



Variety in business-to-business services and buyer-supplier interaction

Variety in
business-to-
business services

The case of cleaning services

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Abstract

Purpose – The paper aims to empirically validate a recently developed typology to demonstrate that services that are similar in terms of technical content, but different with regard to how they are used by the buying company, require different buyer-supplier interaction processes.

Design/methodology/approach – The paper conducts an embedded case study based on dyadic data collection to investigate the purchase of cleaning services by Netherlands Railways (NS) from two suppliers. These services differ with regard to how they are used by NS: as part of the value-proposition to customers (train and station cleaning) or as part of the support processes for NS (office cleaning).

Findings – The paper finds that for a technically homogenous service, fundamental differences in required interaction arise as a result of different usage situations. These differences are reflected in the sourcing decision and the design of the service delivery management process.

Research limitations/implications – Besides the general limits of single case studies regarding external validity, a specific limitation of the study is the limited number of supplier interviews conducted.

Practical implications – In order to develop appropriate sourcing and service delivery management strategies, practitioners need to consider the use of the service purchased and how it relates to their value proposition. This research shows that pooling volume for services that are used differently may enable immediate price reduction but could reduce supplier performance and ultimately customer satisfaction.

Originality/value – The case study and the validated typology complement the limited literature on the procurement of services transferred to the next level of customers in the supply chain.

Keywords Case study, Service, Interaction, Purchasing, Buyer-supplier relationships, Business services

Paper type Case study



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1. Introduction

Many organisations have difficulties with effectively organising the transactions and relationships involved in service procurement (Ellram *et al.*, 2007, 2008; Van der Valk and Rozemeijer, 2009). This is a serious problem given the increasing importance of business-to-business services (including business-to-government services) in the purchasing expenditures of individual organisations (Axelsson and Wynstra, 2002; Ellram *et al.*, 2007; Wöfl, 2005). The managerial challenge in service procurement is twofold. First, the fact that services are characterized by simultaneous production and consumption (Chase and Tansik, 1983; Nie and Kellogg, 1999; Sampson, 2001) implies continuous interaction between buyer and seller aimed at communicating about, coordinating and adapting the activities and resources allocated to and/or used in the buyer-seller relationship. The characteristics of these interactions strongly affect the success of ongoing service exchange (Roth and Menor, 2003). Second, the traditional managerial focus on the content of different services (Agndal *et al.*, 2007) complicates the development of effective service sourcing strategies, as it disregards strategic segmentation dimensions such as criticality to the final customer. Indeed, organisations increasingly outsource customer-critical processes and functions like call-centres and even product design (Bhalla *et al.*, 2008; Ellram *et al.*, 2008; Fifarek *et al.*, 2008).

The current literature on service procurement does not adequately address these two challenges. Regarding interaction, most service operations research focuses on consumers rather than business customers (McLaughlin *et al.*, 1991). Regarding segmentation, the majority of service classifications developed by marketing (Lovelock, 1983) or operations management scholars (Chase, 1978, 1981) adopt a supplier's perspective (see, for an extensive overview, Cook *et al.*, 1999). The few classifications that identify service categories from a buyer's perspective fail to provide insight in how differences between services lead to differences in effectively managing the associated procurement and exchange processes. In sum, no research systemically studies the effectiveness of various interaction processes for different types of business services.

In this paper, we empirically validate a recently proposed typology of "ideal" buyer-supplier interaction patterns. Starting from the classification of four types of business services introduced by Wynstra *et al.* (2006) and Van der Valk *et al.* (2008, 2009) conducted theory-building fieldwork, thereby determining an effective pattern of ongoing buyer-supplier interaction for each service type. The typology stipulates that each of these patterns leads to successful service exchange for specific service types, and therefore we label these patterns as "ideal". The aim of the current study is to provide a first validation of this framework using an embedded case study.

In this case study, Netherlands Railways (NS) buys cleaning services for passenger trains and stations, but also for its offices. These cleaning services fall into different categories of Van der Valk *et al.*'s (2009) typology, which distinguishes between two main usage situations:

- (1) the service is used within the buying company; and
- (2) the service is passed on to the buying company's (business) customers.

Extant research has hardly addressed the latter usage situation (Jackson and Cooper, 1988; Nordin and Agndal, 2008), despite the claim that buyer-supplier relations differ for "indirect" services used internally, versus "direct" services that are transferred to the next level of customers in the supply chain (Parasuraman, 1998).

NS has adopted one unified approach in sourcing cleaning services. In light of the proposed typology, we would expect NS to have little success with this approach, as it fails to acknowledge differences between cleaning services and implications of these differences for procuring and exchanging these services. Our objective is to explain the results of NS's approach in terms of the typology, which proposes differentiated interaction processes for the different types of (cleaning) services.

By validating this typology of interaction in business service procurement, we aim to make two closely related contributions. First, this study complements the scarce literature on business service segmentation from the perspective of the buying organisation. The proposed typology adopts strategic, customer-oriented segmentation dimensions, by integrating marketing and operations management perspectives in services (Cook *et al.*, 1999; Kellogg and Nie, 1995). Second, we predict and validate which pattern of interaction is effective for which type of service, thereby extending the established generic notion that effective interaction between suppliers and customers of business services is essential for exchange success.

We also make a contribution to the emerging stream of research on “procuring complex performance” (PCP) by elaborating on the notion of complexity as brought forward by PCP researchers.

The structure of our manuscript is as follows. The next section presents a review of prior literature, which is only brief in order to reserve sufficient space for our case study. We refer to Wynstra *et al.* (2006) for a more detailed literature review on business service procurement. In Section 3, we present our research design. Then, we present the data and subsequent discussion of our case study. The paper ends with conclusions, limitations and suggestions for further research.

2. Prior research on business service procurement

The mainstream literatures on business services can be summarised in a few main observations. First, studies in both service operations and marketing have consistently stressed that services are produced and consumed in continuous interaction between buyers and sellers (Grönroos, 2008; Johnston, 2005; Roth and Menor, 2003). The majority of research conducted in these disciplines, however, focuses on business-to-consumer services. Second, there is research in the domain of purchasing and supply (chain) management (see, for an overview, Table I), which does address business-to-business services but focuses on the initial phases of the purchasing process. In practice, however, the problems are not limited to the phases preceding the contract, but also pertain to the phases following the contract/service delivery management (Ellram *et al.*, 2004). In addition, there is not much literature focusing on direct services (Jackson and Cooper, 1988; Nordin and Agndal, 2008), i.e. services that end up in the buyer's offerings to end customers. Table I also shows that service procurement studies are highly fragmented across different types of services as defined by their “technical” content (Nordin and Agndal, 2008).

An emerging research stream within the business service procurement literature focuses on “PCP”, as witnessed by this special issue. Typically, these studies explore “the detail and dynamics of contractual and relational governance mechanisms and their changing significance over time” (Zheng *et al.*, 2008, p. 46). These dynamics of these two types of inter-organisational governance are studied in the context of large-scale capital investment projects that encompass the design and delivery of

Topic	Sources
Describing the service (specification)	Axelsson and Wynstra (2002), Fitzsimmons <i>et al.</i> (1998), Van der Valk and Rozemeijer (2009)
Supplier selection	Day and Barksdale (1994, 2003)
Evaluating the service in advance of purchase	Axelsson and Wynstra (2002), Van der Valk and Rozemeijer (2009)
Capturing the service in the right type of contract, including legal issues	Smeltzer and Ogden (2002), Van der Valk and Rozemeijer (2009)
Buyer-supplier interdependency	Jackson <i>et al.</i> (1995), Van der Valk <i>et al.</i> (2009), Wynstra <i>et al.</i> (2006)
Interaction and ongoing delivery of the service	Jackson <i>et al.</i> (1995), Van der Valk <i>et al.</i> (2009), Wynstra <i>et al.</i> (2006)
Evaluating the service after the purchase (evaluation/performance measurement)	Fitzsimmons <i>et al.</i> (1998), Jackson <i>et al.</i> (1995), Smeltzer and Ogden (2002), Van der Valk and Rozemeijer (2009)
Service procurement process	Van der Valk and Rozemeijer (2009)
Service heterogeneity	Van der Valk <i>et al.</i> (2009), Wynstra <i>et al.</i> (2006)
Decision making units in service procurement	Ellram <i>et al.</i> (2007), Smeltzer and Ogden (2002)
Supplier opportunism	Ellram <i>et al.</i> (2007), Tate <i>et al.</i> (2010)
Cost versus value of services	Ellram <i>et al.</i> (2007), Tate and Van der Valk (2008), Van Mossel and Van der Valk (2008)
Specific type of service, for example:	Advertising Call centre services Facility management/cleaning services Consulting services
	Lichtenthal and Shani (2000), West (1997) Tate (2006) Ancarani and Capaldo (2005), Hui and Tsang (2004), Jiménez <i>et al.</i> (2007), Van Mossel and Van der Valk (2008) Mitchell (1994), Schiele (2005), Smedlund (2008)

Table I.
Overview of service procurement literature

services and goods, characterized by differing degrees of infrastructural and performance complexity (Lewis and Roehrich, 2011).

