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Comparison of performance measurement in different purchasing and supply management practices

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Structured abstract:

Purpose – This study compares the characteristics of performance measurement in cross-functional and supplier-oriented purchasing and supply management (PSM) practices. It clarifies the purposes and content of performance measurement in three PSM practices.

Design/methodology/approach – A multiple case study approach is utilized in this study. Each of the cases is related to a contemporary performance measurement development project during the period 2015-2016. Interviews are conducted to obtain a pre-understanding of the research questions at hand. The case studies continue as an action research including measurement development workshops.

Findings – Identification of causalities between measurement objects and the measurement value benefits are contemporary issues of performance measurement development in the PSM context. The findings indicate that the measurement of outputs and outcomes instead of inputs and measurement supporting supplier relationship management are increasingly important in the service context. Measurement purpose affects the characteristics of PSM performance measurement. This study identifies that more informal control and non-standard measures are needed in interactive PSM practices such as cross-functional practices.

Research implications – The study provides practical examples of performance measurement in service purchasing, classifies the characteristics of performance measurement and highlights the need to extend the scope of measurement in the PSM context. The findings of the case studies reported support practitioners in developing performance measurement that satisfies contemporary managerial needs.

Originality/value – Earlier studies are often not explicit with the purpose of performance measurement. This study contributes to the existing literature by linking performance measurement characteristics to the understanding of PSM practices and providing a wider overview of the varying characteristics of performance measurement supporting strategic purchasing of services.

Keywords: case study, collaborative performance management, cross-functional integration, development process, performance measurement, purchasing and supply management (PSM), supplier evaluation

1. Introduction

Studies have shown that performance measurement has a positive impact on strategic integration accomplished by the purchasing function (Paulraj et al., 2006), the performance of suppliers and alignment of supplier relationship to the objectives of the buyer company (Cousins et al. 2008). The outcomes of performance measurement are dependent on the design, implementation and use of
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measurement. Performance measurement can support purchasing and supply management (PSM) practices (e.g. Gunasekaran et al., 2004; Talluri and Sarkis, 2002) but the link between performance measurement characteristics and PSM practices remains unclear.

The literature on PSM performance measurement has proliferated in the last two decades (Andre et al., 2015). A number of conceptual frameworks have been developed (e.g., Gunasekaran et al., 2004) and metrics have been listed (e.g., Caniato et al., 2014). Two perspectives on PSM performance measurement can be identified (Pohl and Förstl, 2011). Internal measurement relates to the performance of the purchasing function through supporting tasks, such as make-or-buy analysis and supplier selection. External measurement highlights the tasks required for supply management, such as performance evaluation of suppliers.

There is an established understanding of different PSM practices involving both internal and supplier-oriented practices (Terpend et al., 2008) but the use and requirements of performance measurement in those practices are still somewhat unclear. While there are studies linked to some of these practices, such as vertically aligned practices (Gunasekaran et al., 2004) and non-relational supplier oriented practices (Prahinski and Fan, 2007), cross-functional and relational supplier-oriented practices have gained less attention (Luzzini et al., 2014). Wider applications of performance measurement can reveal new kinds of benefits, such as organizational learning, supporting sustainable competitive advantage of firms and networks.

Despite the potential benefits of performance measurement, earlier research has revealed challenges, such as the short-term focus of measurement highlighting cost savings (Baier et al., 2008; Pohl and Förstl, 2011) and contractual agreements (Nudurupati et al. 2015). Strategic decision-making in purchasing would require more data on the external environment of the company complementing purchasing spend information (Marakas 2003). Development of suppliers would also benefit from more extensive content of measurement. A lack of balance has been identified between financial and non-financial measures (Bhagwat and Sharma, 2007), and the use made of performance measurement is often reflected by formal control (cf. Chenhall, 2003), which does not necessarily support learning in bilateral relationships.

The importance of service PSM has increased (Hallikas et al. 2012). Buyers are increasingly searching for complete solutions requiring service-dominant logic in PSM (Lindberg and Nordin 2008) due to their interest to emphasize their core business (Quelin and Duhamel 2003). Despite the recognized importance of services, it has been argued that the emphasis in the literature is still much in manufacturing and purchasing of goods (Boonitt and Pongpanarat, 2011). Limited amount of studies exists on PSM performance measurement in the service context.

