level of the business transaction. An unresolved quest in the frameworks

mentioned above is how to keep track of several parallel business transactions at the instance level, which seems to be the normal situation in the case studies that we have performed.

IT systems can be considered as an important part of the infrastructure because they are developed for supporting recurrent business transactions, but they should also support the dependency between parallel business transactions competing for the same delivery capacity. This is an important issue because we have found in many case studies that problems involving how commitments are guaranteed, confirmed and fulfilled are often associated with a lack of infrastructural support, e.g., poor and inflexible IT systems. The consequences of these problems are that the customers do not get the right products or that the right products are delivered but not in a timely fashion. One main reason for this is that business transactions are not performed in isolation from each other; several transactions are performed in parallel and compete for the same delivery capacity which triggers the need for commitment management. Commitment management as it is described in this paper is about the creation and fulfilment of commitments in a context of parallel business transactions, and the purpose is to present a framework which could be used to analyse commitment management in such a context.

The research approach adopted in this paper can be characterised as abductive. In an abductive approach (Nöth, 1990, p. 336; Alvesson & Sköldbberg, 2000, pp. 16-19) empirical findings are important. However, the analysis of empirical data can be preceded by studies of theories, but the theories are not used uncritically; instead they are used for inspiration and to generate ideas of how to analyse the data. The reason to use an abductive approach in our research is to find patterns and constructs which can be reconstructed and which also are found in other business transaction contexts. These theories are not considered as certain laws but as frameworks (made up by patterns and constructs) that could be used to interpret the data. To use theories in this way makes it easier to understand the empirical findings. The theories used can also together with the empirical findings then trigger the development of new and adapted frameworks.

What has triggered our research are problematic situations that have been identified in a number of case studies concerning how suppliers and customers make agreements, and fulfil these agreements in a context of parallel business transactions. In the paper these problems are described in section 4 in the form of scenarios, and solutions for these problems are also discussed. Based on these scenarios we have then studied the literature to find theories that could help us to explain and describe these situations, these theories are presented in section 2 of the paper. The theories we have found relevant for explaining these problems have been used to derive a number of theoretical constructs that are presented in section 3. In section 5 the theoretical constructs have then been used to analyse and discuss the empirical findings and based on this a framework for commitment management emphasising infrastructural and transactional dimensions have been derived. This implies that the scenarios have been used as drivers for highlighting problematic issues in commitment management, and to arrive at a framework for analysing commitment management in a context of parallel business transactions that is based on both theoretical and empirical insights. In section 6 the conclusions of the paper is presented.

2 Commitment Management in Business Transactions

There are several frameworks for studying business interaction in commercial settings. Some examples include AW or Action Workflow (Medina-Mora et al, 1992), DEMO (Dietz, 1999) and Business interAction and Transaction Theory (BAT) (Goldkuhl & Lind, 2004). Common characteristics of different frameworks include an emphasis on interaction between two different roles coming to and fulfilling agreements, that interactions are structured into several phases, and that communicative acts are regarded as the co-ordinating mechanism. These business interaction frameworks are promising since they focus on how communication is used to create commitment between different business parties. There are also other initiatives that utilise business interaction frameworks. Schmidt & Lindemann (1998) have presented a reference model for electronic markets, developed into a more general framework called the media reference model (Lechner & Schmidt, 2000).

In this paper we have chosen to use the BAT-model as a basis for understanding commitment management. BAT was chosen for several reasons: its view that business interaction is regarded as social interaction, that the structure of the business transaction is centred on reaching and fulfilling commitments, and that both commitments of the supplier and the customer are regarded as interrelated. Importantly BAT emphasises social interaction as both the performance of communicative and/or material acts. In this way, acts are interwoven in action patterns constituting different types of exchanges.

2.1 Business interaction as social interaction

Goldkuhl (1998) has presented the BAT model (Business Action Theory model). This business framework is divided into six phases: (1) Business prerequisites phase, (2) Exposure and contact search phase, (3) Contact establishment and proposal phase, (4) Contractual phase, (5) Fulfilment phase, and (6) Completion phase.

This model has been further developed by Goldkuhl & Lind (2004). A business interaction can be performed at different levels, see figure 1 below.

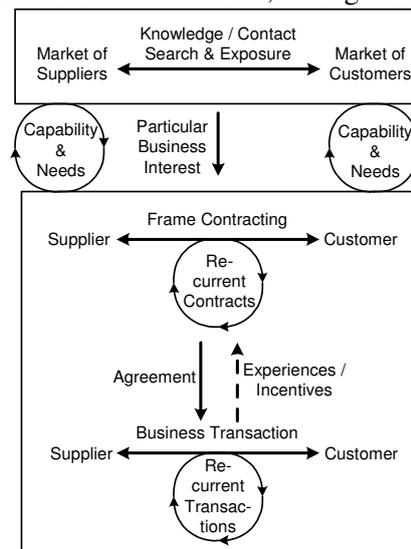


Figure 1: Two levels of business interaction (Goldkuhl & Lind, 2004)

The interaction can take place at a market level where suppliers and customers interact as potential customers and suppliers toward each other (Phase 2 in the original model). When a contact is reached between a supplier and a customer this interaction may proceed to the dyadic level (Phase 3). On the dyadic level, a distinction is made between frame contracting and business transaction. A business transaction occurs between a particular supplier and a particular customer on one occasion, and it comprises the establishment, fulfilment and assessment of such business agreement (Phase 3 to 6). Alternatively, a business transaction can be governed by frame contracts. A frame contract concerns the establishment of long-term agreements, and governs recurrent business transactions.

On a market level, a supplier interacts with potential customers and vice versa (search phase). The BAT model adopts both a supplier and customer perspective (a symmetric view). The role of a customer arises from a lack of capability. There is something in the customer's activities that needs to be resolved, and this may be done through purchase of a product (i.e. transfer of value from a potential supplier). The customer searches for knowledge about potential products and potential suppliers to meet the demands. Through these knowledge search activities, a customer's understanding of the product requirements may emerge. This market interaction is driven by general business interests of both suppliers and customers. When contact is established between a supplier and a customer, this interaction may proceed to the dyadic interaction. Already actor relationships are being established concerning the supplier's and customer's expectations on each other. In figure 2 below the constituents of the business transaction is depicted.

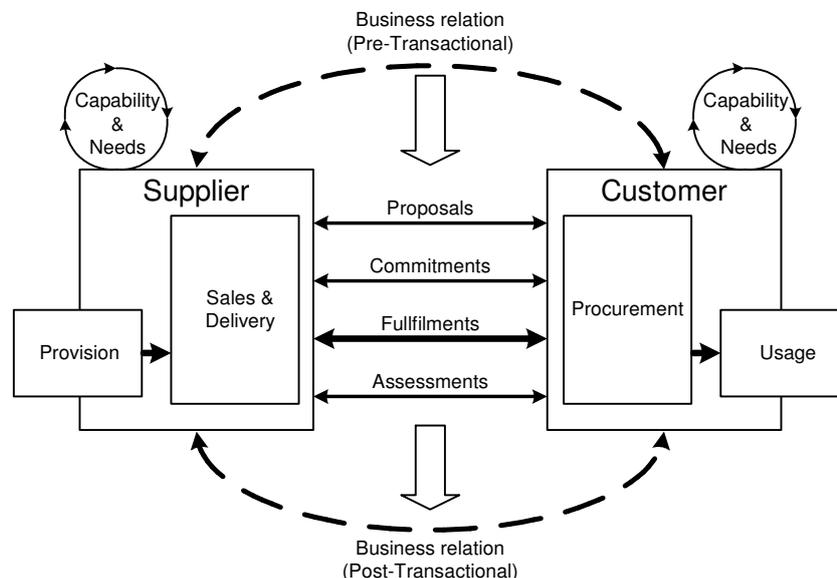


Figure 2: The constituents of the business transaction (Goldkuhl & Lind, 2004)

On the dyadic level, interaction occurs between a particular supplier and a particular customer, where the interaction consists of several communicative and material exchanges including proposals, commitments, values and assessments. Agreements are established by exchanging proposals necessitating negotiation between the

two parties. This implies the need to establish each party's commitments within the scope of the dyadic interaction. These commitments concern the expected future business actions of each party. In the following phase there is an exchange of value. It is only on this level that the exchange of value - goods and/or services in the exchange for money - occurs. If either party is not satisfied with the fulfilment, a reclaim might be directed to the other party, that occurs during the assessment phase. Of course, positive feedback in the assessment phase, regarding the success of the transaction may also be exchanged between the parties.