In the PCP literature, infrastructural complexity refers to the extent to which the components of a project are “bespoke or highly customised” (Brady *et al.*, 2005, in Lewis and Roehrich (2011, p. 23)). Performance complexity is defined as “a function of characteristics such as the level of knowledge embedded in the performance [...] and/or the level of customer interaction” (Lewis and Roehrich, 2011, p. 23). The central question in the PCP literature is how these two types of complexity affect inter-organisational governance mechanisms. In turn, these governance mechanisms largely determine the performance of supply relationships involved in these kinds of complex projects (Caldwell *et al.*, 2009).

One ambiguity in the emergent PCP literature regards its notion of performance complexity, which is suggested to encompass interaction. Van der Valk *et al.* (2009)

however argue that interaction is a fundamental element of the governance mechanisms between buyers and suppliers of business services. Thus, while the PCP literature claims to focus on the effect of supply task characteristics on inter-organisational governance, one of these characteristics (customer interaction) encompasses also elements pertaining to the actual governance of inter-organisational relations.

Our study seeks to complement the PCP literature in this respect, by clearly treating characteristics related to the management or governance of inter-organisational relations, such as the type of stakeholders involved, as dependent variable. The “interaction approach” of the Industrial Marketing and Purchasing (IMP) Group (Håkansson, 1982) provides a well-established theory for investigating relational governance mechanisms at a detailed level, such as the communication patterns between different groups of stakeholders within the relation. Interaction involves the communication about, coordination and adaptation of activities and resources that buyers and sellers are allocating and/or using in the relationship (Wynstra *et al.*, 2006).

One of the starting points in the interaction approach is that the process of interaction is affected, among others, by how supplies are used by the buying company (Håkansson, 1982). Studying the impact of this supply task characteristic on interaction processes heeds the call for more research that investigates the differences between services used internally and services transferred to the buyer’s customer (Jackson and Cooper, 1988; Nordin and Agndal, 2008).

Studying the impact of usage situation may also help further develop the notion of complexity in PCP literature. Even though they do not involve major capital investment projects, the procured cleaning services studied here can be seen as examples of “PCP”. In terms of PCP’s infrastructural complexity, the actual degree of customisation of the service is quite high. Train cleaning for instance, needs to be carefully and continuously (re-)scheduled in line with (changing) train arrival and departure times. More specifically, the type of usage may have an impact on the extent to which the procured service interacts with other parts of the total product offering by the buying firm to its final customers, “in a nonsimple way” (Simon, 1962, p. 468). We return to this in the Discussion section.

One important similarity between the current study and the PCP literature is that both not only investigate the initial purchasing process, like most purchasing and supply management studies of business services (Table I), but also the subsequent phases of delivery and use of goods and services (Caldwell and Howard, 2011; Caldwell *et al.*, 2009; Lewis and Roehrich, 2011).

2.1 A usage-based typology of business service interactions

Wynstra *et al.* (2006) advance the notion that the effectiveness of particular buyer-seller interaction processes, strongly depends on how the purchased service is going to be used by the buying organisation, and propose a usage-based classification of four types of business services.

According to Wynstra *et al.* (2006), two types of business services move downstream in the supply chain to the customers of the buying firm. The demand and requirements for these services are immediately related to the demand of the buying firm’s customers, both in quantitative and qualitative terms. Component services are directly delivered to end-customers by the supplier (i.e. hiring external field maintenance specialists by an equipment manufacturer). Semi-manufactured services

are an input for the buying company's offering to (end-)customers (i.e. an airline outsourcing the cleaning of an airplane), and are usually integrated into the final offering before being delivered to the end customer.

The other two service types pertain to service use within the buying company. Instrumental services affect how the buying company's primary processes are carried out (i.e. information and communication technology services bought by a governmental organisation). Given that instrumental services affect primary processes, they may have an indirect effect on end-customers (e.g. when travellers can order a visa online). Consumption services primarily concern the support processes of the buying company (i.e. catering services bought by a telecom company for its employee canteens).

Based on a theory-building multiple-case study, Van der Valk *et al.* (2009) provide definitions of ideal interaction patterns for these four service types, i.e. interaction patterns that lead to successful ongoing service exchange in terms of the service process and the service outcome. The descriptions of these ideal interaction patterns are conceptualised in terms of the key objectives of interaction, buyer representatives involved, buyer and supplier capabilities, and communication (Table II). Here, we only briefly describe variation in the key objectives and functional involvement from the side of the buyer.

For component services, the key objective is to ensure a fit between the service being purchased and the buying company's existing offerings. Consequently, from the buyer's side, people from marketing should be strongly involved in the ongoing interactions, since they are knowledgeable about end-customer requirements. For semi-manufactured services, an additional key objective is to optimise the form and degree of processing of the service with respect to the buyer's application. In addition to marketing representatives, people that will render the service into a part of the final offering (e.g. production representatives) should be involved in the ongoing interactions.

The key objective for instrumental services is to make sure that the services have the desired effect on the buying company's processes or the resources used within those processes. Hence, representatives of the functional departments or processes at which the service is directed should be involved in ongoing interactions. Since these services can significantly impact the functioning of organisations, business development representatives may also be involved. Finally, for consumption services, the key objective is to ensure that the service supports various core organisational processes in a way that facilitates the buying organisation and its employees in carrying out their primary tasks. Depending on which service is bought, the internal customers, who are usually strongly involved in the ongoing interactions, can be any functional department.

3. Research design

We conduct a case study into the purchase of cleaning services by NS. The unit of analysis is the buyer-seller service exchange relationship. The study has a 3 × 2 embedded design (Yin, 2009): case company NS buys cleaning services for three different objects (stations, trains and offices), each from two suppliers. The case study encompasses a "before" situation where the different cleaning services were bought separately by different organisational units – and in different ways – and an "after" situation where the different cleaning services were bought collectively by a team

Examples	Key objectives	Buyer representatives	Critical buyer capabilities	Critical supplier capabilities	Main issues in the communication
<i>Component</i> Luggage handling services bought by an airline Call centre services bought by a telecom provider	Service has to become an integral part of buying company's offering to end customers	Marketing representatives, people knowledgeable of the buying firm's final offering	Ability to clearly specify customer requirements and how service impacts customer processes	Provide high quality service Have sufficient capacity available	Demands of end customer Service performance
<i>Semi-manufactured</i> Catering services bought by an airline for their passengers Internet services for mobile devices bought by a telecom company	The service should become an integral part of the buying company's primary processes	End customer representation (marketing/sales) People that process the service into the final offering	Clearly identifying and communicating end customer requirements Optimise fit between buyer's and provider's operations	Clearly identifying and communicating end customer requirements Optimise fit between buyer's and provider's operations	End customer requirements Possibilities for processing service in desired way
<i>Instrumental</i> Consultancy services bought by an airline Marketing services bought by a telecom provider	The service should affect the buying firm's primary processes in the desired way	Business development representatives (may represent any functional department or business process)	Ability to identify and communicate internal customer demands Implementation skills	Business development capabilities Process design capabilities	Information on buying firm's primary processes and how the service affects these processes Exchange of sensitive information
<i>Consumption</i> Catering services bought by an airline for their offices Cleaning services bought by a telecom company	The service should be integrated with various support processes	Internal customers (any functional discipline or all)	Ability to specify and communicate requirements of various internal customers	Ability to develop efficient routines	Reduction of administrative workload

Source: Adapted from Van der Valk *et al.* (2009)

Table II.
A typology of effective
buyer-seller interaction

consisting of representatives of the different units. This single, embedded case study provides the first true test of the typology, while previous empirical work has been aimed at conceptual and theory development (Van der Valk *et al.*, 2008, 2009; Wynstra *et al.*, 2006). Single case studies are particularly suitable for investigating phenomena of interest in depth and comprehensively. Furthermore, Easton (2010) notes that when well-articulated theory exists, as is the case with our typology, particular aspects of that theory, i.e. controlling for the technical content of the service, can be targeted in a single case. Finally, with regard to the PCP's notion of performance complexity, a single case may be enough to advance current theory.

