Testing a theory of buyer-seller interaction in business services

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Abstract
This paper presents the results of an empirical study into ongoing interaction between buyers and sellers of business services. Drawing on a classification of business services which is based on how the buying firm uses a service with respect to its own offerings, we posit that functional (effective) interaction should be differentiated for different types of services.
A review of existing literature and some exploratory studies provided an initial validation of this usage-based classification. Subsequently, two in-depth case studies were conducted to develop "ideal" patterns of buyer-seller interaction for each service type. These "ideal" patterns concern different successful configurations of a specific set of dependent variables.
Additional case studies have been conducted to test the theoretical propositions regarding successful buyer-seller interaction. The results demonstrate that the observations from these additional case studies match with the ideal patterns of interaction. Furthermore, the level of perceived risk seems to affect the extent to which the patterns for the different types of services are substantially different: low risk services all have similar patterns. Further research is directed at extending the findings beyond the existing domain of service companies into the manufacturing domain.

Introduction

The procurement of business services has become a substantial element in firms' total acquisition of external resources (Axelsson and Wynstra 2002; Van Weele 2005). Various studies have demonstrated that organizational buyers view the purchase of business services as essentially different from the purchase of goods (Fitzsimmons et al. 1998; Smeltzer and Ogden 2002; Stock and Zinszer 1987). Services marketing literature has consistently been emphasizing that services are produced in interactive processes between the buyer and the seller (Grönroos 2000; Zeithaml and Bitner 1996).
However, there have been relatively few attempts to investigate these ongoing interaction processes in great detail. This seems counterintuitive, since the actual outcome of the buyer-seller relationship is largely dependent on the design and management of interfaces and interaction processes. Grönroos (2004) emphasized that the main contribution of services management and marketing lies in the acknowledgement of the importance of the service encounter and the customer-service provider interactions it comprises: this interaction, rather than the transfer of the service as such, has become the main area of interest for the services marketing discipline. Researchers in the area of buying *business* services seem to have failed to acknowledge this characterizing aspect of continuous interaction, and have mainly focused on the initial phases of the purchasing process, such as supplier selection (Day and

Barksdale Jr 1994), or on one specific type of services (management consultancy (Mitchell 1994), advertising (Lichtenthal and Shani 2000; West 1997) or logistics consultancy (Stock and Zinszer 1987)).
We therefore propose to study the ongoing interaction between buyers and sellers of business services with the aim of developing a typology of successful buyer-seller interaction for buying different types of business services. These different types of business services are derived from the usage-based classification as proposed by Axelsson and Wynstra (2006), which results in four types of services: component services, semi-manufactured services, instrumental services and consumption services.
The typology to be developed contains a grand theory, which posits that the more an actual interaction pattern resembles an "ideal" interaction pattern, the more successful the interaction will be. These "ideal" patterns consist of configurations of several process-related and structural aspects of interaction (i.e. dependent variables) and we posit that different types of services require different configurations of the dependent variables in order for interaction to be successful (middle-range theory).
Two exploratory case studies were used to develop "ideal" patterns of interaction for each type of service. This paper tests the middle-range theories by means of eight additional case studies.

The remainder of this paper is organized as follows. First, we elaborate on the theoretical background underlying this study. Then, the middle-range theories that were developed with the exploratory case studies are presented. This is followed by a methods section on the additional case studies. Subsequently, the middle-range theories are tested. The paper ends with a discussion of the results and conclusions.

Theoretical background

Axelsson and Wynstra (2006) argue that the way in which a buying company uses/ applies the service purchased with respect to its own business processes is one of the main determinants of effective buyer-seller interfaces and interaction processes. By using certain decision rules, the following four different applications/ ways of using a service can be identified:

- Consumption services: these services do not directly affect the primary processes of the buying company (f.e. cleaning services for office buildings).
- Instrumental services: these services directly affect how the buying company's primary processes are carried out, but are not (eventually) provided to end customers of the buying company (f.e. ICT services for a chemical plant).
- Semi-manufactured services: these services are, after being transformed by the buying company, (eventually) being provided to end customers of the buying company (f.e. catering services for an airline, which are "wrapped" into a service package by the flight attendants).
- Component services: these services are, without transformation, (eventually) being provided to end customers of the buying company (f.e. subcontractors for a cleaning company).