There may be a recurrence of dyadic interaction between the particular supplier and customer over time. This also means a continual development of business relationships. Before the dyadic interaction begins there exists some type of business relation between the two parties. If the parties have traded earlier experience-based business relationships exist and these form pre-contractual relationships giving expectations for the next turn of business interaction. This also means that post-contractual relationships become pre-contractual when the parties enter into a new dyadic interaction. As Keen et al (2000) state, trusting relationships are of key importance in e-interactions, and the fulfilment of commitments is essential for building trust.

The reason why communication is important and generic both at the market and dyadic level is that communication is used to perform generic business acts like to request, to offer, to order or to confirm an order (Goldkuhl, 1998), which creates commitments that have to be fulfilled in the course of the business transaction.

These communicative acts create agreement that has to be fulfilled by means of subsequent actions. The supplier is responsible for delivering a product in a certain point in time, and the customer must pay for the product.

This means that the ability to create business agreements and to fulfil these agreements is generic for the business transaction, which implies that it is very important to be able to create agreements of a high quality and to fulfil commitments made in a reliable way.

2.2 Workpractice theory and business transactions

BAT adopts a horizontal view of the business transaction which means that it acknowledges the (horizontal) coordinative dimension; negotiations, agreements and commitments between clients and producers which governs the activities in the fulfilment of the transaction. Vertical coordination which includes control and authority are not considered and neither the infrastructure needed to support these transactions, however vertical coordination and the infrastructure is highlighted in the workpractice theory (WPT). According to WPT (Goldkuhl & Röstlinger, 2006, p. 43) "A workpractice consists of people (the producers) acting in favour of some people (the clients). The producers create results (products) from the workpractice aimed for the clients." A workpractice consists of actors (producers), their actions and accompanying results. The producers need conditions of different kinds in order to produce results. This implies that workpractices consist of conditions, producers, actions and results. Conditions/results are action objects. An action object is created through some action and used in some other action. Action objects can both have a material and a communicative character. Metal components that are assembled into a car are material objects. A business agreement that initiates the fulfilment phase of the business process is a communicative or semiotic object. What is important to notice is that action objects are multifunctional and that they can play different roles, and fulfil

different generic functions for the workpractice. One of the main ideas in workpractice theory (WPT) is to clarify these functions (Goldkuhl and Röstlinger, 2006, p. 43)

According to WPT (Goldkuhl and Röstlinger, 2006, p. 47) there is an important distinction between process type and its different process instances. “A process instance (as a constellation of objects and actions) is conceived as a transaction. A workpractice comprises usually several transactions of the same type over time.” This also means that we can distinguish between conditions that prevail in order to perform a single transaction and conditions for the type level of the transaction. Goldkuhl and Röstlinger (*ibid.*, p. 47) write “Such conditions which function for types of transactions are here called infrastructural conditions. Conditions which function as specific parts of transactions are here called transactional conditions.”

The WPT-model is illustrated in figure 3 below.

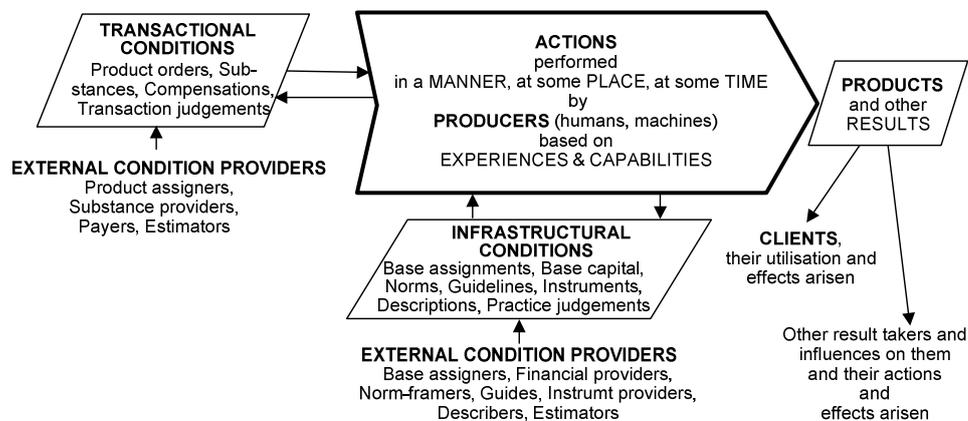


Figure 3: The workpractice model (Goldkuhl & Röstlinger, 2006)

We have chosen the WPT-model because it attempts to include both business transaction as well as infrastructural aspects of a workpractice. The purpose with this is according to Goldkuhl and Röstlinger (2006, p. 56) “When using a traditional limited business process concept there is a risk that the inquirers will disregard important infrastructural issues.” This is in line with the purpose of this paper, because it is important to consider the infrastructural support for commitment management and not only transactional aspects.

The transactional conditions of WPT will be explained in more detail in the section 3.1 where these conditions are compared with BAT and yield management. The infrastructural conditions will be explained in more detail in section 3.2.

2.3 Yield management

To promise to fulfil a commitment implies that delivery capacity is bound for a particular time frame, and normally companies are involved in parallel business transactions. This implies that business transactions compete for the same delivery capacity, and commitment management (CM) is triggered in such a context. However neither the BAT nor the WPT has a focus upon delivery capacity issues and strategies for how to allocate and use a limited time-framed delivery capacity in an environment of parallel business transactions. This is discussed in the yield management literature.

Based on insights provided by yield management (YM) (cf. Donaghy et al, 1998), the success of a business is dependent on maximizing the utilisation of the delivery capacity, the revenue and consequently the net returns. Enterprises that use YM periodically review business transactions for goods or services already supplied and for goods or services to be supplied in the future. A lot of effort has also been made in developing IT systems for the support of YM. The enterprises which deal with YM e.g. air line companies have also developed strategies for solving conflicts between competing business transactions, e.g. when seats have been overbooked. These strategies include rules for how to compensate for passengers that have to wait and take another flight, and can be seen as an infrastructure for managing commitments in a context of parallel business transactions that compete for the same delivery capacity.

YM is particularly suitable in the service industry have to be delivered at a specific time for example a flight seat (McColl et. al. 1998). Industries that use YM include airlines, hotels, stadiums and other venues with a fixed number of seats, and advertising. With an advance forecast of demand and pricing flexibility, buyers will self-sort based on their price sensitivity (e.g. travelling at time frames when prices are low), their demand sensitivity (must have the higher cost early morning flight) or their time of purchase (usually paying a premium for booking late).

The idea is that YM should increase the revenues for the same number of units, by taking advantage of the forecast of high demand/low demand periods, effectively shifting demand from high demand periods to low demand periods and by charging a premium for late bookings.

In recent years the morality of YM has been questioned (Cooper, 2004). The ethical issues include the firm's manipulation of personal information. A firm that practices YM through IT systems relies on forecasts, and the manipulation of information via online transaction processing systems to find out the price to maximize revenue. There have also recently been questions about the effectiveness of YM in the long run. A firm that wants to satisfy its customers and have them come back are putting their customer relationships in jeopardy by using YM practices (McCaskey, 2006). The costs of lower customer satisfaction, loyalty and the loss of relationships can have longer more serious effects and in the end might make the implementation detrimental to the firm. The extra revenue is the short-time benefit, but a loss of goodwill and thereby a possible drop in revenue in the long run.

The back-drop of YM described above shows how important it is to take care of the business relationships that are emphasized in CM. The main idea in CM is to take care of the business relationships by making high-quality agreements with the customers and keeping the commitments made in these agreements, but at the same time making sure that the available delivery capacity is utilised in an efficient way.