Despite the limits of a single case as a test of theory with respect to external validity, this case also has particular strengths which make it well suited for such a first validation of our typology.

First, the possibility of this study to compare a "before" and "after" situation makes it particularly suitable for the purpose of validating theory. The study forms a "natural" experiment, where a condition (differentiated interaction forms, patterns) is first present and then removed (but not specifically for the purpose of the study) (Dul *et al.*, 2010). Experiments are the preferred research strategy for testing theory (Dul and Hak, 2008).

Second, in contrast to prior cross-sectional field studies (Van der Valk *et al.*, 2009), the embedded design controls for the technical content of the service and the buying organisation, eliminating these as possible sources of variation in the interaction processes observed. Additional merits of the current study are the scope (pre-purchase in addition to post-purchase processes) and sources (suppliers in addition to buyers) of data collection, which further enhance the internal validity of this study.

Data collection comprised 21 semi-structured interviews of 1.5-2 hours with NS and supplier representatives in the period June-December 2006, and focuses specifically on the period of the first two purchasing tenders (2005-2006). We did not interview customers, but relied on written documentation for information on issues such as customer satisfaction. NS's chief procurement officer (CPO) appointed the senior buyer cleaning as our key informant, and assigned her the task of arranging interviews. Interviewees were selected based on their (strategic or operational) involvement with the collective sourcing projects. All but two interviewees have their background in facility management and have at least five years of experience in their current positions. The interviews focused on the time period 2005-2006, during which the first two collective sourcing projects were conducted. Incidentally, information regarding the period before (2003-2005) was raised during the interviews.

At NS, we interviewed all members of the commodity team (CT) and the sourcing teams (ST) for the two projects (Table III). Interviewing multiple functional representatives enables data source triangulation (Yin, 2009). The CT is responsible for developing the overall (i.e. not just sourcing) strategy for the commodity cleaning services, and is primarily internally oriented. Commodity here refers to a technically and commercially speaking homogeneous group of purchase items (goods and/or services). The senior buyer cleaning derives the sourcing strategy for cleaning from this general commodity strategy. Subsequently, the ST implement this sourcing strategy in sourcing projects.

The six interviews with CT members focused on the tactical/strategic considerations for bundling the sourcing of the three cleaning services. The eight interviews with ST members addressed the actual sourcing projects (specification, selection, contracting)

Team	NS Gate	NedTrain	CHD	Other (NS)	Suppliers
Commodity team	Process manager quality control	National director train cleaning	Facility manager	Senior buyer Project leader CPO	–
ST project 1/ Supplier A ^a	Cleaning advisor	Contract manager cleaning (former) Contract manager cleaning (current)	Facility manager	–	Manager national accounts
	Cleaning advisor	Contract manager cleaning			
ST project 2/ Supplier B	Cleaning advisor	Contract manager cleaning central region	Facility manager	–	General director Head of sales

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Notes: ^aProject 1 involved two geographical regions; the two regions involved separate ST, which were interviewed both

Table III.
Overview of interviewees

and how NS and the suppliers interact during the contract period. In the cases where people have multiple roles (i.e. being a member of both ST), these roles were addressed separately.

At the suppliers, we interviewed representatives that were strongly involved in the sales project (a sales representative at Supplier A, and a sales representative and the general director at Supplier B), but who claimed to have sufficient insight in the daily collaboration between their company and NS. All interviewees have at least eight years of experience in their current positions. The three interviews with suppliers focused on how they view their contract with NS. The number of supplier interviews is limited due to the suppliers' general resistance to share sensitive information.

We followed the suggestions of Yin (2009) and Gibbert *et al.* (2008) to ensure validity and reliability. The use of a conceptual framework (i.e. the interaction typology) helped to establish internal validity. External validity, within limits, was derived from the theoretical justification of cases at the level of the service purchase. To enhance reliability, we developed a case protocol, an interview questionnaire, recorded and transcribed interviews, and verified transcripts with the interviewees. Interview data was triangulated with NS documents that provided detailed insights into performance measures and specification methods used (Table IV). Approved interview transcripts were developed into case summaries, which were also verified with the interviewees and discussed among the researchers to further enhance construct validity. Finally, the results of the research were discussed in a 1.5 hour roundtable discussion attended by the CT and the senior buyer cleaning. The feedback received provided support for the picture we had obtained.

We followed the steps in qualitative data analysis suggested by Miles and Huberman (1994). First, we coded the case summaries and the minutes of the roundtable meeting (Voss *et al.*, 2002) using the initial stages of the purchasing process, the ongoing interactions and success. Then, we further analysed our data on the ongoing interactions in terms of theoretical constructs advanced by Wynstra *et al.* (2006) and Van der Valk *et al.* (2009): the key objectives of interaction, buyer and supplier representatives involved, buyer and supplier capabilities, and communication. This enabled us to describe the interaction patterns and the main findings on the initial purchase process; our case narrative

Document	Topic/information obtained
Steller (2007), "Introductie in de (inkoop) wereld van NS"	Presentation by NS's CPO for training workshop for professional education, Eindhoven, The Netherlands, 20 December 2007, containing information on: NS purchasing organisation and processes Customer satisfaction and spend with regard to cleaning services (period 2003-2006)
Cleaning Research Association (Vereniging Schoonmaak Research) (1999), "Toepassingsmogelijkheden van zelfsturende teams in de schoonmaak"	Discussion notes prepared by the Human and Market Committee (Commissie Mens en Markt), November 1999: Information on how the use of self-supporting teams rather than more traditional personnel management approaches may lead to better performance of cleaning crew
NS Gate (2006), "KTO-REGIO's-Q3.xls"	Excelfile containing the results of customer satisfaction surveys (KlantTevredenheidsOnderzoek) on cleanliness, timetable performance and safety in trains and at train stations, period first quarter 2002-third quarter 2006 Information on how NS Gate measures customer satisfaction (KPIs used and scores for Supplier A for the period 2002-2006)
NS Gate (2006), "NSX-Meerj.Overzicht2006-KW2-06.xls"	Excelfile containing performance scores on cleaning for all stations in The Netherlands, period 2000-2006
NS Corporate Purchasing (Concern Inkoop) (2005), "Bestek en PvE: deel 1 Algemene Bepalingen", IEAR – 2005, 2004/S 252 218010 – part 1	Information on general purchasing terms and conditions
NS Corporate Purchasing (Concern Inkoop) (2005), "Bestek en PvE: deel 2 Aanbestedingspecifiek", IEAR – 2005, 2004/S 252 218010 – part 2	Information on sourcing-project-specific terms and conditions: specification, selection and award criteria, quality evaluation, collaboration, etc.
NS Gate (2006), Examples of image specifications ("beeld-bestek")	Pictures showing what NS Gate would like the station to look like during the day
NS Gate (2006), Overview supplier selection and award criteria	Information on how NS Gate selects their suppliers
Supplier A annual report (2009)	Information about annual turnover
Supplier B (2006), Communication scheme NS – Supplier B	Overview of Supplier B-NS communication scheme (who talks to whom about what)
Supplier B (2006), Overview of organisational structure for NS account	Overview of Supplier B's dedicated organisation structure set up for NS account

Table IV.
Overview of documents studied

and analysis are organised around these constructs. The descriptions of interaction patterns were qualitatively compared to the ideal interaction patterns in relation to the success of the ongoing service exchange. Based on this evaluation, we determined whether the different usages of the cleaning services warrant differentiated buyer-seller interaction.