This classification has two main advantages over existing service classifications (Axelsson and Wynstra 2006): firstly, it enables the identification of similarities between business services that are technically speaking of a different nature. These generic similarities provide purchasers with useful decision-making information, since they imply that from a purchasing perspective, there are more similarities between cleaning of an airplane and luggage handling (both component services targeted at end customers), than between cleaning of an airplane and cleaning of offices (a component and a consumption service respectively). Secondly, each company will classify their services differently depending on how these services are used. Thus, besides the fact that our generic classification is company-specific, buying companies also have a certain choice in how to buy their service: temporary labor for the primary processes could be considered an instrumental service, but if this temporary labor is addressed at the buying company's customers, it could also be labeled a component.

As an initial validation of their classification, Axelsson and Wynstra (2006) performed exploratory studies into service procurement processes and obtained strong indications that segmenting services based on the way the customer uses/ applies the service indeed influences what interaction patterns are most suitable and functional for each of the four types of services in their classification.
Primarily, they found that the type of service influences what will be the *key objectives* of the interaction. They consequently observed variation in the *type of representatives* involved on the buying company's

and the service provider's side, the *capabilities* deemed critical for buyer and supplier, and the *issues* that were of critical importance in the buyer-seller dialogue. For example: with component services, which are passed on to end customers, the marketing discipline was involved in the ongoing interactions, whereas with consumption services, internal customers (with various functional backgrounds) were strongly involved.

In these exploratory studies however, Axelsson and Wynstra (2006) did not explicitly address sampling issues or the development of research instruments. Therefore, these initial observations of variation in interaction for different types of services need to be substantiated by more rigorous empirical research. For this purpose, the classification of Axelsson and Wynstra (2006) was augmented with the concept of perceived risk (Johnston and Lewin 1996), since the services for which more explicitly defined and designed interactions were found were both considered strategic (high risk) services. Since we feel the influence of perceived risk is reflected in how explicitly interactions are designed rather than the way in which they are designed, we posit a moderating effect of the level of perceived risk on the relationship between the use/ application of the service and the dependent variables.

Furthermore, Axelsson and Wynstra's (2006) observations focus mainly on "structural" aspects of interaction (i.e. type of representatives, required capabilities), rather than on interaction processes. Yet, through interaction, companies communicate with and adapt to each other, thereby enabling them to manage the relationship and to deal with issues that could not be foreseen at the time of the purchase decision. We therefore enhance the dependent variables beyond the structural dimension (representatives and capabilities) to include interaction processes (communication and adaptation).

Developing "ideal" patterns of interaction

We posit that the application/ use of the service will determine the most appropriate structural aspects of interaction and interaction processes (Figure 1). Differentiation in interaction will be strongest for those services characterized by a high level of perceived risk.

Insert Figure 1 here.

The most appropriate structural aspects of interaction and interaction processes make up an "ideal" interaction pattern. If a buying company develops an interface and processes that closely resemble this "ideal" pattern, interaction will be successful, both in terms of the ongoing service provision and in terms of the outcome of service provision (i.e. customer satisfaction). As such, the classification could be developed into a typology of successful buyer-seller interaction in business services. Whereas classification schemes allocate phenomena (in this case services) to one of the (in this case four) mutually exclusive and exhaustive categories based on a set of decision rules, typologies "identify multiple ideal types, each of which represents a unique combination of the organizational attributes that are believed to determine the relevant outcome(s)" (Doty and Glick 1994).

Typologies contain two types of theories made up by two types of constructs. First, the "grand" theory explains business performance by looking at the deviation of an observed second-order construct and an "ideal" second-order construct. In this study, this second-order construct is a pattern of ongoing interaction for a specific service. In other words: the more the actual pattern resembles the ideal pattern, the more successful the buying company will be with regard to managing ongoing service provision.