Another difference between yield and commitment management is that CM has a focus on the dyadic level of the business transaction, and YM is more oriented towards the market level. Still there are ideas in YM that is of interest for CM, for example:

1. Lowering prices for customers that do early purchases, i.e. book "delivery capacity" well in time.

2. Advanced forecasting techniques, but in CM the interest is focused on doing forecasts of commitments in the contact establishment and proposal phase of the business transaction.
3. Stimulate the customers to put their orders in time frames when there is a lot of available delivery capacity.

Compensate the customers for not being able to keep the commitments made because of overbooked capacity.

3 Analytical constructs for commitment management

In the former section three theories useful for deriving analytical constructs for commitment management (CM) were introduced. In this process the Business Action Theory (BAT) and the BAT-model is used as the basis since its focus on patterns for establishing and fulfilling commitments. In this section a number of constructs are presented for the analyses of CM in parallel business transactions based on the theory presented in section 2. These analytical constructs are divided into transactional constructs (section 3.1) and infrastructural constructs (section 3.2).

3.1 Transactional constructs of commitment management

In section 2.1 we could see that the BAT has a focus on the establishment of the two parties' commitments in business agreements and a fulfilment of these commitments. Therefore BAT is used as the starting point for finding analytical constructs for commitment management at the transactional level. In this section the BAT model is compared to the transactional conditions of the WPT-model, and ideas from YM. The comparison is made in order to show similarities and dissimilarities between the constructs used in these theories compared to the constructs that are important to consider for CM in a context of parallel business transactions. The table 1 below summarises the comparison. In the first column a short description of the construct from a CM perspective is presented, and in the other columns is the description of the construct presented from a BAT, WPT and YM perspective, or if there is no equivalent construct a comment is presented.

Table 1: Comparison between BAT, WPT and YM for the purpose of deriving transactional constructs of commitment management

Transactional constructs for commitment management	Business and interaction Theory (BAT)	Workpractice theory (WPT)	Yield Management (YM)
Business Transaction Parallel dyadic transactions at the instance level	Dyadic business transaction at the instance level	Dyadic business transaction at the instance level, and several transactions instances over time that share a number of common features at the type level	The construct is not defined but it is recognised that several parallel business transactions are going on.

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Transactional constructs for commitment management	Business and interaction Theory (BAT)	Workpractice theory (WPT)	Yield Management (YM)
Supplier delivery capacity The supplier's delivery capacity to perform the value transformation process. This is a combination of substance, the supplier's capability to perform transformation activities and time.	The suppliers capability is described as a readiness to participate in particular business interactions.	The concept of capability is used at it describes the actors/agents ability to produce.	The capacity to deliver (distribute) a product at the right time.
Customer need and capacity The customer's need and capability to receive and pay for the product	The customer need originates from a lack of capability, the customers must have a capability to receive and pay for the product.	Customer need is focused a workpractice gets its social legitimacy from the needs of its clients.	The customer demand is focused and the customer's capability to receive and pay for the product in time frames when there is available delivery capacity
Commitment An obligation either from the supplier or customer to act in a certain way in the future.	Exchange of commitments means the establishment of each party's obligations within a business agreement	A transaction includes both an agreement of doing something and the accomplishment of this doing.	The construct is not focused
Business agreement The business agreement contains the two parties' commitments; it also initiates the value transformation process, and specifies the conditions of satisfaction.	The business agreement contains the two parties' commitments. The business agreement initiates the value transformation process	The product order is the initiating force of the value transformation process.	The construct is not focused
Value transformation process The transformation of substance to the finished product to be utilised by the customer. The transformation process consists of both production and distribution activities, performed by suppliers and customers	The supplier value transformation process consists of activities for sales and delivery as well as product provision	The transformation of input (substance) to output (the finished product to be utilised by the customer	The delivery of the product in cooperation with the customer.
Compensation Money or other benefits that are paid by the customer, it also includes penalties paid for broken commitments by the supplier	The customer compensates the supplier for the delivery	The payment for the produced product	The price of the delivered product and penalties for broken commitments

Transactional constructs for commitment management	Business and interaction Theory (BAT)	Workpractice theory (WPT)	Yield Management (YM)
Results The result is the fulfilment of the commitments described in the business agreement	The result of the transaction is a fulfilment of the business agreement	The product and other results.	Delivered product at a maximised revenue
Transaction judgements Transaction judgements concern judgements for a transaction instance.	Appreciative assessments and reclaims	Judgements that concern a transaction instance.	The construct is not focused
Business relationships The performance of business transactions implies a continual development of business relationships.	The performance of business transactions implies a continual development of business relationships.	A workpractice exists in a <i>web of social relations</i> , e.g., between producers and clients	The construct is not focused.

Business transaction

In CM it is the parallel instances of several dyadic business transactions that are of concern and as well these instances can be of different types. A business transaction means the establishment, fulfilment and assessment of a business agreement.

The definition of a business transaction in CM is defined as in BAT (Goldkuhl & Lind (2004, p. 8) "A business transaction concerns a particular transaction occasion". In WPT (Goldkuhl & Röstlinger, p. 47) two levels of the business transaction is described: the instance and type levels. At the instance level the business transaction is described as a unique combination of product order, substance (base), actions and product. At the type level a business transaction stands for a number of such transactions that share a number of common features. The difference between the view of the business transaction concept in CM compared to BAT and WPT is that CM has a focus on the coordination of parallel business transactions. In YM the concept of business transaction is not defined, however it is recognised that there are parallel business transactions going on which have to be managed.

Supplier's delivery capacity

In CM supplier delivery capacity is described as the supplier's capacity to perform the transformation process (see below), and this capacity is described as the combination of substance, the capability of people/agents to perform transformation actions and time. This means that delivery capacity is a concept that describes resources that are either consumed or transformed in the value transformation process. Note that in some definitions of the capacity concept only the ability to perform activities is included, (Answers.com; <http://www.answers.com>; Webster's Online Dictionary; <http://www.websters-online-dictionary.org>). However we want a concept that also includes the substance that is transformed.

In BAT the supplier's capability is described as the readiness to participate in particular business interactions (Goldkuhl and Lind, 2004, p. 6). In WPT the concept of capability is also used, and it means the actors/agents ability to produce which is a part of the delivery capacity concept used in CM. In YM delivery capacity is emphasised. The reason for this is that YM is focused on products that are not possible to

store, that is they have to be delivered in fixed time frame. The idea is to try to adapt the market demand to time frames that are most suitable in order to maximise the utility of the supplier's delivery capacity. The problem becomes quite similar in CM because commitments bind the substance and transformation activities within a specific time frame. The supplier's delivery capacity must also in most cases, be reserved in order to ensure that it is available to fulfil the commitments in the business agreement, it must also be used so efficiently as possible in order to make money. The supplier's delivery capacity consists of the resources described below:

1. Raw material, components, or products in stock, that is resources which should be transformed, otherwise it would not be able to fulfil the commitments in the business agreement (substance according to WPT).
2. People/agents that are capable of performing transformation activities (see below). Machines and IT systems are agents because they can perform transformation activities based on assignments of human beings. Time is important to consider together with people/agents capability to perform the activities in order to understand the capacity concept, because labour, transport or machine hours are resources that are consumed in the transformation process

Customer's need and capability

In CM the customer's capability is described as the customer's capability to receive the product and pay for it. The product should meet customer's need.

This is in line with BAT, since according to BAT the role of a customer arises from a lack of capability (Goldkuhl & Lind, 2004 p. 6) that creates the need. In BAT it is also recognised that the customer must have the capability to receive for the product (ibid. p 9). In WPT a workpractice gets its social legitimacy from the needs of the clients (Goldkuhl & Röstlinger, 2006, p. 43). In YM the customer's demand/need focused and the idea in YM is to match customer demand with the supplier's delivery capacity.

Commitment

In CM the concept of commitment is defined as an obligation either from the supplier or customer to act in a certain way in the future.