4. Case background

NS is the national railway service provider in The Netherlands transporting over one million passengers between 390 train stations on a daily basis. NS is organised into

two divisions. The first division is passenger transportation, which consists of NS Travellers, who are responsible for transporting passengers, and NedTrain, NS's train maintenance company, which maintains and overhauls the trains owned by NS. (NedTrain has a performance agreement with and thus receives financial compensation from NS Travellers.) The second division deals with the development and exploitation of train "hubs", i.e. stations. NS Gate is responsible for all resources and activities in and around train stations; platforms and escalators, but also shops and catering, and car parking facilities and bicycle sheds. The platforms, stairs and escalators are part of the railway infrastructure owned by ProRail, the national concession holder for managing the public railway infrastructure. NS Gate maintains and cleans this infrastructure in exchange for financial compensation from ProRail. As passengers pass through train stations, it is highly important for NS Travellers that NS Gate does their job well.

In their mission statement, NS indicates that they wish to "transport passengers from and to clean stations using clean trains" (source: presentation by NS's CPO). The cleaning of trains and stations, but also of office buildings, is performed by external suppliers. According to the CPO, NS is the largest buyer of cleaning services in The Netherlands, with an annual spend of about €55 million (source: presentation by NS's CPO). This involves three types of cleaning activities:

- (1) Station cleaning involves daily cleaning activities, like cleaning toilettes, mopping floors, but also getting rid of small nuisances, like a package of French-fries that has been dropped by a passenger. Station cleaning is purchased and organised by NS Gate (source: presentation by NS's CPO).
- (2) Train cleaning consists of two activities:
 - overnight cleaning jobs; and
 - "end-of-the-line" cleaning (performed at stations at the end of a line, before a train turns and continues its time table).
The first concerns intensive cleaning jobs, like the floors, walls and seats of a train. The latter concerns "quick" actions, like cleaning toilets and emptying bins. Overnight train cleaning is critical: a train which has not been cleaned today cannot be included in tomorrow's time table. Train cleaning is purchased and coordinated by NedTrain.
- (3) Office cleaning includes the daytime cleaning of offices, meeting rooms, etc. Office cleaning is purchased by the corporate housing department (CHD), which is formally a part of NS Gate.

The volume ratio for station, train and office cleaning at the corporate level of NS is 30:60:10.

4.1 Purchasing at NS

All purchase orders for activities aimed at the development or operation of networks for the provision of public railway transportation services, and with contract values over €422,000 (excluding VAT) for products or services and €5,278,000 (excluding VAT) in the case of works should be issued as a European tender on the basis of the "resolution tendering special sectors" (in Dutch: "Besluit Aanbestedingen Speciale Sectoren" (BASS) (www.nsprocurement.nl/European_tenders)). At the time of this

study, the purchase of cleaning services at NS was done through a European tender. Buying organisations generally consider European tenders to be very time-consuming and complex (Van Weele, 2010). In the past, NS conducted separate sourcing projects for cleaning services, in which the independent profit-and-loss responsible business units NS Gate, NedTrain and CHD each individually bought their cleaning services for stations, trains and offices (source: interview with NS's CPO). As NS started to professionalise its purchasing function, the company moved towards a centralised business structure. As a result, investigations began regarding the possibility for increased collaboration between the units. This resulted in the identification of 11 purchase categories, consisting of purchases requiring similar technical know-how and providing synergistic opportunities (source: interview with NS's CPO). Following these centralisation initiatives, in 2005, NS decided to source the cleaning services for all three objects in one collective sourcing project.

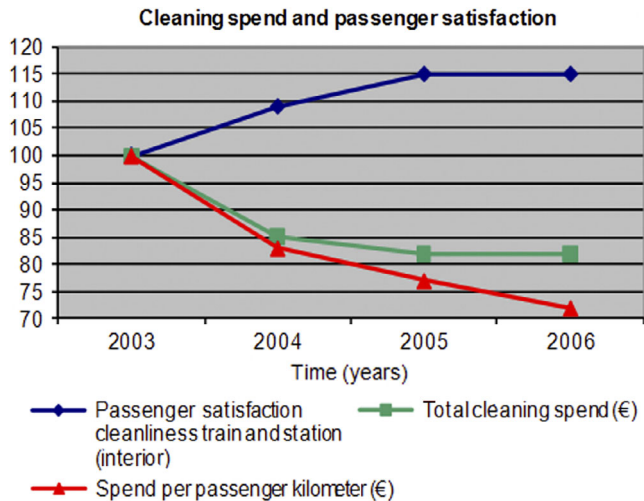
The purposes of a collective sourcing project were threefold. First, bundling the volume of cleaning activities was expected to lead to price reductions. Second, NS would have to go through one rather than three complex, labour-intensive European tendering procedures. Finally, by awarding the cleaning of stations and trains to one supplier, this supplier was expected to increase operational efficiency. Whereas in the past, a delayed train would render the train cleaning supplier idle, while the station cleaning supplier was cleaning platforms, the new situation would allow the supplier to clean the station while waiting for the delayed train.

4.2 Collective sourcing of cleaning

NS considered contracting one nationally operating supplier too risky, as it would increase NS's dependence on the supplier and decrease competition between suppliers. NS therefore bundled the cleaning activities for all three objects on a regional basis. Fifteen regions were identified; the first three were tendered in 2005 and 2006. The first tender in 2005 involved two regions, with a contract value of about €8 million, which were awarded to Supplier A, a nationally operating cleaning provider with about 12,000 employees and a turnover of €235 million (in 2007; source: Supplier A's 2009 annual report). The second tender comprised one region with a contract value of about €4 million, and was awarded to Supplier B, a family-owned company with about 1,000 employees and an annual turnover of about €20 million (source: Supplier B company web site). Each tender was performed by a ST consisting of representatives of NS Gate, NedTrain and CHD. The contracts had durations of three years with an option to extend with one more year twice.

According to the CPO, the sourcing projects resulted in huge cost savings for NS. As can be seen in Figure 1, the spend on cleaning per passenger-kilometre has gone down since the first collective tender in 2005. Interview results show that while the units acknowledge the company-wide savings, they have mixed feelings regarding the savings for the individual units. The process manager for quality control (NS Gate CT representative) claims: "For NS Gate cost savings are zero; sometimes, we pay a little more". The cleaning advisor (NS Gate ST representative project 2) concurs:

The savings for NedTrain and the corporation are substantial, but for NS Gate the results are zero. CHD even has to pay a bit more while quality is going down.



Source: Steller (2007)

Figure 1.
Cleaning expenditure and
passenger satisfaction
(2003-2006; index score –
2003 = 100)

The facility manager (CHD commodity and ST representative) notes that “CHD obtains some small savings”. NedTrain realizes substantial savings, mostly resulting from improved contracts containing lower unit prices and shorter allowed time windows for cleaning activities. Problems with the execution of cleaning activities, however, resulted in more operational management attention being needed from NedTrain and in rework for the suppliers. The contract manager cleaning (NedTrain ST representative project 1) claims: “What the actual savings are is unknown”.

5. Case description and analysis

When considering these three cleaning services in light of the usage-based classification of business services (Wynstra *et al.*, 2006), we note that for station cleaning, cleaning personnel are notably present in the service delivery process of NS. The result of cleaning clearly impacts passenger satisfaction. Furthermore, demand for this service is directly related to demand for train transportation: the more passengers in the train station, the greater the need for cleaning. Given this direct and substantial impact on NS’s service offering to passengers, station cleaning clearly constitutes a component service.

Train cleaning is less straightforward, and the early phases of our field work actually revealed two distinct types of train cleaning. One type of train cleaning occurs during the day at the train station and in front of passengers, as they may already enter the train while it is being cleaned. The impact of train cleaning on passenger satisfaction and the link between train transportation demand and cleaning demand make us consider this type of train cleaning to be a component service.

Another type of train cleaning occurs overnight, away from customers, at a rail yard. This type of train cleaning eventually becomes part of NS’s offering to passengers in the form of a clean train and is thus considered a semi-manufactured service. We hereafter refer to these two types of train cleaning as component train cleaning and semi-manufactured train cleaning.

Finally, office cleaning can be classified as a consumption service. It does not affect passengers, nor does it impact the primary processes of NS. While office cleaning is less similar to the cleaning activities for the other two objects, including this type of cleaning brings additional benefits in terms of increased volume and efficiency.