This second-order construct represents a configuration of first-order constructs. Here, these are the dependent variables, i.e. the identified structural and process elements of interaction. Each ideal second order construct is based on a "middle-range" theory, which explains why the first-order constructs are internally consistent and how they explain performance. Thus, four middle-range theories (one for each type of service) should be developed which explain why a certain interface and certain processes together will contribute to successful management of ongoing service provision. Since beforehand we had no reason to assume differences in the relative importance of each theoretical first-order construct, we assumed all first-order constructs to be of equal importance.

The four middle-range theories were developed based on two in-depth exploratory case studies at service companies. Although Doty and Glick (1994, p. 238-239) explain that empirical specification has several

disadvantages in comparison with theoretical specification of "ideal" patterns[1], the literature available in this area is too much underdeveloped to be able to specify each ideal type in terms of all the first-order constructs. Therefore, theoretical specification of ideal patterns is not deemed viable.
In the case studies, those dependent variables that showed strong variation across the four types of services and little variation within one service type were identified. As such, more distinctive, clear-cut patterns of interaction can be developed for the four types of services. Furthermore, we investigated which configurations of dependent variables (second-order constructs) were most successful for each of the four types of services. For a description of research methods, see appendix A.
When analyzing the observations, we dealt with the cases of successful and unsuccessful interaction separately. The successful cases were used to develop "ideal patterns of interaction. The unsuccessful cases were used to refine/ adjust these "ideal" patterns. Moreover, we looked primarily at the high-risk services: low-risk services are expected to all have similar patterns of interaction (which are distinctively different from patterns associated with a high-risk service of the same type), as a result of which they will not be very useful in developing distinctive, successful patterns of interaction[2].

Table 1 summarizes the developed middle-range theories regarding the buyer-supplier interaction for the different types of services. For each service type, it lists the key objectives, the critical supplier capabilities, the representatives involved from the buyer's side, characteristics of the communication process and the areas in which adaptations take place[3].

Insert Table 1 here.

Testing the middle-range theories

The middle-range theories developed in the two exploratory studies were subsequently tested by means of additional case studies. Testing the middle-range theories took place in two steps: 1) within the original domain (service companies); and 2) outside its original domain (manufacturing companies).
Using the methods described above, case studies were conducted at five additional service companies and three manufacturing companies. The additional case companies were selected based on the sampling criteria described in appendix A.

Two of the service companies are considered routine service providers; the third is considered a professional service provider. The additional case studies comprise four component services, eight instrumental services and eight consumption services. Although originally we sought to select services in each of the four categories, no semi-manufactured services could be identified. Testing the theory at the five service companies provided support for the middle-range theories. Only the middle-range theory for consumption services was slightly altered: in addition to evaluation at long but regular intervals, daily communication regarding service delivery activities was found to characterize the interaction pattern for consumption services.

For the remainder of this paper, we focus on testing the middle-range theories outside its original domain. Of the three manufacturing companies, one is a unit/ project-based manufacturer, one a series-based

[1] The following disadvantages are mentioned: 1) empirical specification fits the ideal patterns (middle-range theories) to the data; 2) the correspondence between the empirically specified ideal patterns and the middle-range theories is restricted to the organizations studied; and 3) empirical specification restricts the range of organizational effectiveness to the maximum level of effectiveness observed at the organizations studied (Doty and Glick 1994, p. 238-239).
[2] Ideally, development of distinctive, successful patterns of interaction would only involve high risk services. However, low-risk services were included in the study since for consumption services, high-risk services are hard to find.
[3] The services initially selected as semi-manufactured services had to be reclassified as component services when the study progressed. Therefore, middle-range theories could only be developed for the remaining three types of services.

manufacturer, and one a process manufacturer. The additional case studies comprise six instrumental services and four consumption services. Like was the case with the previous test in the service domain, no semi-manufactured services could be identified at the manufacturing companies. Table 2 lists the cases selected were distributed across the three remaining categories.

Insert Table 2 here.