The aim of this study is to compare the characteristics of performance measurement in relational and cross-functional purchasing and supply management practices. More specifically this study intends to answer the following research questions:

RQ1: What characterizes the purposes of performance measurement in cross-functional and supplier-oriented PSM practices?

RQ2: What characterizes the content of performance measures in cross-functional and supplier-oriented PSM practices?

RQ3: What characterizes the content of PSM performance measurement in the service context?

The unit of analysis of this study is a buyer company applying performance measurement for its PSM practices. Hence the dyadic relationship between buyer and supplier companies is perceived from the
buyer viewpoint. The paper is based on three action-oriented case studies in environments highlighting the specific interest of service purchasing. Interviews and participant observations of performance measurement development projects are the main source of empirical data.

2. Literature review

2.1. Purchasing and supply management (PSM) practices

Understanding performance measurement supporting the modern strategic approach to PSM (Paulraj et al., 2006; Pohl and Förstl, 2011) necessitates differentiating between the practices implemented by the purchasing function. Making a distinction between a) external supplier-oriented PSM practices and b) internal PSM practices is generally feasible (Day and Lichtenstein, 2006). Supplier-oriented practices can be further divided into relational and non-relational practices (Zimmermann and Foerstl, 2014). Relational practices require effort on the part of both supplier and buyer companies and may include practices such as joint product development, knowledge sharing, and specific investments. Non-relational practices are related to the activities of a buyer company and may include practices such as supplier evaluation, selection, incentives, and development (Terpend et al., 2008).

Internal PSM practices can be divided into the following four subcategories: vertically aligned PSM practices (i.e. strategic alignment), cross-functional practices (e.g. collaboration with R&D), practices within the PSM function (e.g. preparation for negotiations, order processing) and enabling PSM practices (e.g. skill development of employees) (Zimmermann and Foerstl, 2014).

In this study, the emphasis is on supplier-oriented practices and cross-functional practices supported by performance measurement. These practices have been regarded as important in raising the strategic importance of purchasing (Paulraj et al., 2006; Zimmermann and Foerstl, 2014). Close collaboration with suppliers is increasingly recognized to have a crucial impact on business performance. The purchasing function can also have an important role as an integrator in an organization and provide important synergy benefits between business units.

2.2. Performance measurement supporting PSM

Price has traditionally been considered as the single most important criterion when assessing suppliers (Chia et al., 2009; Cousins et al., 2006). Supplier quality management initiatives with a process focused approach have for long been applied, meaning that the internal quality standards have been extended to the supplier network (Morgan and Dewhurst, 2007). Measurement of supplier quality can be carried out using various tools and techniques, such as scorecards, audits, certifications, site inspection, statistical process control, and costs of poor quality (Noshad and Awasthi, 2015). There have also been studies identifying Balanced Scorecard (BSC) as a potential basis for supplier performance measurement (e.g. Andre et al., 2015) in order to provide a balanced approach to analyzing suppliers.

Despite the long history of PSM performance measurement, many challenges have been identified. A common set of supplier measures would make measurement easier and support some specific managerial purposes such as supply chain benchmarking (Bruno et al., 2012). However, the definition of a set of measures applicable to multiple companies across the supply chain is a very challenging task (Andre et al., 2015; Bruno et al., 2012). For example, quality is typically defined differently in varying contexts. Further, performance measurement does not always support bilateral communication between companies.

Performance measurement is a potential tool facilitating inter-organizational collaboration between supply chain members and its importance in inter-organizational relationships has been recognized.
The final version of this paper is published in International Journal of Productivity and Performance Management, Vol. 67 Issue: 8, pp.1290-1309 available at: https://doi.org/10.1108/IJPPM-06-2017-0148 (Busi and Bititci, 2006). While inter-organizational relationships have gained increasing attention in the literature, there has been little research on performance measures supporting such relationships (Cousins et al., 2008) and there is a specific paucity of empirical research (Papakiriakopoulos and Pramataris, 2010).

Studies providing perspectives and criteria for evaluating buyer-supplier relationships (Cho et al., 2012) have been presented. It has been claimed that the measures should communicate the joint vision and offer rewards to motivate employees, improve collaboration and achieving targets (Kaplan et al. 2010; Papakiriakopoulos and Pramataris, 2010). Busi and Bititci (2006) propose three perspectives on the measures of collaborative enterprises: extended process measures, collaborating measures and collaboration management measures.