We now turn to our case narrative and analysis. As the collective sourcing project's main objective is to increase synergy between station and train cleaning, our narrative focuses on stations and trains and to a lesser extent on offices.

5.1 Before the contract was signed: collective sourcing of cleaning services at NS

In all sourcing projects, the three units experienced the complexity of collective sourcing, as their individual sourcing approaches were very different. One source of complexity relates to specification. For station cleaning, NS Gate worked with pictures to communicate to the supplier what they want the station to look like during the day. These output specifications were complemented with statements of work. Supplier performance was evaluated in three ways. First, an independent party recurrently measured whether the required operations were performed properly and with the right materials. Second, NS Gate used a service level monitor, a thrice-weekly quality check of eye-catching contaminations. Third, NS Travellers measured passengers' perceptions of the cleanliness of stations (end-customer satisfaction) and forwarded the results to NS Gate. In the end, however, the suppliers are compensated on the agreed service levels, not on their performance towards the end-customer.

NedTrain, on the other hand, had – in the past – performed the cleaning activities on trains in-house and prescribed the cleaning activities to be executed including the materials to be used: “Part of this total cleaning system is that suppliers need to use to prescribed cleaning products and their producers in order to achieve the desired quality within the agreed upon time windows, [...]” (obtained from the document on sourcing-project-specific terms and conditions, Table IV). In other words, the infrastructural complexity (customisation) is relatively high (Lewis and Roehrich, 2011). NedTrain evaluated quality right after cleaning and the quality of the cleaning activities during the day. For the latter evaluation, a random sample of trains was selected. NedTrain performed these quality evaluations themselves, which the suppliers consider to be potentially biased. NS Travellers also measured how passengers perceived the cleanliness of trains and returned these results to NedTrain; however, this is not linked to desired supplier performance or the statement of work. Again, suppliers of train cleaning are compensated for displaying the specified behaviours, not for the results obtained.

The first collective sourcing projects made NedTrain realise that NS Gate's output-oriented specification method could be beneficial. However, a second source of complexity, namely work pressure, prohibited NedTrain from coming up with a fully developed set of output-based specifications. Overall planning was tight; furthermore, NedTrain representatives (operational contract managers) had to do the sourcing projects on top of their daily work of operationally managing the train maintenance process (in contrast, the cleaning advisors of NS Gate are completely dedicated to cleaning). “Then, the specification had to be developed. [...] These specs I had to develop from scratch. Furthermore, there was severe time pressure and little support from others” (NedTrain contract manager, project 1).

Third, complexity resulted from the use of different supplier selection criteria:

The rail infrastructure operator, ProRail, demands a Safety, Health and Environment Checklist Contractors (SCC) certificate for suppliers working on and around the railway tracks. NedTrain does not demand this, but due to collective sourcing, NedTrain has to conform to this selection criterion of NS Gate. This is likely to increase prices (National director cleaning, NedTrain).

Because of these complexities, the (management of the) operational processes remained substantially different. As a result, there was less contract management synergy than expected. The suppliers in turn were not able to achieve the intended integration between station and train cleaning.

In terms of contractual compensation, the CPO indicates that for NS prices for cleaning went down (12 per cent savings on total cleaning spend) while customer satisfaction went up (Figure 1). The three units claim that there has been no substantial change in quality (either positive or negative). Substantial savings were obtained for NedTrain, while for NS Gate and CHD costs remained the same. With regard to costs, the manager national accounts (Supplier A) states:

In the case of NS, the three cleaning contracts each have substantial sizes. Particularly NedTrain is very large: adding NS Gate and CHD does not increase the volume that much.

The head of sales of Supplier B adds:

The savings resulting from negotiating better prices are about 20%; the savings resulting from bundling volumes are only a few percent. Furthermore, the 20% savings include slimming down the contract: activities that formerly were part of the contract are now labelled as additional work.

Furthermore, expected economies of scope were not attained, as the collective sourcing projects took a lot of effort from the parties involved. The units have learned about and from their differences; thus despite a rough start, the people involved managed to get the contracts working. However, it is hard to say whether the results for NS justify the efforts involved.

5.2 After the contract was signed: service delivery management with Supplier A

In 2005, a collective contract for two regions was awarded to Supplier A based on its good quality/price ratio. However, due to the time restrictions mentioned in Section 5.1, NedTrain had not been involved in setting up the supplier selection criteria. As a result, the criterion “experience with train cleaning” was not included. The selection decision turned out to be highly problematic. According to the NedTrain contract manager for project 1: “Supplier A had never cleaned trains before: NedTrain therefore had to teach Supplier A what train cleaning is all about.” His project 2 colleague stated: “Supplier A was sort of walking around with the specifications in hand.” As a result, the contract managers cleaning had to put in a lot of time and effort to “train” the cleaning supplier; on top of their 24-7 operational process, this was an arduous task. For Supplier A, the need for increased attention and capacity for train cleaning came at the expense of station cleaning. As a result, NS Gate also had to put in a lot of extra effort to make the contract work.

The interaction patterns observed are summarised in Table V. Considering the ongoing interactions for the cleaning of stations, the key objective was to contribute to NS's value proposition through the provision of clean junctions of public transport.

Table V.
Interaction patterns
NS – cleaning Suppliers
A and B

Type	Key objectives	Critical capabilities NS	Representatives NS	Representatives Supplier A	Representatives Supplier B	Critical capabilities Supplier A	Critical capabilities Supplier B	Main issues in the communication
Cleaning of stations (component service)	Service becomes integral part of NS's service provision/ contributes to value proposition	Translating customer satisfaction target into working program	Cleaning advisor External quality inspectors	Manager national accounts, supported by: Manager operations Regional representatives	District manager stations, trains and buildings District manager "outside" stations Sales/general management	Perform prescribed working program while attaining desired quality level	Understand that cleaning is a part of NS's primary processes Pro-active in optimizing various activities performed	Technical quality supplier Adequacy of working program Optimization of cleaning trains and stations Execution of cleaning activities/ quality of cleaning activities
Cleaning of trains (component service, semi-manufactured service)	Timely communication of changes in time-table and delays (reliability NS performance)	Contract manager cleaning Quality inspector NedTrain	Contract manager cleaning Quality inspector NedTrain	District manager stations, trains and buildings Object leader stationing premises Sales/general management	District manager stations, trains and buildings Object leader stationing premises Sales/general management	Reliability (supplier needs to be present when train arrives) Flexibility (supplier can clean stations when train does not arrive)	Understanding of being part of NS' primary processes/pro-activity in optimizing various activities performed For overnight cleaning: understand supplier impact on NS performance/ ability to match demand patterns	Execution of cleaning activities/ quality of cleaning activities

(continued)

Type	Key objectives	Critical capabilities	NS	Representatives	Representatives Supplier A	Representatives Supplier B	Critical capabilities Supplier A	Critical capabilities Supplier B	Main issues in the communication
Cleaning of offices (consumption service)	Clean efficiently and effectively without disturbing employees	Ability to clearly communicate occupant requirements	NS	Facility manager	Representatives Supplier A	Representatives Supplier B	Critical capabilities Supplier A	Critical capabilities Supplier B	Main issues in the communication
					District manager	District manager, trains stations and buildings	Develop efficient routines	Develop efficient routines	Daily quality
					Sales/general management	Sales/general management	Understand internal customer needs	Understand internal customer needs	Opportunities for improving efficiency while maintaining effectiveness

Variety in business-to-business services

Table V.

While an important supplier capability would have been to understand (end) customer requirements and develop an appropriate cleaning program, so far, NS only focused on whether the supplier performed the cleaning activities as prescribed. NS did not involve/question end-customers to determine cleaning requirements. Supplier A's manager national accounts also argued that a strong focus on end customer satisfaction is not preferable: "When you interview people that just experienced a major (but unrelated) delay, cleaning will not score high." In other words, performance complexity is high (Lewis and Roehrich, 2011). Supplier representatives involved were the manager national accounts, who is the main point of contact for NS, and the manager operations and various regional representatives, who inform the manager national accounts about the operational processes, quality, etc. These are the main issues in the communication between Supplier A and NS.