In order to be able to match the observations regarding the dependent variables with the "ideal" patterns, the observations for each service have been summarized in three tables: one for component, one for instrumental and one for consumption services. An additional row in each table represents the ideal pattern for that specific service type. The middle-range theories are subsequently tested by matching the observations for each individual case of a specific type with the "ideal" pattern of that type. As such, each case is treated as an experiment serving to confirm or disconfirm the theoretical propositions (Eisenhardt 1989; Yin 2003).

Instrumental services

The ideal pattern for instrumental services as well as the patterns for the four individual cases can be found in Table 3.

Insert Table 3 here.

The first instrumental service studied concerns training for the buying company's employees. For this purpose, it is important to understand the generic needs of the buying company, as well as the specific needs and educational levels of individual participants. The training as such is company-specific. The buying company has made changes to their organizational design by setting up a dedicated business school. Furthermore, they have been able to introduce a "no cure, no pay" mechanism. The latter is something that would not typically be expected for instrumental services. For the rest however, the pattern for this service is highly similar to the ideal pattern.

The second instrumental service studied is the construction and subsequent operation (including maintenance) of a hydropower station. The contractor has to understand the role the plant is going to fulfil in the buying company's primary processes; furthermore, project management skills are highly important. This service requires extensive communication with the contractor, and a formal process with hold and witness points has been introduced. The observations for this service largely resemble the ideal pattern.

Thirdly, we studied the services provided by a drilling contractor. This service facilitates company 2's production activities. The specific characteristics of the industry in which company 2 operates put requirements on the contractor to understand safety issues. Because of the high impact of this service on production, progress and deviations are important topics in the buyer-seller communication. Because of the newness of the technique, sensitive information is exchanged. Also here, the findings match with the ideal pattern.

Finally, we studied the purchase of a consumer panel, i.e. market research which is used as input for marketing/ sales managers of company 3 to make changes to for example packaging or marketing strategy. The supplier needs to understand what the information will be used for, how their service provision is linked to the primary processes of company 3 and what the individual requirements of users are. Company 3 tries to get the supplier to think along the lines of company 3 and to come up with some innovative ideas that will result in the required information against lower costs. This is something that is not fully achieved though. Except for this emphasis on innovative thinking, the findings for this service resemble the ideal pattern for instrumental services quite well.

Overall, the findings for the individual services closely resemble the ideal interaction pattern for instrumental services. However, these results should be viewed in the light of the level of success associated with the service purchases. Also, the level of perceived risk needs to be taken into account. Observations on these variables were obtained from the interviews and verified through the questionnaires. The results are listed in Table 5.

Insert Table 5 here.

For all services, the process of service delivery and surrounding management activities were considered successful. For the consumer panel is the result of service delivery considered less successful. This does not mean that the service delivered is inappropriate or of low quality, but that there is no room for extras.
Because all service purchases are considered successful and the observations for the individual services match with the ideal pattern, our middle-range theory on a successful pattern of interaction for instrumental services is repeatedly confirmed.
It is interesting to note that the findings for the low-risk service also match the ideal pattern. This service however is characterized by low success with regard to the result of service delivery. This raises the question whether company 3 is over investing in the interaction with the supplier.

Consumption services

The ideal pattern for consumption services as well as of the four individual cases can be found in Table 4.

Insert Table 4 here.

The first service is cleaning newly constructed buildings before transferring them to their owners/ tenants. This type of cleaning occurs on a project-by-project basis, and therefore has specific requirements each time. In case only sweeping floors is required, the cleaning is left to construction staff (like a carpenter), which then has to be willing to perform tasks outside their job description. Communication and evaluation is project-related and adaptations have hardly been made. The observations match the ideal pattern to some extent, though not fully.
The second consumption service is building in components in cars and lettering the exterior of the car. Here, every user has his/ her individual preferences, and it is important that the supplier understands these preferences. Several departments are involved, each performing a specific task (design of company style, producing sticker for the exterior of the car, et cetera). Company 1 has also put a lot of effort in supply chain integration, and the supplier has set up a dedicated mobility desk. The observations for this service do not seem to match the ideal pattern in the sense that many departments are involved and that adaptations go beyond financial and administrative procedures.
Office cleaning is the third consumption service studied at company 1. Here, the observations do match the ideal pattern.
In the case of stockist services, the supplier has to keep stock and ensure Just In Time delivery. Because this is a global contract, a global account manager was involved. The supplier has to understand the impact of non-availability on the primary process. Furthermore, they have to think about standardization in order to achieve cost efficiency. The supplier set up a dedicated service centre. Overall, the observations match the ideal interaction pattern.
Waste management concerns collecting waste and deliver it to suitable processors. This service is of key importance for company 2's license to operate. The supplier therefore has to have a thorough understanding of safety standards and (environmental) requirements. The supplier invested in clothing and containers that fulfilled safety requirements and furthermore set up a service centre. A transparent pricing mechanism has been introduced. The observations do not match the ideal pattern.
The last consumption service studied again concerns office cleaning. No large deviations from the ideal pattern could be identified. One thing to note is that the supplier in this case has made adaptations to their way of working.