This is in line with how the notion of commitment is described in BAT where the exchange of commitments means the establishment of each party's obligations within a business agreement- a frame or business transaction agreement (Goldkuhl & Lind, 2004, see figure 2 p. 8). These obligations concern the expected future fulfilment actions of each party. According to WPT (Goldkuhl & Röstlinger, 2006, p. 48) "a transaction we include both the agreement of doing something and the accomplishment of this doing." This implies that the term commitment is not explicitly used, however it is implicitly described because creating agreements and fulfilling them, are based on creating and fulfilling commitments. In YM the concept is not defined because the dyadic business interaction is not focused.

The business agreement

In CM the business agreement specifies the commitments of the producer, that is product that should be delivered, the time of delivery and other conditions that describe the result that should be accomplished. It is also important to specify the commitments of the consumer, for example what he should pay and other conditions that

are important in order to receive and utilise the product. This implies that the business agreement both initiates the value transformation and defines the conditions for satisfaction of the fulfilment of the business transaction (see Winograd & Flores 1986; Denning & Medina-Mora, 1995; Eriksson 2000). This also means that the business agreement is based on mutual commitments that both the producer and customer are obliged to fulfil.

This is in line with how the business agreement is described in BAT where it is the business agreement that initiates the transformation process. This is also similar compared to WPT where the concept of product order is used to describe the initiating force of the transformation process. In YM the business agreement is not defined.

Value transformation process

In CM the value transformation takes place when commitments are fulfilled and the transformation process implies that production and distribution activities are performed. These activities are in most cases performed by suppliers but also the customers perform these activities.

In BAT the value transformation is described as (Goldkuhl & Lind, 2004, p. 9). “The supplier part of this value transformation process consists of activities for sales and delivery as well as product provision”. However it is also said that (ibid., p. 8) “the exchange of fulfilments means the exchange of value” i.e. the real “value transformation” takes place when commitments are fulfilled, i.e. sales activities are transaction activities but not value transformation activities. In WPT the transformative dimension is described the transformation of input (raw material) to output (the finished product to be utilised by the customer” (Goldkuhl & Röstlinger, 2006, p. 45). In YM the value transformation takes place when the product is delivered to the customer, an empty flight seat does not generate value only costs.

Compensation

In CM compensation is the money or other benefits that are paid. The customers pay for the fulfilment of the commitments that are specified in the business agreement. Compensation could also be paid to the customer if the supplier does not fulfil his commitment (e.g. in line with seats that are overbooked).

This is in line with BAT “the customer compensates the supplier for the delivery” (Goldkuhl & Lind, 2004, p. 10). This is also in line with WPT where compensation is used for describing the amount that the customer should pay for their products (Goldkuhl & Röstlinger, 2006, p. 53). YM has a focus on the price which is the compensation the customer are willing to pay for the product, but in YM the supplier may also pay penalties to the customer if commitments are broken.

Results

In CM the main result is the fulfilment of the commitments described in the business agreement.

This is in line with BAT where the result of the transaction is a fulfilment of the business agreement (Goldkuhl & Lind, 2004, p. 6). In WPT it is claimed (Goldkuhl & Röstlinger, 2006, p. 43) that “the producers create results (products) from the workpractice aimed for the clients”. This means that the product is the main result and the product concept covers both goods and services. The workpractice also creates other

results for example product and practice descriptions. In YM it is the delivered product at a maximised revenue which is focused.

Transactional judgements

In CM transactional judgment are judgements that concern transactions at the instance level.

In BAT appreciative assessments and reclaims are exchanged in the completion phase of the business transaction (Goldkuhl & Lind, 2004, p. 8). The concept of transactional judgement is borrowed from WPT (Goldkuhl & Röstlinger, 2006, p. 52). In YM the concept is not defined.

Business relationships

In CM business relationships are focused and the performance of business transactions implies a continual development of business relationships. In order to be able to do this the fulfilment of established commitments are very important since it is an important norm (see below).

This is in line with BAT (Goldkuhl & Lind, 2006, p. 10) since there is a focus on the development of business relationships. The business transaction is dependent on the existing business relationships between the business parties. Such relationships can be deep if there is prior interaction, and thin if no or little interaction has previously occurred. The execution of the business transaction will influence the business relationship dependent on its performance. If there will be recurrent business transactions, the post-transactional relationships will form the pre-transactional relationships in the next business transaction. According to WPT (Goldkuhl & Röstlinger, 2006, p. 55) “a workpractice exists in a *web of social relations* between producers and clients/result takers and between producers and condition providers”. In YM there is no focus on business relationships and YM has been criticised for this.

3.2 Infrastructural constructs for commitment management

Section 2.2 shows that WPT could be used to analyse general infrastructural conditions (support) for business transactions. Therefore the infrastructural conditions of WPT are chosen to describe conditions that the infrastructure should have in order to support business transactions.

Base assignments

Product repertoire, role assignments and resource assignments are assignments on an infrastructural level (Goldkuhl & Röstlinger, 2006, p. 48). A role assignment define the duties of the producers for types of transactions. The product repertoire defines the product types that should be produced, and resource assignments for example budget are also conditions on an infrastructural level.

Instruments

Instruments are considered as instruments because they may be used in several transactions of the same type (Goldkuhl & Röstlinger, 2006, p. 51). Instruments have a supportive character in relation to the transaction process.

Guidelines

According to Goldkuhl and Röstlinger (2006, p. p. 51) a similar reasoning as with instruments can be applied to guidelines. Many guidelines are formulated as prescriptions for use in many transactions. They are thus parts of the infrastructure.

Descriptions

Knowledge is expressed either orally or in writing into statements which have a propositional content used to describe objects which could be things, actions, commitments and so on. Descriptions are information that could be used to support the performance of business transactions.

Norms

Norms are value expectations on workpractices and their products. Goldkuhl & Röstlinger (2006) write “quality norms regulate what is expected from all process instances of one kind and perhaps even from instances of several kinds. Norms are thus formulated in relation to types of transactions and not to a particular instance.”

Practice judgements

Judgements of transaction instances can be generalised to an assessment of a transaction type. Such a generalised judgement functions as infrastructural condition. General practice judgements do not need to originate from transaction instances. People inside or outside the workpractice may render general opinions about the workpractice.

Base capital

Financial capital can be provided to workpractice in different ways. Capital provided by founders/owners cannot be seen as transactional. Such base capital is part of the workpractice’s infrastructure.

4 Failures in Commitment Management

In this section three typical “scenarios” are described and analyzed, and are based on experiences derived from several case studies. The scenarios show situations where parallel transactions compete for the same delivery capacity and where there is a need for better commitment management. For each scenario, identified problems and effects derived from poor commitment management are established, and proposed solutions are discussed. The problems occur mainly because of a lack of supporting infrastructure for commitment management, and as a consequence the proposed solutions are directed towards the improvement of this infrastructure. In the previous section a number of infrastructural functions (or conditions) based on WPT was presented. WPT is the theory chosen for analysing infrastructural support for business transactions. In this section we have therefore classified the proposed solutions into a suitable WPT category in order to indicate which general infrastructural support is needed in order to support CM in a context of parallel business transactions.

4.1 Scenario 1: The problem of managing pending commitments in open business offers

Scenario description

This example is derived from a steel company producing steel pipes for hydraulic cylinders. This company makes many offers to potential customers, consisting of product specifications, prices, as well as when to supply the product. Normally there is an expiry date determining how long the offer will be valid. The Enterprise Resource Planning (ERP) system does not support this aspect of the business transaction sequence, and as a consequence these offers are written using a word processor and then faxed to the customer.

Incoming customer orders are also registered at the same department (sales). At this time, the order is also confirmed and this order confirmation is communicated to the customer. The basis for this order confirmation is a receipt of reserved capacity from the ERP-system. Offers that are still valid, so-called open offers, are however not taken into consideration when a customer order is confirmed. This is the case although the commitments pending in the open business offers may affect the possibility to fulfil both the commitments made in the confirmed orders and open offers. The reason for this is that an open offer implies commitments to accept a purchase order based on the conditions of satisfaction described in the offer for as long as it remains open. As a consequence both open offers and confirmed orders compete for the same delivery capacity.