Considering the ongoing interactions for the cleaning of trains, the key objective was to contribute to NS's value proposition. The supplier representatives involved were the same as for stations. In terms of functional background, the buyer representatives were similar to the ones involved in station cleaning, yet, they represent NedTrain instead of NS Gate. Issues emerged regarding quality evaluations: "The quality of train cleaning is evaluated by NedTrain quality inspectors: in the eyes of the supplier, this may seem not very independent" (senior buyer cleaning). Since the cleaning of trains (during the day) was performed during NS's operations, critical supplier capabilities were flexibility (a train may arrive a little earlier or a little later) and reliability, to avoid disturbances in the time-table. Regarding flexibility however, the manager of national accounts for Supplier A noted conflicting interests between NedTrain and NS Gate:

For example: when we know a train is not coming or coming later, we want to clean platforms. NedTrain, however, does not want us to, since they then feel like they are paying for the cleaning services of NS Gate.

This conflict was not resolved but rather left to the supplier to deal with on a case-by-case basis. No clear distinction was made between component train cleaning (overnight in the rail yard) and semi-manufactured train cleaning (during the day, at the station). Consequently, the interaction patterns for these two train cleaning services were the same.

The ongoing interactions for the cleaning of offices were less problematic. CHD was hardly affected by the problems Supplier A had with trains and stations, since cleaning offices is different in terms of the location, the type of people that do this work (mostly women versus mostly men), the type of activities performed (inside, medium-intensive labour versus outside, very intensive labour), etc. However, Supplier A did not treat this cleaning service differently: the same supplier representatives were involved as with trains and stations.

This part of the case description already highlights some discrepancies between the observed interactions and the ideal interactions for the three cleaning services. We come back to these in our discussion in Section 6, but first we discuss the findings for Supplier B.

5.3 After the contract was signed: service delivery management with Supplier B

In 2006, a collective contract for one other region was awarded to Supplier B. The sourcing process for this project was very similar to the process of the previous project, as both projects took place in a short time frame. NS did try to incorporate

lessons-learned from the first sourcing project. An example is adapting the supplier selection criteria: NS now specified that the supplier would need to have experience with cleaning trains. The interactions between the divisions of NS and Supplier B for cleaning trains and stations were different than between NS and Supplier A. The findings for office cleaning are similar and we therefore leave them out of this analysis.

First, in the ongoing interactions for the cleaning of stations, the key objective was that they were cleaned in a way that contributes to customer satisfaction. Supplier B tried to perform their cleaning activities from a customer's point-of-view. For example, when a passenger drops a package of French fries on the platform, cleaning this up may take priority over emptying the bins on the train, as the first activity will more strongly impact customer satisfaction. According to Supplier B's general director:

Some years ago, a study was conducted into how the quality of cleaning affects customer satisfaction. Results: the quality was excellent, but customers were not so satisfied. To increase customer satisfaction, one should focus on the customer experience (scent, colour, music) rather than on cleaning more frequently or carefully. There has been some follow-up to this study, but more can be done.

Furthermore, Supplier B claimed that they did not assign just any cleaner to cleaning stations: they felt that their cleaners are part of NS in the eyes of passengers, and this sets certain requirements on the people performing this job in terms of language, clothing and attitude (customer orientation). According to Supplier B, not all employees are equally suitable to perform this job. In this sense, Supplier B demonstrated a very pro-active attitude in continuously improving the various cleaning activities performed: "For the new contract, we developed a new management structure" (general director Supplier B). This structure involves two region managers (one for a main station, the trains that pass through this station and the head office, and one for the other stations in the region, including the trains that pass through), and sales/general management (NS is a key account for Supplier B) (buyer representatives). The latter had strategic consultations with the senior buyer cleaning on aligning both companies' strategies and identifying opportunities for improvement (communication). Regarding communication, "We use a communication scheme that states who talks to whom about which subjects. This communication scheme was developed in consultation with the client" (general director, Supplier B).

Concerning the integration with the cleaning of trains, Supplier B was able to optimise the various cleaning activities they performed because of the dedicated and pro-active team leaders leading the cleaning crews at stations. These team leaders are responsible for cleaning stations and trains that pass through the stations (component train cleaning), a job that requires the continuous checking of the information panel in the station hall to see where and when trains will arrive in order to send cleaners to the appropriate platforms. If delays occur, the team leaders assign their personnel to platforms that need cleaning. As such, the cleaning processes for stations and trains are strongly interlinked. At the strategic level, a single region manager was responsible for both stations and trains at these stations. In contrast, the overnight cleaning of trains (semi-manufactured train cleaning), which takes place at a separate location, was assigned to a dedicated object leader and was thus separated from train cleaning at stations (component train cleaning).

6. Discussion

The observations regarding interaction patterns for the three cleaning services are summarised in Table V. We clearly find that the three types of cleaning services

warrant differentiated interaction patterns. This supports the notion of Parasuraman (1998), who argued that the linkages between buyers and sellers of business services differ for services used internally and services that (possibly after being modified) go further downstream in the supply chain. The fact that we studied services which are similar from a technical content point-of-view is viewed as an asset rather than a burden: we find that even within the realm of technically similar services, strong differences may still be present. Taking into account these differences may be crucial for determining appropriate governance structures for the ongoing service exchange.

The case description shows that the interactions between NS and Supplier B resemble the descriptions of ideal interaction by Van der Valk *et al.* (2009) more closely than the interactions between NS and Supplier A. Thus, Supplier B differentiated more strongly than Supplier A. NS is more satisfied with the contract with Supplier B. Hence, we conclude that the service exchange with Supplier B is more successful. Thus, differentiating interaction patterns for different types of cleaning services results in a more successful ongoing service exchange. The results of this study therefore suggest that our typology of effective buyer-seller interaction requires no immediate changes and thus is a useful addition to extant segmentation literature.

The strongest effects of the type of usage seem to be reflected in the buyer-seller interface, which we – as opposed to typical PCP studies – view as a dependent variable. Finding strong effects in this area supports the notion of Caldwell and Howard (2011, p. 243), who state that PCP is more accurately defined as being “concerned with interfaces and the management of interfaces”. In our case, this emerges most clearly in the boundary-spanning functional representatives involved on the side of Supplier B. NS involved different people (representing the different organisational units) in the sourcing and subsequent service delivery management processes; yet, their internal collaboration was insufficient to realize the intended synergies the expected benefits. Consequently, Supplier A treated all services the same and involved the same set of people for all three cleaning services. Their strategy was more one of standardization rather than the customised integration NS was looking for.

Supplier B on the other hand clearly differentiated the three types of cleaning, yet sought integration of these processes where appropriate. Their understanding of the differentiation in cleaning services is illustrated by their acknowledgement that cleaning in the presence of final customers requires different cleaner abilities than traditional office cleaning or overnight train cleaning. In other words, the interaction with end customers here affects what type of people should be involved in the service production processes. This finding clearly illustrates that interaction, which in PCP is an aspect of performance complexity and an independent variable, should be viewed as a dependent variable.

The managerial separation of overnight cleaning of trains (away from customers) from the daytime cleaning of trains (in plain sight of customers) also underlines Supplier B’s understanding of the role of cleaning in NS’s business processes. Train cleaning at train stations was strongly integrated with station cleaning; in our conceptualisation, both can be defined as component services. This illustrates yet another aspect of performance complexity: the need for understanding the buyer’s business processes when offering services directly to the buyer’s customers, even if it is a seemingly basic service like cleaning. Such understanding could be argued to increase the level of knowledge embedded in the service provision and the level of provider

specialisation required. On the other hand, one could also argue that a required understanding of the buyer's primary processes increases the extent to which the service is customised, which would make it an aspect of infrastructural complexity. Apparently, these two notions of complexity are not completely unambiguous.

Supplier B has devoted special attention to setting up an appropriate organisational structure for managing their key NS account. The newly set-up organisational structure at Supplier B had strong links with the communication scheme agreed upon by both companies. Thereby Supplier B incurred increased overhead costs, but also increased their ability to customise their service provision to the wishes of the three internal customers at NS (infrastructural complexity). Supplier B involved different people for each of the three types of cleaning, at different organisational levels. By involving different managers in the different cleaning activities, appropriate management skills were available for each of the cleaning activities. Due to the strong involvement of people that directly supervise the execution of cleaning activities, the dialogue between NS and Supplier B involved more hands-on issues than the dialogue with Supplier A. Also, opportunities for improving the customer experience in trains and at stations were investigated and discussed. Thus, Supplier B has developed appropriate interactions for each of the three types of cleaning, as a result of which the interactions with NS are more successful.