The success and the level of perceived risk associated with each of the service purchases are Table 6.

Insert Table 6 here.

Again, most of the services are successful both in terms of the process and the result of service delivery. One of the consumption services is characterized by high risk, which explains the extra efforts put into this

service purchase. Thus, the observations did not match the ideal pattern, but this can be explained by the level of perceived risk.
There is also a discrepancy between the ideal pattern for consumption services and the observations for the waste management service. The level of perceived risk however is low. We expect that the way company 2 deals with this service is shaped by the importance of the service with regard to the license to operate. Since the service is neither complex nor new, risk is low. This could indicate that taking into account the level of perceived risk blurs the analysis; it might be better just to look at importance instead. Further research is required to validate this idea.
Overall, the findings matched the ideal pattern for consumption services in four out of six cases. We therefore conclude that our middle-range theory on successful interaction for consumption services is repeatedly confirmed.

Conclusion and discussion

This study has addressed the concept of buyer-seller interaction in the ongoing exchange of business services. Starting out with a classification based on how the buying firm uses/ applies the service with respect to its own offerings, we developed middle-range theories regarding ideal (successful) buyer-seller interaction patterns for each of the four service types identified based on two in-depth case studies at two services companies.
Subsequently, the middle-range theories developed were tested by means of additional case studies at five more service companies. Each individual case was associated with an interaction pattern that closely resembled the ideal pattern of that specific type. When observations deviated from the ideal patterns, plausible explanations could be found in the level of perceived risk involved, and occasionally, in company-specific characteristics.

This paper addressed the testing of the middle-range theories beyond the original setting by conducting additional case studies at manufacturing companies. At the manufacturing companies, only instrumental and consumption services could be identified. This seems logical considering that manufacturing companies usually do not pass on services to their customers.
Considering the instrumental services, the patterns identified matched the ideal pattern for this type of service. In one of the cases, the buying company might be over investing in the interaction. Regarding the consumption services, four out of six patterns identified matched the ideal pattern. For one of the services without a match, a plausible explanation could be found in the level of risk involved. For the other service lacking a match, the explanation can possibly be found in the importance of the service rather than in the risk associated with the service.
Whether importance explains variation in interaction better than does risk should be investigated further. This could be done by performing the same type of analysis with importance as a moderator instead of risk.

This study could be subject to some criticisms. One is that the vast amounts of data collected have been reduced to descriptions of four first-order construct, which implies a drastic simplification of real life. However, considering the exploratory character of this study, this simplification is necessary in order to facilitate sense-making. This does not mean that results do not have to be viewed in relation to their full context.
Related to this is the fact that no causal effect has (yet) been established between organizing in a way that fits an ideal pattern and success. This is something that should be addressed in further research.
Another limitation has to due with the fact that the questionnaire study is currently being conducted. As a result, we have to base our analyses partly on our own interpretations of the cases rather than on interpretations of the people actually involved. The latter will have more in-depth knowledge of what is actually going on in the ongoing interactions and will therefore provide more accurate data. When this data is complete, a more thorough analysis can be conducted. Possibly, we could refine our middle-range theories by studying relative degrees of success of the interactions observed.

This study is a first step towards developing a typological theory on successful buyer-seller interaction in the ongoing exchange of business services. Additional research is required to substantiate these results.