The effect on the steel company of not taking both orders and open offers into consideration during the order confirmation, results in it not being able to deliver all the products necessary and as a consequence not keeping their commitments. This in turn has the effect that some customers become dissatisfied and choose to use another steel company as their supplier.

Scenario discussion

The situation described above raised questions of how pending commitments in open offers should be considered. In this case, no delivery capacity was reserved for pending commitments, and as a consequence the capacity for accepting orders based on these pending commitments was not guaranteed. One reason why capacity was not reserved for pending commitments in open offers was that the offers were not integrated with the ERP-system and therefore it was not possible to reserve delivery capacity based on the offers with the help of the system.

Another reason for this problem was that there were no rules or policies developed to solve this situation, and as a consequence all commitments could not be kept, and the conditions for satisfaction were not fulfilled. The steel company tends to prioritise commitments in confirmed orders over pending commitments in open offers. However if a strategic customer wants to make an order using an open offer it should perhaps be prioritised resulting in a previously confirmed order (= already made commitment) being moved down on the priority list thereby violating this commitment. These problems with the commitment management of pending commitments in open offers led to dissatisfied customers, and some of these customers were lost.

Questions not answered were. How should pending commitments, made in open offers, be considered? How should different offers be valued and affect other com-

mitments made by the company? Is there any difference between the commitments made in offers to possible customers compared to those made to a particular customer?

Proposed solution

In this case the problem of the commitments in open offers can be solved by developing the following infrastructural constructs.

- *Norms.* Norms that could be used for evaluating different kinds of customer relationships have to be developed. These norms should be based both on the customer's historical behaviour and on the customer's strategic importance.
- *Guidelines.* Based on the norms (see above), guidelines should be developed that describe how different commitments to different customers should be managed when conflicts occur.
- *Instruments.* The ERP-system should be changed so that open offers could be registered.

The amount of capacity needed could then be calculated based on the i) *probability* of pending commitments in open offers becoming real orders, ii) the capacity needed for real orders and iii) the guidelines described above. Functionality for making these types of calculations has also to be developed.

Based on the improved infrastructure appropriate capacity reservations could then be made, and conflicts can be resolved.

4.2 Scenario 2: The problem with how commitments are made in the order confirmation

Scenario description

This example is derived from an e-commerce company where many customer orders are continuously received by the e-company. At the arrival of the customer order the customer gets a receipt of the arrived order. Each morning the customer office divides the customer orders amongst the customer service workers. Each worker will receive a stack of approximately 50 customer orders. For each customer order, the worker will check the availability of products in the company's stock system and then confirm a delivery date to the customer; issuing an order confirmation. When the whole stack of customer orders are processed, they are transferred to and reserved against the customer's record in the company's ERP-system. This implies that customer orders are confirmed prior to reserving products in the ERP-system. Since there are several customer orders concerning the same type of product, the risk for promising the same (physical) products to several customers is high. Later in the business transaction this gives rise to the need for splitting specific customer orders into several deliveries due to missing products, some products will also need to be substituted.

The effect of this situation is that customers do not receive ordered products according to the commitment made by the e-commerce company. Either, only some of the ordered products that are missing are delivered at the same time, or there are other products delivered as substitutes (in relation to the original customer order). Some customers have expressed strong views about this.

In a situation where there is a lot of products in stock, it would not be possible for two or more customers to compete for the same (instance of a) product. The situation described in the scenario does however often occur because there are a lot of products sold. The company saves money by keeping low reserves of stock in its warehouse and by ordering new stock on demand. Therefore, the company is reliant on quick order turnarounds and fast deliveries from its respective manufacturers. The e-commerce company has put a lot of effort into its order splitting and product substitution procedures to satisfy its existing customer orders.

Scenario discussion

The situation at the e-commerce company raised several questions, but the main one is how to reserve the products so that they can be delivered to meet customer's expectations, and the conditions of satisfaction. The commitment made by sending the order confirmation is that the company is obliged to deliver according to the conditions of satisfaction described in the customer's purchase order. The cause of the problem is that the business agreement is created before the supplier has guaranteed the fulfilling of his commitment, in other words reserving the capacity to deliver. As a consequence the purchase order would not be fulfilled according to the commitments made in the business agreement.

A basic cause of the problems described above is that the workers at the customer office do not reserve the products in the ERP-system prior to the order confirmation. This situation has been created because the e-commerce system and the ERP-system are not integrated. Another reason is that there is a rule in the e-company that states that all customers should have a confirmation sent to them at the end of the day, and as a consequence the customer service workers are prioritizing this rule before checking and reassuring that the commitments made could be fulfilled. The problem described above imply that several commitments competing of the same product are not managed in a proper way, and that commitments are broken leading to dissatisfied customers.

Proposed solution

In the case of the e-commerce company the problem with the commitments made in the order confirmation can be solved by developing the infrastructural constructs as described below.

- *Guidelines.* The business rules have to be changed so that the product is reserved before confirming the customer order.
- *Instruments.* It must be possible for the customer service workers to reserve capacity with the help of the ERP-system before they confirm the orders.
- *Norms and guidelines.* Develop norms and related guidelines for how the customers should be compensated if the conditions of satisfaction are not fulfilled either if products are substituted, or the time of delivery is delayed the customers should be compensated for this.

Based on the improved infrastructure the quality of the agreement with the customers will be improved and the number of broken commitments will probably decrease. In the case of broken commitments the customers will be less dissatisfied if

the company admits that they have not fulfilled their commitment and are willing to compensate for this.

4.3 Scenario 3: The problem with faked commitments

Scenario description

At a paper manufacturer, the salespersons have been instructed by the chief of production that there is a four week lead time before the customer order can be delivered (from the time of entry of the customer order). The company has for a long time worked with rationalizing and making the production extremely efficient, but apparently this is not enough for meeting today's customer demands. Since the salespeople are representatives of the company, they make commitments to customers on behalf of the paper manufacturer. However, the salespeople think that it is not possible to sell under the conditions communicated by the chief of production. In the competitive market of the paper manufacturer much shorter lead times are needed. This has created a situation in which each salesperson registers "fake orders". This is a way of reserving production capacity in order to cut lead time for the real order that is about to come. The "fake orders" are to be substituted with a real customer order before the production takes place. Sometimes the salesperson gets into the situation that he/she is out of "fake orders" and has to negotiate with other salespeople in order to reach an agreement with a particular customer.

This situation could be seen as a highly creative way of solving the problem of being as predictable as possible concerning the need of reserve delivery capacity as well as meeting customer demands in a competitive way. However, the effect of this practice is that a situation is created in which each party tries to sub-optimize their (part of the) business as much as possible. Sometimes the company finds itself in a situation where there are no real customer orders at the time of production and a lot of blame is placed on the salespeople by the production personnel.

Scenario discussion

The situation at the paper manufacturer raised a number of questions concerning the quality of the commitment management. The main problem here is that the salespeople and the production personnel do not talk to each other. The sales people believe they have found a solution to a real problem by making "fake orders". This situation is driven from the fact that the IT system does not distinguish between different statuses of the commitments made in the production planning system. A fake order is an expression of a forecasted real commitment that is expected to be made, and a real order is a real commitment. However this is not a good solution because it often results in the salespeople getting into trouble due the volume of fake orders in the system, and needing to delve into difficult bargain processes about fake orders with each other.

Another problem is that the fake orders give the production personnel the wrong impression about the delivery capacity needed, leaving the impression that they cannot effectively plan the production; the fake commitments are interfering with other established "real" commitments.

This raises a number of questions that need to be answered. How should the norms governing the internal communication between the market and production

departments be developed to ensure an effective way of reserving and utilizing delivery capacity? How can a situation of sub-optimization be avoided? How can a higher degree of understanding between the actors at the selling and production units be achieved?

Proposed solution

The problem with the faked commitments could be solved by developing the infrastructural described below.