However, there have been fewer studies presenting actual measures for collaboration. Papakiriakopoulos and Pramataris (2010) argue that measures dedicated to collaboration are typically non-financial, since financial measures likely cause more conflicts in interests leading to definition difficulties. It has likewise been proposed that more balanced objects of measurement including aspects of quality could support the pursuit of overall success in integrated value-chains (Barber, 2008). One method for measuring the performance of close relationships between organizational parties is customer-target-oriented measurement originating from consultancy projects (Chang and Williams, 1999).

2.3. PSM performance measurement in the service context

Four different approaches to the object of purchasing can be applied in purchasing business services: input, throughput, output and outcome (Axelsson and Wynstra, 2002). The increasing interest in buying outputs and outcomes challenges the current approaches of PSM performance measurement highlighting inputs (especially costs). It has also been presented that service PSM requires intensive interaction between buyer and supplier (Hallikas et al. 2012) which may pose specific challenges for performance measurement.

In general, performance measurement in services has been presented as an important research area requiring further attention (Bititci et al., 2012; Neely, 2008). Specific performance measurement challenges in services can be identified (Pawar et al., 2009), many of which are due to the IHIP characteristics of services (Berry and Bendapudi, 2007). For example, the intangible elements of services and the concurrent provision and consumption of a service complicate performance measurement. It is also known that one characteristics of service performance measurement is its context-specific nature, i.e. applicable performance measurement practices vary depending on the service in question (Jääskeläinen et al., 2014). For example, the importance of outcomes or resources as performance measurement objects can vary when comparing tailored and standard services.

Whereas specific characteristics of service supply chain management have been presented in the literature (Baltacioglu et al., 2007), limited research exists on PSM performance measurement in services (Cho et al., 2012) and service performance measurement from the viewpoint of a business customer (Jääskeläinen et al., 2014). Van der Valk and Rozemeijer (2009) found three major problems in purchasing process for services, two of which relate to performance measurement: defining the specific content of a service level agreement and evaluating performance. Service level agreements create a need to develop appropriate and contemporary service performance measures. The literature presents broad perspectives to performance measurement in service supply chains including service supply chain operations, customer service and corporate management (Cho et al., 2012). However, the more specific characteristics of PSM performance measurement in the service context still require further studies.
2.4. Analytical framework

Table 1 presents the analytical framework of this study, which concentrates on the design phase of performance measurement system development (cf. Neely et al. 2000). This phase includes the definition of managerial purpose, measurement object(s), and measurement method(s) intended to achieve the purpose. Another main perspective of the analysis is the internal and external PSM practices presented earlier. In this way the study intends to extend and structure the current research on performance measurement in the PSM context and exemplify performance measurement for different PSM practices.

<table>
<thead>
<tr>
<th>Task in performance measurement design phase</th>
<th>Observed questions during the case-specific action research process</th>
<th>Theoretical constructs for the analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of managerial purpose (RQ1)</td>
<td>What are the anticipated managerial purposes of using performance measurement?</td>
<td>What is the main PSM practice (Day and Lichtenstein, 2006; Zimmermann and Foerstl, 2014) supported by the defined purpose of performance measurement? Do the intended uses of performance measurement reflect either formal or informal management controls (Chenhall, 2003)?</td>
</tr>
<tr>
<td>Definition of performance measures (RQ2)</td>
<td>How can the content of performance measurement be characterized in terms of measurement objects? Can the defined measurement content and identified challenges be related to the studied context (service PSM)?</td>
<td>Do the intended content of performance measurement reflect either non-standard or standard approach to performance measurement (Andre et al., 2015; Caniato et al., 2014)?, e.g. due to the intended frequency of measurement</td>
</tr>
</tbody>
</table>

The managerial purposes of performance measurement identified are first linked to PSM practices and further analyzed from the viewpoint of formal and informal management controls (Chenhall, 2003). According to Maciarello and Kirby (1994), formal controls consist of purposefully designed and explicit structures, routines, procedures, and processes supporting managers in ensuring that organizational strategies are implemented. The use of performance measurement as a formal control is sometimes related to standardized information provision for passive respondents. In turn, informal controls include personal, cultural, and social controls which activate individuals to achieve their own ends (Chenhall, 2003). Performance measurement as an informal control may activate employees to engage in bilateral communication and to challenge existing conceptions of cause-and-effect relationships. The provision of measurement information will be analyzed from the viewpoints of standardization vs. tailoring of measures, to understand the causes of varying practices reported in the literature (Andre et al., 2015; Pohl and Förstl, 2011). Managerial implications are identified through the content of designed measurement systems and challenges occurring during the performance measurement interventions. The specific interest is in the possible service-specific features of measurement.
3. Methodology