This discussion has shown that the notion of performance complexity can be developed further by taking out those elements that pertain to governance. Specifically, this means viewing interaction as a dependent rather than an independent variable. The discussion also alluded to the idea that performance complexity and infrastructural complexity perhaps cannot be so clearly separated. Finally, we illustrated that for NS the purchase of cleaning services, which become part of its offering to customers and are therefore strongly connected to their primary process of passenger transportation, can indeed be viewed as buying complex performance, due to the inherent infrastructural and performance complexity.

7. Conclusions

Prior research into the ongoing exchange of business services resulted in a typology of effective buyer-seller interaction (Van der Valk *et al.*, 2009). In the current study, this typology is used to investigate the ongoing interactions between a single buying company and two suppliers of cleaning services. In particular, this research highlights similarities and differences in the exchange process for a specific kind of service (cleaning) and the associated interaction patterns for three specific usage situations: two types of cleaning services that become part of the buying company's value proposition, while the third type is "consumed" within the buying company.

By offering a validated interaction typology, this research makes two substantive contributions to the business service procurement literature. First, this research answers the call for more strategic, customer-oriented segmentation methods of procured business services by integrating marketing and operations management perspectives in services (Cook *et al.*, 1999; Kellogg and Nie, 1995). As Lovelock and Young (1979) state, this is an important step towards improving productivity in service industries, as changing the way in which customers interact with service producers facilitates service exchange. We distinguish between different business-to-business service types, more specifically:

- services that are used within the buying firm; and
- services that are passed on to subsequent customers.

As such, the usage-based classification underlying our typology is a valuable addition to a mere content-based segmentation of business services, which is commonly used in practice (Agndal *et al.*, 2007).

Second, this research deepens our understanding of the process of ongoing business service exchange and buyer-seller interactions therein, an area where scholarly research is still limited. In particular, by focusing on communication, coordination and adaptation (together: interaction), we complement and extend the PCP literature by clearly denoting interaction as a dependent variable from the notion of performance complexity. Furthermore, we started to discuss the distinctness of the two types of complexity (infrastructural and performance) as put forward by PCP. We have also demonstrated that seemingly “mundane” services can be quite complex. More specifically, complexity in terms of infrastructure (ongoing customisation, e.g. in terms of timing) and performance (difficulties of assessing and attributing cleaning outcomes) can be seen to vary in relation to the type of service being procured, with component services (station cleaning and “end-of-the-line” train cleaning) at the high end of the spectrum and consumption services (office cleaning) at the low end. Validating that different patterns of interaction are effective for these different types of service, we explicate and extend the notion that what is effective interaction (a fundamental element of relational governance) between suppliers and customers varies across the procurement complexity space (Caldwell *et al.*, 2009).

For practitioners, the finding that different patterns of effective interaction exist for different service types suggests that managers should adopt a contingent rather than a best practice approach when buying business services and managing business service suppliers. The results of the case study demonstrate that a uniform approach to purchasing services that are similar from a technical content perspective may not always be appropriate. A best practice approach that is very appropriate for buying cleaning for NS’s offices (consumption service), may not at all be appropriate for buying cleaning for stations and trains at stations (component service). This implies that considering content alone is not sufficient in setting up effective purchasing and supply management processes for business services (Ellram *et al.*, 2007; Wynstra *et al.*, 2006). Acknowledging the differences between similar services within a given technical category, by using the interaction typology as a diagnostic tool and guideline, provides valuable learning opportunities to improve and optimise service design and delivery. The results of the current study, in combination with declining benefits of collective sourcing, have in 2010 led NS Gate, NedTrain and CHD to go their separate ways in procuring cleaning services.

Although the guidelines are specific for buying companies, they can also provide service providers with insights on how the buying company uses the service and consequently how it would like to deal with the provider. Providers can then organise themselves in a way that is consistent with the buyer’s interaction expectations and desires to address the right issues and designate the right people in its marketing, sales and service delivery processes.

The main limitation of our study is that only a few supplier representatives have been interviewed. Conducting multiple interviews with other (operational) supplier

team members, such as cleaners and supervisors, would perhaps have provided additional insights. However, our comparison of the results from supplier interviews with the results from the interviews at NS leads us to believe that the current informants have a fairly good overview of what goes on in the daily processes. Therefore, in this study, this limitation is not deemed too problematic.

Future studies could be aimed at replicating our findings for other kinds of services at other companies. It seems relevant to verify whether the differences identified here in terms of managing the ongoing service exchange are equally relevant in other service contexts. For example, what happens when a university starts to make a clear distinction between catering for employees (consumption service) versus catering for students (component service)?

The study demonstrates that services that are similar in terms of technical content, but different with regard to how they are used by the buying company, require different sourcing and service delivery management strategies. As such, we feel it is a valuable step in identifying the requirements and benefits of effective business service procurement interactions.

References

- Agndal, H., Axelsson, B., Lindberg, N. and Nordin, F. (2007), "Trends in service sourcing practices", *Journal of Business Market Management*, Vol. 1 No. 3, pp. 187-208.
- Ancarani, A. and Capaldo, G. (2005), "Supporting decision-making process in facilities management services procurement: a methodological approach", *Journal of Purchasing & Supply Management*, Vol. 11 Nos 5/6, pp. 232-241.
- Axelsson, B. and Wynstra, F. (2002), *Buying Business Services*, Wiley, Chichester.
- Bhalla, A., Sodhi, M.M. and Son, B.-G. (2008), "Is more IT offshoring better: an exploratory study of Western companies offshoring to South East Asia", *Journal of Operations Management*, Vol. 26 No. 2, pp. 322-335.
- Brady, T., Davies, A.C. and Gann, D. (2005), "Creating value by delivering integrated services", *International Journal of Project Management*, Vol. 23 No. 5, pp. 360-365.
- Caldwell, N.D. and Howard, M.B. (2011), *Procuring Complex Performance: Studies of Innovation in Product Service Management*, Routledge, New York, NY.
- Caldwell, N.D., Roehrich, J.K. and Davies, A.C. (2009), "Procuring complex performance in construction: London Heathrow Terminal 5 and a private finance initiative hospital", *Journal of Purchasing & Supply Management*, Vol. 15 No. 3, pp. 178-186.
- Chase, R.B. (1978), "Where does the customer fit in a service operation?", *Harvard Business Review*, November/December, pp. 137-142.
- Chase, R.B. (1981), "The customer contact approach to services: theoretical base and practical extensions", *Operations Research*, Vol. 29 No. 4, pp. 698-706.
- Chase, R.B. and Tansik, D.A. (1983), "The customer contact model for organizational design", *Management Science*, Vol. 29 No. 9, pp. 1037-1050.
- Cook, D.P., Goh, C.-H. and Chung, C.H. (1999), "Service typologies: a state of the art survey", *Production and Operations Management*, Vol. 8 No. 3, pp. 318-338.
- Day, E. and Barksdale, H.C. (1994), "Organisational purchasing of professional services: the process of selecting providers", *Journal of Business & Industrial Marketing*, Vol. 9 No. 3, pp. 44-51.