- *Guidelines.* The bureaucratic rule “no promises of shorter lead-times than 4 weeks” should be abandoned. Instead the delivery promise should be based on real and estimated delivery capacity available.
- *Instruments.* An IT system with a better forecast functionality should be developed. This means that the sales persons should be able to register forecasted commitments and that the IT system should support the sales persons in making good forecasts of how much delivery capacity that would be used for different time frames. This should also make it possible for the production personnel to see which commitments are forecasted and which are real.

Based on the improved infrastructure the communication between sales and production could be improved, and the result would be a better way of managing competing commitments. The logic is that the sales personnel and the production personnel should negotiate and discuss the delivery capacity needed based on forecasts and real commitments, and the IT-systems should support this.

5 A framework for commitment management in a context of parallel business transactions

In section 3 analytical constructs which could be used to analyse commitment management in a context parallel business transactions at a transactional level was introduced based on a theoretical comparison between the BAT, WPT and ideas from YM. In section 3.2 the infrastructural conditions of WPT were explained and in section 4 they were used to indicate which type of general infrastructure support that is needed for business transactions in a context of parallel business transactions. In this section transactional and infrastructural constructs will be discussed in relation to the case studies and the constructs presented in section 3 in order to derive at a framework for analysing CM in a context of parallel business transactions.

5.1 Transactional constructs

Parallel business transactions

In the theoretical analyses of CM transactional constructs in section 3, it is the parallel instances of several dyadic business transactions are focused, and the case studies show that this is a very important aspect to consider. It is very important to take other parallel transactions into consideration when dealing with a specific focused transaction. In Figure 4, we have built further on the BAT model to visualise the need for this. The supplier needs to take other (ongoing) business transactions ($T_1..T_n$) into consideration when one instance (T_{focused}) is considered.

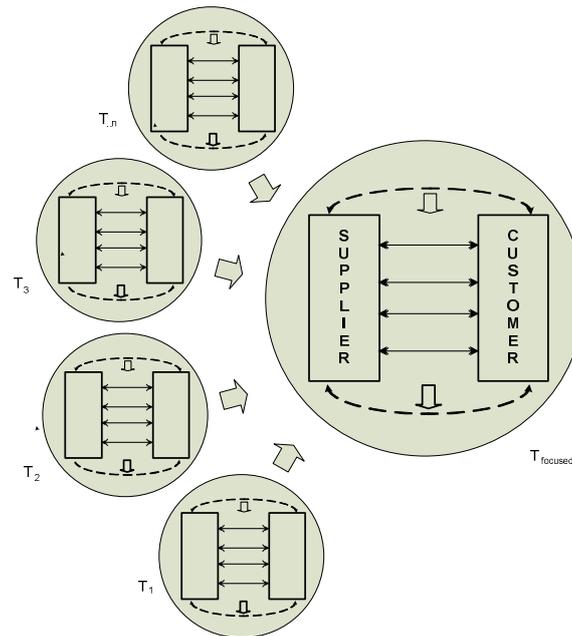


Figure 4: Competing commitments in relation to focused business transaction

Figure 4 also illustrates that parallel ongoing business transactions could be in different phases, some might still be in the offering phase, while others could be in the fulfilment phase. However in each transaction there is a competition for the same delivery capacity implying that commitments can be in conflict with each other. The proposed framework helps to highlight these types of conflicts. It should thus be possible to identify that the conflicts will occur as early as possible in order to take proper actions (see the discussion about norms, guidelines and IT systems below).

Supplier's delivery capacity

In the theoretical analyses of CM the supplier's delivery capacity is considered as an important construct (see section 3), and this has been confirmed by the case studies. The delivery capacity is a concept that describes resources that are either consumed or transformed in the value transformation process. The delivery capacity is defined as the combination of substance, the capability that people/agents need to perform the transformation actions (that is production and distribution actions) and time. However the case studies show that different aspects of the supplier capacity can be focused. To summarize the cases the following could be seen:

- In case 1 the production and distribution capacity are equally focused, because the steel company both deliver products from the shelf and customised products.
- In case 2 the distribution capacity are focused because this is a distribution/logistics company.
- In case 3 the production capacity are focused because the paper manufacturer delivers customised products.

The goal of the companies are also to use their delivery capacity as efficient as possible because unused delivery capacity, does not generate value, it only generate

costs. This fact is the major explanation why there is always parallel business transactions going on in companies. If the company had unlimited resources there would not be a competition about the delivery capacity among parallel business transactions. However this is not the way companies function. In most situations companies want to optimise the use of their delivery capacity, and as a consequence this is one of the most important constructs that have to be considered when business transactions are analysed.

Customer needs and capability

In CM (see section 3) the customer's capability is described as the customer's capability to receive the product and pay for it. The product should meet the customer's needs.

The case studies show that it is important that the suppliers can match their delivery capacity to the customers' needs and capability. This is one of the basic ideas in commitment management. The customer's needs should also be regarded in the context of the customers' expectations when commitments are made, and how the conditions of satisfaction in the business agreement are established and fulfilled. From two of the case studies it could be noted that:

- In case 2 where the distribution e-company sells standardised products from the shelf the customers expect a short delivery time, which forces the company to optimise this expectation (need). This explains why it is important to make a fast order confirmation and that the company has put a lot of effort in order splitting and substitution procedures.
- In case 3, although the customers want short lead times, there is more freedom to negotiate with the customer about the delivery time because the customers know that the company must have time to produce.

Commitment

In CM (see section 3) the concept of commitment is defined as an obligation either from the supplier or customer to act in a certain way in the future.

The case studies show how important it is to consider the meaning of different types of commitments. Based on the case studies and used theories we acknowledge four types of commitments:

- Commitments made to the "market" in advertising (market level)
- Commitments in open offers (pending commitments) (dyadic level)
- Commitments in business transaction agreements (real commitments) (dyadic level)
- Commitments in frame contracts (dyadic level)

It is important to understand the meaning of pending commitments in open offers. An offer, no matter if it is an offer to a potential or a particular customer, means that if the offer is accepted by a customer (by him/her issuing an order), it is expected that the supplier also confirms the customer order based on the conditions of satisfaction described in the offer. It should also be noted that responses made to offers directed towards potential customers (on market level) are harder to predict than responses to offers made to particular customers (on dyadic level). This implies that

already in the offering phase the supplier binds delivery capacity in the future. However there is an uncertainty of how much capacity that is bound because the supplier does not know the acceptance rate of the offers in advance. This issue has also been taken up by Rittgen (2006; 2007) where it has been called conditional commitments. Commitments in business transactions agreements have been called real agreements in section 4 because they are binding commitments. According to Rittgen (2006; 2007) this is called unconditional commitments.

BAT also put forward the notion of frame contracts. According to BAT these commitments are long-term obligations which govern subsequent recurrent business transactions. Goldkuhl & Lind (2004, p. 6) write "Frame contract means a contract concerning several subsequent business transactions that can be different sub deliveries." This means that the fulfilment of these obligations should be fulfilled by business transactions on the instance level. However, the meaning of these commitments is not always that clear (Haraldson & Lind, 2005). The commitments in frame contracts do not always mean that they have to be fulfilled. Many times these commitments are commitments that are planned or hoped to be fulfilled. Based on the case studies it is important that the meaning of these commitments is defined in the frame contracting phase.

Business agreement

In CM (see section 3) the business agreement is described as a specification of the conditions of satisfaction and the mutual commitments of the supplier and customer, it is also the business agreement that initiates the value transformation process.

The case studies show that the business agreement and the way it is established is extremely important. How this could be done is dependent on:

- other parallel transactions (see above)
- how the supplier has organised their delivery capacity (see above) and which capacity that is available;
- the customers needs (expectations) and capabilities (see above);
- an understanding of the meaning of different types of commitments (see above);
- the importance of the business relationships (see below).

The scenarios show that if the conditions of satisfaction in business agreements are not made in the right way inefficiency and quality problems occur.

Value transformation process

In CM (see section 3) the value transformation takes place when commitments are fulfilled and the transformation process implies that production and distribution activities are performed.