A qualitative multiple case study approach was utilized in this study. The case study approach was chosen in order to gain an in-depth understanding of individual settings (Gummesson, 2000), which is justifiable due to the complex nature of the object under investigation, i.e., PSM practices and their performance measurement requirements. A multiple case study approach was chosen to apply theory extension and refinement logic (Voss et al. 2002) to the current knowledge on performance measurement in PSM. Each of the cases is related to a contemporary performance measurement development project during the period 2015-2016. The selection of case companies followed the idea of maximum variation (Flick, 2002) in order to justify the findings in several contextual settings and in different PSM practices. Selection of cases followed the logic of predicting different results from each case for predictable reasons (i.e. use of performance measurement for different PSM practices) (Voss et al., 2002). During the course of the case studies, the steps of developing performance measurement and the step-specific questions observed stayed the same (see Table 1) while the content of performance measurement varied in line with measurement purpose in question.

The three companies studied are large (annual revenue over 1 billion euros; over 10,000 employees in 2014) and they operate internationally and mainly in business-to-business markets. They represent the views of the buyer and in each case the interest is in the development of performance measurement for service PSM. Case A is a forest industry company operating in 30 countries. Its annual sales amount to 5.0 billion Euros and it has approximately 9,600 employees. The main measurement challenge in Case A relates to the evaluation of supplier service quality. Case B is a large logistics company operating mainly in business-to-business markets. The company’s annual revenue exceeds 1 billion Euros and it employs over 20,000 people. The main measurement challenge in Case B relates to demonstrating the benefits of close buyer-supplier relationships. Case C is in the ICT industry. The main measurement challenge in Case C relates to the fragmentary information on suppliers and the need to combine supplier spend information with business benefits. Table 2 illustrates the case contexts and methods of this study.
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Table 2. Illustration of case companies

<table>
<thead>
<tr>
<th>Company</th>
<th>Case A</th>
<th>Case B</th>
<th>Case C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>Manufacturing (forest industry)</td>
<td>Services (logistics)</td>
<td>Services (ICT)</td>
</tr>
<tr>
<td>Proportion of purchasing spend of all the costs</td>
<td>~55%</td>
<td>~50%</td>
<td>~50%</td>
</tr>
<tr>
<td>Research methods</td>
<td>10 interviews: 8 representing the case company and 2 representing service supplier</td>
<td>5 interviews with case company representatives</td>
<td>11 interviews for case company representatives</td>
</tr>
<tr>
<td>3 workshops for defining and testing of the measurement method</td>
<td>3 workshops for the definition of the new measurement approach</td>
<td>2 workshops for defining and testing of the measurement method</td>
<td></td>
</tr>
<tr>
<td>Informants</td>
<td>Eight interviewees from the case company: managers and directors representing production units (5) and purchasing function (3) Two interviewees of the supplier company: business director, quality manager</td>
<td>Interviewees and workshop participants were managers and directors representing purchasing function (3) and purchasing function’s internal customers from the business lines (2)</td>
<td>Interviewees included managers and experts from purchasing (4), analyst positions (2) and business unit managers (5)</td>
</tr>
<tr>
<td>1st workshop (definition of measurement purpose): 2 managers and directors representing purchasing</td>
<td>Workshops (1st and 2nd for defining measurement purpose and objects, 3rd for defining measures) were attended by the same employees participated in the interviews</td>
<td>1st workshop (definition of measurement purpose): 4 business unit managers and 4 managers representing purchasing</td>
<td></td>
</tr>
<tr>
<td>2nd workshop (definition of measurement content): 3 managers and directors representing purchasing</td>
<td>2nd workshop (interpreting measurement results, evaluating the method)</td>
<td>2nd workshop (interpreting measurement results, evaluating the method): 1 business unit manager, 2 managers representing purchasing and 1 analyst</td>
<td></td>
</tr>
<tr>
<td>3rd workshop (interpreting measurement results, evaluating the method): 4 managers and directors representing purchasing and 4 production units</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interviews were the starting point of each case study; they were used to obtain a pre-understanding of the research questions at hand. The interview themes related to information needs and to the prevailing status and challenges in performance measurement. They were partly tailored to the case-specific development needs since they were used to define the measurement objects (e.g. benefits of supplier collaboration in Case B and service quality in Case A). The interviews were audio-recorded and transcribed verbatim.