Moreover, the relative importance of the different first-order constructs is something that could be specifically addressed in further studies. Eventually, the grand theory (larger fit between actual and ideal pattern leads to more success) could be tested, for example by means of a large-scale survey.

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Appendix A Research methods exploratory case studies

We developed a sampling frame consisting of two dimensions: the type of buying company (a service provider or a manufacturer), and the type of production (routine or professional service provision; unit, series or process manufacturers). We wanted to include both service providers and manufacturers, on the one hand because service companies due to their more profound experience with services are expected to be more advanced at obtaining services from external providers, on the other hand because also manufacturing companies are increasingly being confronted with buying services. The latter dimension was derived from Håkansson (1982, p. 34/ 35), who demonstrated that organizations employing different types of production have different purchasing strategies and are confronted with different types of purchasing problems.

We selected two service companies for the in-depth exploratory studies, since service companies' professional approach to buying services was expected to increase the chances of finding variation between different types of services. One of these companies was considered a routine service provider; the other a professional service provider. The services to be studied (one of each type) were selected by the companies in consultation with the researchers.
Each of the service purchases was studied by means interviews, a short questionnaire and company documents. Two to three in-depth interviews were conducted with purchasers (focusing predominantly on the purchasing process) and contract owners and/ or users, who were deemed to be most knowledgeable on what happened after the purchase. The questionnaires were used to verify the interview data on the level of success associated with the ongoing interactions and the level of risk associated with the service (measured on a five-point Likert scale). Company documents were studied to obtain more background information on for example category plans, purchasing procedures and Service Level Agreements (see Van der Valk et al. (2006) for a detailed description of data collection methods).

Figure 1 Research framework

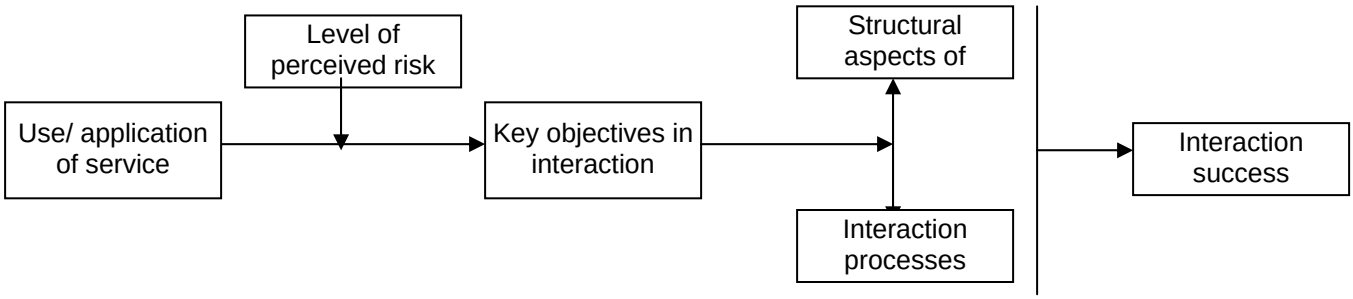

Table 1: How the dependent variables vary per service type

Type	Key objectives	Critical supplier capabilities	Customer representatives	Communication	Adaptations
Component	▪ The service should fit with the customer's final offering	▪ Understanding the needs of the end customer ▪ Understand the offering of the buying firm ▪ Flexibility in terms of service delivery ▪ Reliable service delivery	▪ Marketing representatives , people knowledgeable of the buying firm's final offering	▪ Demands of final customer (user) ▪ Timing of service delivery ▪ Quality requirements ▪ Communication mainly related to demand	▪ Service design ▪ Service delivery process ▪ Capacity & demand management
Instrumental	▪ The service should affect the buying firm's primary processes in the desired way ▪ The service should fit with important characteristics of these primary processes	▪ Understand primary processes buying firm ▪ Understand how the service affects the customer's primary processes ▪ Understand fit between service and primary processes ▪ Understand internal customer needs	▪ People involved with the primary process affected by the service ▪ Internal customers	▪ Design of the service ▪ Effects of service on primary processes ▪ Internal customer demands ▪ Communication on a continuous basis	▪ Service specification ▪ Service design ▪ Exchange of sensitive information ▪ Changes to organization structure
Consumption	▪ The service should support various core processes at the buying firm	▪ Ability to develop efficient routines ▪ Understand internal customer needs ▪ Ability to adapt the service to the specific situation of customer	▪ Internal customers (various functional disciplines)	▪ Internal customer demands ▪ How to develop efficient routines ▪ Communication at long but regular intervals ▪ **Frequent communication to fine-tune service delivery activities**	▪ Administrative procedures ▪ Financial procedures