The case studies confirm this view of the value transformation process. The suppliers try to avoid situations with unsold products, and huge amounts of products in stock. They want a workpractice which is oriented towards fulfilling commitments made in business agreements which implies that they know that the transformation process is met with a payment from the customer.

Compensation

In CM (see section 3) compensation is the money or other benefits that are paid. The customers pay for the fulfilment of the commitments that are specified in the business agreement. Compensation could also be paid to the customer if the supplier does not fulfil his commitment (e.g. in line with seats that are overbooked).

The concept of compensation has not been focused in the case studies. Still compensation is extremely important since this represents the customer's fulfilment of his/her commitment (see above), and thus is basic for the value transformation process (previously described).

Results

In CM (see section 3) the main result is the fulfilment of the commitments described in the business agreement.

The case studies show that there are three types of results that are extremely important to achieve, i.e. paid compensation, right product delivered and kept delivery time.

Transactional judgements

In CM (see section 3) transactional judgment are judgements that concern transactions at the instance level.

The case studies have not been focused on transactional judgements. Still a conclusion from the case studies is that the fulfilment of commitments is important in order to acquire high-quality transactional judgements.

Business relationships

In CM (section 3) business relationships are focused and the performance of business transactions implies a continual development of business relationships.

The case studies confirm the importance of business relationships and that they are managed in the right way, and an important aspect of this is to create and fulfil commitments in the right way in order to ensure a positive development (when desired) of the supplier – customer relationships. By bringing forward the notion of business relationships considerations about which relationships to preserve and which to phase out when managing several parallel commitments is high-lighted.

5.2 Infrastructural constructs

In section 2.2. WPT was the theory chosen for analysing infrastructural support for business transactions. In section 3.2 the infrastructural constructs was explained and in section 4 some of these constructs norms, guidelines and instruments were used to indicate which type of general infrastructure support that is needed for business transactions in a context of parallel business transactions. In this section the infrastructural constructs of WPT will be discussed in relation to the case studies and it is based on this discussion the infrastructural constructs for CM (as sub-headings in the text below) are chosen.

Norms for evaluating business relationships

In WPT (see section 3.2), norms are value expectations on workpractices and their products

One important conclusion from the cases studies is that it is very important to develop norms for evaluating different business relationships, for example, when conflicts occur and commitments have to be prioritised. This evaluation should be based both on the customers strategic economical significance but also on ethical grounds for instance if it is a trusted customer which the company has made business for a long time. Also norms should be developed that give advice for how broken commitments should be managed. This implies that norms for evaluation business relationships are an important infrastructural construct to consider in CM.

Guidelines for commitment management

In WPT (see section 3.2) guidelines are prescriptions for how to act in a typical situation.

The case studies show that it is important to develop guidelines for commitment management based on the norms described above. Producers must have proper guidelines in order to deal with the commitments in the right way, for example, when conflicts occur or commitments are broken. This implies that guidelines for commitment management are important infrastructural constructs to consider in CM.

IT systems

In WPT, instruments (see section 3.2) are used as support for several business transactions and IT systems are seen as instruments for performing communicative acts from an infrastructural point-of-view.

An important conclusion from these studies is that the IT systems do not support the management of competing commitments as well as they should.

In scenario 1 the offers were handled outside the order system. In scenario 2 the order confirmation was not integrated with the ERP-system, and in scenario 3 the system did not promote high-quality communication between the sales and production department, necessary in order to manage conflicting commitments. It seems like the systems are built for other purposes than to support commitment management in a parallel business transaction context. In our opinion, these systems are primarily developed and implemented to support the planning and control of separate functions in companies, that is the sales and production functions. The effect of building systems in this way is that CM becomes difficult, and the resulting conflicts that occur between competing commitments are not managed.

In order to be able to manage competing commitments, IT systems that support this are essential. There are a number of requirements that must be considered in order to manage competing commitments. The IT systems should have support for how to plan for and to reserve needed capacity. This implies the IT systems must provide support for well-founded decisions concerning the focused transaction without violating the fulfilment in the other parallel ongoing transactions.

From the case studies two situations could be distinguished, in which IT-support is needed for making proper actions in the course of the business transaction:

- Before making an offer.
- Before making an order confirmation.

In these both situations there is a need for taking commitments already made in orders and also pending commitments based on open offers into consideration in order to avoid unnecessary conflicts. In order to do this it is important that the IT sys-

tems include the necessary functionality (action repertoire) for making good forecasts of the required delivery capacity. However if available capacity has been overbooked, the suppliers must be informed about that in order to take proper action. This will happen based on how bad the forecast of the pending commitments in open offers is, compared to how many of these pending commitments will be turned into real commitments. It could also be the case that planned availability of capacity for a certain time frame is not available due to other circumstances.

This also means that there is a need for an action memory (database, workpractice memory) keeping track of the status of all ongoing transactions concerning the required amount of capacity, and different types of commitments, also commitments made in frame contracts. In table 2 we have pinpointed some important characteristics that must be considered in order to manage competing commitments. The instances depicted in the columns are to be interpreted as examples.

Table 2: Important characteristics to derive from ongoing business transactions for managing competing commitments with communication quality

Transaction	Phase	Capacity
T _{focused}	Offering	C1
T ₁	Offering	C1
T ₂	Offering	C2
T ₃	Offering	C3
T ₄	Order	C1
T ₅	Order	C2
T ₆	Order	C3
T ₇	Fulfilment	C1
T _{..n}	Fulfilment	C2

Dependent on how far a particular business transaction has proceeded, in other words which phase it is in, there must be a judgement of how to reserve/use needed capacity. The judgement should e.g. be based on if the capacity needed is based on a pending commitment in an offer or if the capacity is needed in order to fulfil a real commitment made in an order. Other things have also to be considered are e.g. the importance of different business relationships. This also means that there is a need for an action memory (database) keeping track of the status of all ongoing transactions concerning the required amount of capacity. Important here is that different business actions- the offer, the customer order and order confirmation- are registered in the action memory. Scenarios 1 and 3 above show that offers are not stored in the right way in the IT systems used in these companies. If the offers are registered in the right way it will be possible to get the right information in order to make the right decision concerning the focused transaction, because it than will be possible to implement different models for forecasting the needed delivery capacity. In order to that important business actions, e.g. offer, customer order, order confirmation, need to be considered as objects in their own right. This is important to emphasise since it is tempting to view, e.g. the business offer, merely as a weak entity. This can cause problems such as missing information and unintended deletion. To avoid this Action Oriented Conceptual Modelling (AOCM) approach is recommended (see Ågerfalk & Eriksson, 2004).

Based on the discussion above we claim that the infrastructural construct instrument is too general to describe the construct that is important to consider in CM. We prefer to talk about the construct IT systems, and it is important that the IT systems have the ability to interact in order to obtain the needed IT support. In WPT descriptions are also considered as important infrastructural conditions and the case studies confirm this. However based on the discussion above it is important that the descriptions needed for CM, for example performed communicative acts and the product repertoire are included in the IT systems, which means that descriptions are not considered as a separate infrastructural construct in our framework.

Product repertoire

In WPT (see section 3.2) base assignments (product repertoire, role assignments and resource) are assignments at the infrastructural level.

Due to the focus on the dyadic interaction role assignments are not focused in the framework for CM. In a business transaction between a supplier and customer these two main roles emerge from a need to interact, not from role assignments. This does not mean that different role assignments on the supplier side are unimportant but they are not focused in CM.

Resource assignments have not been considered in these case studies. The reason why resource assignments are not considered in CM is that the resource allocation focused here is based on the resource allocation (reservation of delivery capacity) made in the business transactions not as a condition for the business transaction. This is another focus on resource allocation, that takes place in a dynamic context between parallel business transactions competing for the same delivery capacity.

The base assignment to focus on in CM is the product repertoire. The reason for this is that the product repertoire governs the commitments that could be made in the business agreement. The product repertoire is used to define the product commitment, specifically what type of product that should be delivered. This implies that the product repertoire is an important infrastructural construct to consider in CM.

Practice judgements

In WPT (see section 3.2) the concept practice judgement implies generalised judgements that concern the whole workpractice.