The case studies continued as action research which included workshops attended by researchers and company representatives. Action research is a specific type of case study in which the researcher is in active contact with the case organization (Coughlan and Coghlan, 2002). The work close to the managers provides a depth of understanding which is rarely possible with more traditional research
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methods (Westbrook, 1995). In action research the researcher is not just an external observer in the case organization but also participates in the operations of the organization (Coughlan and Coghlan, 2002). In this study the author participated in performance measurement development projects in each of the case companies.

The action research included workshops, observation and documentation of a measurement development project and it was backed up with the specific questions presented in Table 1. The action research was also supported by a document analysis of existing measurement systems and organizational structures.

Systematic combining as an abductive approach to case research was used (Dubois and Gadde, 2002). The research framework included questions derived both from the literature and empirical observations. Analysis perspectives and some of the constructs (e.g. formal and informal controls) relied on the existing literature while the aspects related to the perceived managerial purposes and challenges in defining measures emerged from the observations during the pre-study interviews and observations during the development projects. The qualitative data analysis started with a within-case analysis followed by a cross-case analysis (Miles and Huberman, 1994). The within-case analysis concentrated on the case-specific aspects of defining measurement purpose and content in each of the cases. The cross-case analysis relied on the classifications of PSM practices and constructs derived from the literature in order to identify comparable and contrasting results in performance measurement supporting the studied PSM practices.

4. Empirical examination

4.1. Case A: Measurement of supplier quality

The purpose of the performance measurement developed

The interest in performance measurement development was in the quality of service suppliers. In service purchasing, the role of quality and subjective aspects was deemed high, which complicated performance measurement. The representatives of purchasing highlighted the need to combine both objective (e.g., number deviations in the agreed response times) and subjective quality (i.e., quality perceived by employees) information. Service level agreements (SLA) were used with service suppliers. The agreements were seen as problematic since the criteria for service quality were very often defined by suppliers offering standard contracts. Suppliers were active in measuring customer satisfaction annually. Due to the large number of service suppliers, a representative of service purchasing estimated that the number of different customer satisfaction surveys (of their suppliers) was around 200. These surveys had different scales and questions with no opportunity to compare the results. Obviously, measures defined by suppliers were not always in line with the information requirements of Case A.

The purchasing representatives argued that there should be a link between supplier and customer in the new service quality measurement. The expectations of Case A should be linked to the management and practices of their suppliers. The measurement of supplier processes by the customer was deemed a new idea supportive of the analysis of quality drivers for outcome quality. It was also planned that quality measurement defined by the customer would support suppliers in enhancing their understanding of customer requirements.

It was regarded as important that the new quality measurement should be applicable to different suppliers and services in order to enable comparisons. Measurement should also act as a continuous support for PSM. At the same time, it was deemed important that the results should be communicated
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to suppliers in order to agree on joint targets. Eventually, the new subjective quality measure would be part of SLAs in which Case A is more influential regarding the measures included.

The purpose of the measurement reflects the use of performance measurement as a formal control with pre-planned processes and a standard structure. The perspective of the buyer company and its need to diagnose problems and their causes is apparent in the planned use of measurement. In addition, the use of performance measurement in comparing the suppliers of the buyer company was the starting point for the development of new measurement. These observations on the intended use of performance measurement can be seen to reflect non-relational supplier-oriented practices.

Development and testing of the new performance measurement

The starting point for the development of quality measurement was a framework which can be applied to the suppliers of different services. Based on the review of the quality management and measurement literature, a preliminary interview study and the first workshops, an initial version of the supplier service quality framework, was constructed. It comprised four dimensions: supplier capabilities, business relationship, process quality, and outcome quality.