Table 2 Classification of cases selected at the three manufacturers

	Type of company:	Instrumental services:	Consumption services:
Company 1	Construction company	- Training and education	- Cleaning for delivery - Built-in components and lettering of company cars - Office cleaning
Company 2	Exploration and production company (oil)	- Construction services & operation - Underbalanced drilling	- Stockist piping materials - Waste management
Company 3	Food producer	- Consumer panel	- Office cleaning

Table 3 Observations instrumental services (INS C1 = instrumental service Company 1)

	Key objectives	Critical supplier capabilities	Customer representatives	Communication	Adaptations
Ideal pattern	▪ *The service should affect the customer's primary processes in the desired way* ▪ *The service should fit with important characteristics of primary processes*	▪ *Understand primary processes buying firm* ▪ *Understand how the service affects the primary processes* ▪ *Understand fit between service and primary processes* ▪ *Understand internal customer needs*	▪ *People involved with the primary process affected by the service* ▪ *Internal customers*	▪ *Design of the service* ▪ *Effects of service on primary processes* ▪ *Internal customer demands* ▪ *Communication on a continuous basis (high frequency, high intensity)*	▪ *Service specification* ▪ *Service design* ▪ *Exchange of sensitive information* ▪ *Changes to organizational design*
INS C1	Delivering training that will contribute to the development company 1's employees' skills	▪ Understand employees skills and specific needs ▪ Understand primary processes of buying firm ▪ Understand what the effect should be of employee training in terms of how these employees carry out their primary processes	▪ Director of internal business school (member of personnel department) ▪ Local director, training coordinator, head of Personnel, HR consultant	▪ Employee skills to be developed, specific areas of attention for individuals ▪ Content, duration, organization of training ▪ Results of training (evaluation) ▪ Intensive communication during development of training, annual evaluation	▪ Custom specification and design of service In-depth insight in buying organization required to develop proper training ▪ Business school ▪ **"No cure, no pay" mechanism** ▪ Online registration
INS C2a	Realize capital investments in construction as soon as possible (so they can generate revenue)	▪ Understand how the capital investment fits with company 4's primary process ▪ Understand company 4's specific requirements ▪ **Project management skills**	▪ Purchasing ▪ Technical representatives	▪ Feasibility of outsourcing scenario's ▪ Schedule and deliverables ▪ Formalized contact points including hold and witness points and review moments	▪ Specification and design customized ▪ Fixed unit price per m^3 and kWh output ▪ Exchange of sensitive information
INS C2b	Deliver a service that enables production during drilling	▪ Understand how service contributes to revenue generation company 3 ▪ Understand importance of safety aspects	▪ Supply chain engineer (purchasing) ▪ Technical representatives ▪ Contracting	▪ **Schedule and progress**, deviations ▪ Daily operational contact, quarterly review meetings ▪ Evaluation on well-by well basis	▪ Specification and design developed by company 3 ▪ Cost plus payment ▪ Exchange of sensitive information
INS C3	Provide market information to marketing/ sales managers so they can do their job	▪ Understand how information will be used to change marketing/ sales strategy ▪ Understand fit between service provided and processes marketing department ▪ Understand requirements internal users	▪ Representatives marketing departments ▪ Category management	▪ Internal demands (level of detail data, timeliness of delivery, et cetera) ▪ **Innovative ideas (cross-category thinking, information sharing)** ▪ Weekly contact, annual evaluation	▪ Specification developed by company 3 ▪ Quarterly fixed fees, additional assignments paid for separately