The presentation of the case studies have not had a focus on practical judgements however the case studies indicate the importance of the fulfilment of commitments in order to acquire a reputation of being a trusted business partner.

Base capital

In WPT (see section 3.2) this is capital provided by banks and founders/owners.

The case studies show that it is the efficient use of base capital that is emphasised in CM. One of the main ideas in CM is to utilise the base capital cost-efficiently. Founders/owners expect revenue and the cost associated with capital supplied by banks need to be kept as low as possible in order to generate as good revenue as possible. This means that CM has to focus on lowering the amount of capital bound in delivery capacity which is not meet with commitments from the customer side.

Summary - an adjusted framework

Figure 5 below summarises the discussion in this section and shows important transactional and infrastructural constructs to consider in a context of parallel business transactions.

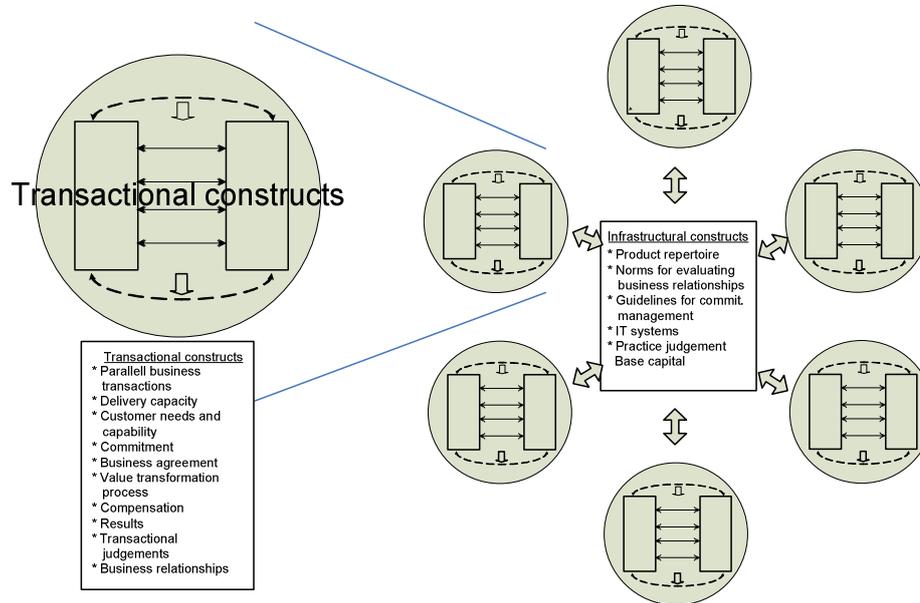


Figure 5: Transactional and infrastructural aspects to take into consideration in commitment management in a context of parallel business transactions

Transactional constructs

The transactional constructs are primarily based on concepts used in BAT (customer needs and capability, commitment, business agreement, value transformation process, results, business relationships) and WPT (compensation and transaction judgements). However there are two important constructs developed in order to analyse CM (parallel business transactions, delivery capacity). These two constructs are very important because they put focus on something typical for business transactions in real life. Companies want to optimize the use of their delivery capacity which implies that parallel business transactions compete about this resource. Surprisingly, these are constructs not usually addressed in the business process literature due to that there is an emphasis on sequential related actions. The effect of such sequential thinking does not give rise to the need of managing competition about delivery capacity.

Infrastructural constructs

The infrastructural concepts (product repertoire, norms for evaluation business relationships, guidelines for commitment management, IT systems, practice judgements, base capital) are based on WPT but they have been adapted quite considerably to CM in the context of parallel business transactions. The intention with the WPT infrastructural conditions are that they should have a general character, and because of that there has been a need for adjusting them to CM in a context of parallel business transactions in order to give them the needed analytical strength in this context.

The use of the framework

The idea with the presented framework is that it could be used for analysing CM in the complex context of parallel business transactions. The management of business transactions are commonly focused on the development of business logic and IT systems to support this logic (Winograd & Flores, 1986; Dietz, 1999; Goldkuhl, 1998; Weigand & van den Heuvel, 1998; Medina-Mora et al, 1992). For example, workflow technology is used to manage business transactions based on a predefined procedure. This works well for simple and stable business transactions but today when globalisation, customisation and increased competition makes the business environment much more volatile, the companies must pay more attention to adapt their business transaction to such a context (Wang & Wang, 2005). When dealing with such a context (as described in the scenarios), where there is uncertainty about open offers, and orders arrive when inventory is low. The actors that create and should fulfil these commitments must be supported by an infrastructure so that they can make the right decisions and take proper action, and it is difficult to model such complex processes. The problems that need to be solved are dependent on the judgement of the current and forecasted situation, and the business relationships, rather than on a static process schema (see Holm & Ljungberg (1996) for a discussion about routinisation and flexibility of work activities). The presented framework could be used as a guide for developing infrastructural support for avoiding conflicts among parallel business transactions, and when conflicts occur, support for solving these conflicts, because in many cases there are no routine procedure for how to deal with the problems. In such a context information about the parallel business transactions going on, different types of commitments and available capacity are extremely important functions that the IS-infrastructure must provide. The IS-infrastructure must also have support for the reservation of this capacity. Furthermore the infrastructure must also provide norms and guidelines for how to act. Decisions could then be made and proper action could then be taken based on situation awareness and guided by business strategies.

6 Conclusions

In the paper we have discussed and analysed the critical issue of commitment management in a context of parallel business transactions. A framework that is an adaptation of BAT to the context of parallel business transactions has been presented. At the transactional level the two important constructs of delivery capacity and parallel business transactions have been added to the BAT-model. The BAT-model has also been extended with a number of infrastructural constructs. The original BAT-model has a focus on the business interaction logic and execution order of how commitments are created and fulfilled. This is an important but too restricted a view if we want to analyse commitment management in a context of parallel business transactions, because the supportive infrastructure must also be considered. This means that the proposed framework extends the management of business process from process logic (still important but too restricted) to business logic. Since we have used the BAT model as a point of departure for developing the framework, the research reported in this paper can be considered as an adaptation of the BAT model to a context of parallel business transactions. The focus is on the dyadic level, and especially on phase 3, the contact establishment and phase 4, the proposal and contractual phases.

The concept of commitment management and the framework has been developed both from a theoretical point-of-view and by analysing a number of scenarios, pinpointing problems and effects of poor commitment management. Using the BAT model assists with the analysis and understanding of how business commitments are instantiated in patterns of interaction, and how they are created with the help of communicative actions, and how these commitments have to be fulfilled in the course of the business transaction. BAT thereby emphasises the important role that commitments have for the horizontal coordination of the business transaction. This also means that it is important to model the communicative acts per se and the commitments that are created with these communicative acts. This could be done by using the Action Oriented Conceptual Modelling (AOCM) approach (Ågerfalk and Eriksson, 2004).

The idea of focusing on commitments in the business transaction is nothing new but the point that we make is that earlier descriptions of commitment management, for instance in the CFA-schema (Winograd & Flores, 1986), the BAT model (Goldkuhl & Lind, 2004) or DEMO (Dietz, 1999), describe how commitments are made and fulfilled for a business process either on the type or instance level. The problem that arises when there are parallel instances of transactions instances involved has not been considered in these earlier descriptions. The focus has been on horizontal and vertical co-ordination of business transactions not on parallel co-ordination. This is important because the scenarios show a need for this and this need is urgent in a business transaction context.

We have discussed and analysed some examples of commitment management deficiencies and the lack of IT support for this in three companies. We have also suggested solutions to these problems based on the presented framework. An important conclusion based on these experiences is that it is essential that commitment management deal with the issue of parallel business transactions, because they compete for the same delivery capacity. This means that commitments made in one transaction need to take account of commitments made in other business transactions. We have introduced a framework that helps us to focus on this important issue. The framework is also helpful in identifying the importance of the infrastructural aspects of business transactions. Traditionally business transactions frameworks have had a focus on transactional aspects, and the business logic of business transaction at the type level. The framework derived and used in this research put a focus on infrastructural constructs.

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