The supplier capability dimension was included as the case company emphasized the importance of the supplier and its operations in the delivery of a service. This idea is based on the service profit chain literature (Heskett et al. 1994). The business relationship dimension was included as a faultless relationship between the buyer and the supplier was deemed crucial by the case company representatives. This dimension represents the contractual level where the customer represents the buyer perspective. Process and outcome quality were included according to Grönroos's service quality model (2007).

Cleaning services at the production premises of the Case A were chosen as a more specific context for piloting the new measurement. The definition of the performance measurement began by identifying all the quality measures available and linking them into the service quality framework. Figure 1 presents an illustration of the end result in the outcome quality perspective. It is noteworthy that the subjective measure for quality was not available.

Figure 1. Illustration of the objective and subjective measures for outcome quality

Frequency of cleaning was measured in different premises and it compared the actual number of different cleaning activities to what is agreed in the supplier contract. The quality rounds were usually performed monthly. The premises were graded on a scale from one to five, based on correspondence to the predefined specifications. The scale was: “lots of deviations” (1), “significant deviations” (2),
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“some deviations” (3), “good” (4) and “very good” (5). The quality round was performed by the supplier’s service supervisor, but the case company representative was also allowed to participate. The quality round reports included the evaluation of all the premises, and averages of the results. Number of complaints measured the cleaning related reclams through a dedicated information system.

The development work around performance measurement continued with the definition of survey-based measures for supplier service quality. In addition to gaining an understanding of the outcome and process quality perceived by the Case A employees, measures were defined to better understand the business relationship with a supplier and the capabilities of a supplier. Eventually three different measures were defined. Table 3 illustrates the factors of the survey measures. The first survey measure was addressed to the employees of a supplier (cleaning personnel), the second measure to the employees of both the supplier and Case A (employees dealing with the business relationship contract), and the third measure to the employees of Case A (employees working in the customer facilities).

### Table 3. Factors of the three survey measures designed

<table>
<thead>
<tr>
<th>Supplier capability (measure 1)</th>
<th>Business relationship (measure 2)</th>
<th>Case company (measure 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job enablers</td>
<td>Communication</td>
<td>Satisfaction to service outcome</td>
</tr>
<tr>
<td>Goal clarity</td>
<td>Trust</td>
<td>Perception of service outcome in comparison to competitors</td>
</tr>
<tr>
<td>Employee empowerment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal engagement</td>
<td>Client-employee interaction</td>
<td></td>
</tr>
<tr>
<td>Feedback</td>
<td>Expertise</td>
<td></td>
</tr>
<tr>
<td>Supplier’s ability to develop the service</td>
<td>Responsiveness</td>
<td></td>
</tr>
</tbody>
</table>

In the testing phase, the results were compared between five different production units and the comparison revealed differences in outcome quality measured with the new survey measure (later referred to as perceived outcome quality). This was the case even though the agreed service level and the agreement costs were roughly the same in all the units. The new measure therefore provides an added dimension to performance measurement.

The comparison of objective (quality rounds) and subjective quality (perceived outcome quality) measures can offer interesting additional insights (Figure 2). The data revealed no clear connection between perceived outcome quality and quality round results. Quality rounds yielded systematically better results. Comparison showed that unit 4 had the lowest quality round result while it also had highest perceived outcome quality. Survey measure respondents were quite satisfied with the quality even though it did not properly fulfil the specifications. The idea of comparing different quality measures requires several measurements in order to provide meaningful results but can be beneficial in the future.
The initial idea for the measurement was to identify relationships between objective and subjective as well as the different dimensions of quality. This may be possible if the frequency of measurement is high enough to obtain a satisfactory number of measurement results in a reasonable period of time. Case A aimed to take the survey measure as a part of monthly monitoring of their suppliers by delivering randomly selected sections of the measure to individual employees. A high enough number of respondents yields a satisfactory number of responses on all sections measured. Supplier employees could also answer the short surveys during their daily registration of duties at the Case A premises.

In the future, the main idea is that the main structure of the survey measure is always the same regardless of the service. When the new survey measurement instrument is fully operational, case A intends to make it part of its SLAs with the connection to its bonus and sanction system.

The case study presented supplier quality measurement which included survey responses from supplier employees regarding work enablers in their own company and work community. The supplier was very positive towards the new measurement, which might have encountered resistance due to the customer’s specific interest in issues of the supplier company (such as the working atmosphere at the supplier company) which are often regarded as internal to one organization. Technical challenges were apparent especially in the small number of responses to the survey measures on supplier capabilities and supplier relationship. However, there appears to be nothing which cannot be solved in the future when more measurements are available. The approach to the definition of the measurement reflects the idea of standardized measurement which could be applied to all service suppliers with little modifications.