Table 4 Observations consumption services (CNS C1a = consumption service a Company 1)

	Key objectives	Critical supplier capabilities	Customer representatives	Communication	Adaptations
Ideal pattern	▪ *The service should support various core processes*	▪ *Ability to develop efficient routines* ▪ *Understand internal customer needs* ▪ *Ability to adapt the service to the specific situation of customer*	▪ *Internal customers (various functional disciplines)*	▪ *Internal customer demands* ▪ *How to develop efficient routines* ▪ *Communication at long but regular intervals (low frequency, low intensity)*	▪ *Administrative procedures* ▪ *Financial procedures*
CNS C1a	Finishing touch (yet often deemed unimportant) to buying company's primary process	▪ Understand specific requirements for cleaning (developed project by project) ▪ **Willingness to take on extra tasks if carpenter cleans**	▪ Purchasing (central and local) ▪ Representatives from operating companies	▪ Time schedule, progress ▪ Performance ▪ Evaluation on project by project basis ▪ Periodical evaluation	▪ Creating a list of preferred suppliers
CNS C1b	Contribute to appearance company 1 by applying company style to cars	▪ Ability to develop efficient routines (ordering cars, building in components, lettering) ▪ **Understand needs of internal customers**	▪ Purchasing ▪ PR department ▪ Commercial department ▪ Representatives of operating company	▪ Due date company car ▪ Requirements internal customer ▪ Periodical evaluation	▪ Supply chain integration ▪ Order forms ▪ Lease company transfers costs to operating companies ▪ Mobility desk
CNS C1c	Clean offices in a way that makes employees feel comfortable at work	▪ Ability to develop efficient routines ▪ Quality of service delivery	▪ Facility management ▪ Internal customers	▪ Daily fine-tuning for cleaning ▪ Evaluation once every two-three months	▪ Adapted specification at some operating companies
INS C2a	Ensure timely availability of timing materials to prevent disruption of primary process	▪ Understand how non-availability of materials affects primary process (reliability) ▪ Enable standardization of materials	▪ Supply chain engineer ▪ **Global account manager** ▪ Mechanical engineer ▪ Project employees	▪ Quality of materials, timing of delivery ▪ Improvement initiatives ▪ Frequent communication	▪ Service design customized ▪ Standardization of materials ▪ **Service centre**
CNS C2b	Fulfill governmental requirements to clean up waste resulting from company 2's primary process	▪ Understand how service contributes to company 2's **license to operate** ▪ **Reduce integral chain costs** ▪ Create process which can pass (environmental) **accountancy audit**	▪ Supply chain engineer ▪ Waste manager	▪ Coordination of activities ▪ **Industry specific safety standards** ▪ **Scorecard** results (HSE, savings, administration)	▪ **Transparent pricing with flexible (maximized) profit margin** ▪ **Investments in company clothing and containers** ▪ **Supplier set up service centre**
CNS C3	Clean offices in a way that makes employees feel comfortable at work	▪ Adapt service to specific office locations ▪ Ability to develop efficient routines ▪ Quality of service delivery	▪ NPI manager (purchasing) ▪ Facility managers or similar	▪ Daily coordination ▪ Results of VSR and internal measurements ▪ Periodical evaluations (regional and national)	▪ **Supplier introduced process cards instead of sizeable books**

Table 5 Questionnaire results instrumental services (L = low, H = high) [*]

Service	Success associated with service delivery process	Success associated with result (delivered service)	Risk
Training and education	H	H	H
Consumer panel	H	L	L
Construction services & operation	H	H	H
Underbalanced drilling	H	H	H

Table 6 Questionnaire results consumption services (L = low, H = high) [*]

Service	Success associated with service delivery process	Success associated with result (delivered service)	Risk
Built-in components and lettering of company cars	H	H	H
Cleaning for delivery	H	H	L
Office cleaning company 1	H	H	L
Office cleaning company 2	H	H	L
Stockist piping materials	H	H	L
Waste management	H	H	L

[*] Unfortunately, data could not be collected for all of the cases. For those cases for which we have not yet received completed questionnaires, the Table lists the researchers' estimates based on the interview data.