- Day, E. and Barksdale, H.C. (2003), "Selecting a professional service provider from the short list", *Journal of Business & Industrial Marketing*, Vol. 18 Nos 6/7, pp. 564-579.
- Dul, J. and Hak, T. (2008), *Case Study Methodology in Business Research*, Butterworth-Heinemann, Oxford.
- Dul, J., Hak, T., Goertz, G. and Voss, C. (2010), "Necessary condition hypotheses in operations management", *International Journal of Operations & Production Management*, Vol. 30 No. 11, pp. 1170-1190.
- Easton, G. (2010), "Critical realism in case study research", *Industrial Marketing Management*, Vol. 39 No. 1, pp. 118-128.
- Ellram, L.M., Tate, W.L. and Billington, C. (2004), "Understanding and managing the services supply chain", *Journal of Supply Chain Management*, Vol. 40 No. 4, pp. 17-32.
- Ellram, L.M., Tate, W.L. and Billington, C. (2007), "Services supply management: the next frontier for improved organizational performance", *California Management Review*, Vol. 4 No. 4, pp. 55-66.
- Ellram, L.M., Tate, W.L. and Billington, C. (2008), "Understanding professional services outsourcing and offshoring", *Journal of Operations Management*, Vol. 26 No. 2, pp. 148-163.
- Fifarek, B., Veloso, F. and Davidson, C. (2008), "Offshoring technology innovation: a case study of rare-earth technology", *Journal of Operations Management*, Vol. 26 No. 2, pp. 222-238.
- Fitzsimmons, J.A., Noh, J. and Thies, E. (1998), "Purchasing business services", *Journal of Business & Industrial Marketing*, Vol. 13 Nos 4/5, pp. 370-380.
- Gibbert, M., Ruigrok, W. and Wicki, B. (2008), "What passes as a rigorous case study?", *Strategic Management Journal*, Vol. 29 No. 13, pp. 1465-1474.
- Grönroos, C. (2008), *Service Management and Marketing*, Liber, Malmö.
- Håkansson, H. (1982), *International Marketing and Purchasing of Industrial Goods: An Interaction Approach*, Wiley, London.
- Hui, E.Y.Y. and Tsang, A.H.C. (2004), "Sourcing strategies of facilities management", *Journal of Quality in Maintenance Engineering*, Vol. 10 No. 2, pp. 85-92.
- Jackson, R.W. and Cooper, P.D. (1988), "Unique aspects of marketing industrial services", *Industrial Marketing Management*, Vol. 17, pp. 111-118.
- Jackson, R.W., Neidell, L.A. and Lunsford, D.A. (1995), "An empirical investigation of the differences in goods and services as perceived by organisational buyers", *Industrial Marketing Management*, Vol. 24 No. 2, pp. 99-108.
- Jiménez, A., Mateos, A., Rios-Insua, S. and Rodríguez, L.C. (2007), "Contracting cleaning services in a European public underground transportation company with the aid of a DSS", *Decision Support Systems*, Vol. 43 No. 4, pp. 1485-1498.
- Johnston, R. (2005), "Service operations management: from the roots up", *International Journal of Operations & Production Management*, Vol. 25 No. 12, pp. 1298-1308.
- Kellogg, D.L. and Nie, W. (1995), "A framework for strategic service management", *Journal of Operations Management*, Vol. 13 No. 4, pp. 323-337.
- Lewis, M.A. and Roehrich, J. (2011), "Contracts, relationships, integration: towards a model of the procurement of complex performance", in Caldwell, N.D. and Howard, M.B. (Eds), *Procuring Complex Performance: Studies of Innovation in Product Service Management*, Routledge, New York, NY, pp. 21-40.
- Lichtenthal, J.D. and Shani, D. (2000), "Fostering client-agency relationships: a business buying behaviour perspective", *Journal of Business Research*, Vol. 49, pp. 213-228.

- Lovelock, C.H. (1983), "Classifying services to gain strategic marketing insights", *Journal of Marketing*, Vol. 47, pp. 9-20.
- Lovelock, C.H. and Young, R.F. (1979), "Look to consumers to increase productivity", *Harvard Business Review*, Vol. 57 No. 3, pp. 168-178.
- McLaughlin, C.P., Pannesi, R.T. and Kathuria, N. (1991), "The different operations strategy planning process for service operations", *International Journal of Operations & Production Management*, Vol. 11 No. 3, pp. 63-76.
- Miles, M.B. and Huberman, A.M. (1994), *Qualitative Data Analysis*, Sage, Thousand Oaks, CA.
- Mitchell, V.W. (1994), "Problems and risks in the purchasing of consultancy services", *Service Industries Journal*, Vol. 14 No. 3, pp. 315-339.
- Nie, W. and Kellogg, D.L. (1999), "How professors of operations management view service operations", *Production and Operations Management*, Vol. 8 No. 3, pp. 339-355.
- Nordin, F. and Agndal, H. (2008), "Business service sourcing: a literature review and agenda for future research", *International Journal of Integrated Supply Management*, Vol. 4 Nos 3/4, pp. 378-405.
- Parasuraman, A. (1998), "Customer service in business-to-business markets: an agenda for research", *Journal of Business & Industrial Marketing*, Vol. 13 Nos 4/5, pp. 309-321.
- Roth, A.V. and Menor, L.J. (2003), "Insights into service operations management: a research agenda", *Production & Operations Management*, Vol. 12 No. 2, pp. 145-164.
- Sampson, S.E. (2001), *Understanding Service Businesses: Applying Principles of the Unified Services Theory*, Wiley, New York, NY.
- Schiele, J.J. (2005), "Meaningful involvement of municipal purchasing departments in the procurement of consulting services: case studies from Ontario, Canada", *Journal of Purchasing & Supply Management*, Vol. 11 No. 1, pp. 14-27.
- Simon, H.A. (1962), "The architecture of complexity", *Proceedings of the American Philosophical Society*, pp. 467-482.
- Smedlund, A. (2008), "Identification and management of high-potential professional services", *Management Decision*, Vol. 46 No. 6, pp. 864-879.
- Smeltzer, L.R. and Ogden, J.A. (2002), "Purchasing professionals' perceived differences between purchasing materials and purchasing services", *Journal of Supply Chain Management*, Vol. 38 No. 1, pp. 54-70.
- Steller, F. (2007), "Introductie in de (inkoop) wereld van NS", paper presentation for Training Workshop for NEVI3 Education, Eindhoven, The Netherlands, 20 December.
- Tate, W.L. (2006), "Purchasing outsourced services from offshore suppliers", doctoral dissertation, Arizona State University, Phoenix, AZ.
- Tate, W.L. and Van der Valk, W. (2008), "Managing the performance of outsourced customer contact centers", *Journal of Purchasing & Supply Management*, Vol. 14 No. 3, pp. 160-169.
- Tate, W.L., Ellram, L., Bals, L., Hartmann, E. and van der Valk, W. (2010), "An agency theory perspective on the purchase of marketing services", *Industrial Marketing Management*, Vol. 39 No. 5, pp. 806-819.
- Van der Valk, W. and Rozemeijer, F. (2009), "Buying business services: towards a structures service purchasing process", *Journal of Services Marketing*, Vol. 23 No. 1, pp. 3-10.
- Van der Valk, W., Wynstra, F. and Axelsson, B. (2008), "An empirical investigation of interaction processes between buyers and sellers of business services", *IMP Journal*, Vol. 2 No. 2.2, pp. 3-21.

-
- Van der Valk, W., Wynstra, F. and Axelsson, B. (2009), "Effective buyer-supplier interaction patterns in ongoing service exchange", *International Journal of Operations & Production Management*, Vol. 29 No. 8, pp. 807-833.
- Van Mossel, H.J. and Van der Valk, W. (2008), "Securing customer satisfaction through component service specifications: purchasing maintenance services for social rented housing", *Journal of Purchasing & Supply Management*, Vol. 14 No. 4, pp. 241-252.
- Van Weele, A.J. (2010), *Purchasing and Supply Chain Management*, Cengage Learning, Andover, MA.
- Voss, C., Tsikriktsis, N. and Frohlich, M. (2002), "Case research in operations management", *International Journal of Operations & Production Management*, Vol. 22 No. 2, pp. 195-219.
- West, D.C. (1997), "Purchasing professional services: the case of advertising agencies", *International Journal of Purchasing & Materials Management*, Vol. 33 No. 3, pp. 2-9.
- Wölfl, A. (2005), *The Service Economy in OECD Countries*, OECD Directorate for Science, Technology and Industry, Paris.
- Wynstra, F., Axelsson, B. and Van der Valk, W. (2006), "An application-based classification to understand buyer-supplier interaction in business services", *International Journal of Service Industry Management*, Vol. 17 No. 5, pp. 474-496.
- Yin, R.K. (2009), *Case Study Research: Design and Methods*, Sage, London.
- Zheng, J., Roehrich, J.K. and Lewis, M.A. (2008), "The dynamics of contractual and relational governance: evidence from long-term public-private procurement arrangements", *Journal of Purchasing & Supply Management*, Vol. 14 No. 1, pp. 43-54.

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