4.2. Case B: Demonstration of the benefits of supplier partnerships

The purpose of the performance measurement developed

The interviewees in Case B agreed that a distinctive characteristic of performance measurement for supplier partnerships is the need to understand the benefits of close relationships or partnerships with suppliers. Performance measurement should better support the partnership decisions at the level of both individual suppliers and the company as a whole. At the company level it was not clear whether
or not more supplier partnerships should be cultivated. This reported purpose of measurement reflects formal control with standardized reporting for top level decision-making and the aim to diagnose problems to be corrected (i.e., potential lack of benefits). It also highlights the perspective of a buying company.

In the workshops, the need to support the discussion with supplier partners received more attention. The measurement should capture the success factors of individual partnerships in order to support the management of partnerships. It was agreed that performance measurement of partnerships needs to start from the operative evaluation of single partners and to provide in-depth understanding of the success of a partnership and factors affecting success. The workshop participants felt that the evaluation of expectations by both parties was useful and could be carried out throughout the lifecycle of a partnership. This could also be a good way to understand the cause-and-effect chains between joint processes and their benefits since individual partnerships are easier to scrutinize and evaluate.

The needs to manage individual partnerships would not be satisfied with a single index presenting the benefits of supplier partnerships at the company level. Measurement at the individual supplier level was deemed to improve the company’s visibility to supplier activities after the signing of a contract. New measurement was linked to the existing supplier meeting structure supporting communication with suppliers. In these meetings targets for the relationship can be set and updated as well as monitored together with a supplier. This performance measurement purpose highlighting discussion with individual suppliers can be seen to reflect the use of performance measurement in informal control supporting bilateral learning and relational supplier-oriented PSM practices.

**Development of the new performance measurement**

The measurement objects included benefits of supplier partnerships and possible drivers of these benefits. The possibility of measuring the benefits identified was evaluated by highlighting the possibility of using existing data. Table 4 illustrates the results.

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Possibility to measure</th>
<th>More defined objects of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilization of supplier expertise</td>
<td>Yes, but difficult</td>
<td>A Innovations – new business, products and services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B Process improvements – unit costs and total cost of ownership (TCO)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C Optimization of fixed costs</td>
</tr>
<tr>
<td>Optimized quality</td>
<td>Yes</td>
<td>A Unit cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B Customer promise, delivery performance</td>
</tr>
<tr>
<td>Increased attractiveness from the supplier’s perspective</td>
<td>No</td>
<td>N.A.</td>
</tr>
<tr>
<td>Decreased risks related to business ethics</td>
<td>No</td>
<td>N.A.</td>
</tr>
<tr>
<td>Decreased direct purchasing costs</td>
<td>Yes, easy</td>
<td>A Unit cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B TCO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C Overall value of the agreement is more than the sum of its components</td>
</tr>
</tbody>
</table>
Five benefits were identified. 1) Utilization of supplier expertise was deemed an important benefit of partnerships and a reason to promote partnerships. However, its measurement was deemed difficult. It was proposed that this aspect could be measured by the number of supplier innovations implemented or added revenue accruing from supplier innovations. 2) Quality optimization meant the optimal level of quality (not too high and not too low) from the customer’s perspective. In partnerships the objective of optimizing quality could be shared with the partner and joint means to reach the target could be defined. This benefit was regarded as a possible object to be measured. The discussed measures highlighting deviations from the desired quality levels included the costs of incorrect supplies or interruptions in production. 3) The increased attractiveness of Case B could facilitate the supplier’s provision of its best resources. From the point of view of performance measurement it was regarded that this benefit is possibly very hard to present in a numerical form. 4) Avoiding risks related to business ethics was deemed vital from the perspective of business success. The attendees of the workshops were not able to define measures for business ethics-related risks. 5) The direct purchasing costs could be decreased by guaranteeing the suppliers a higher sales volume. According to the participants of the workshops, direct purchasing costs is an object which is easy to measure.

While both financial and non-financial measures were included in the measures defined, they still reflect supplier transactions. They measure the end results of collaboration – not the possible means to achieve results. However, the intention in the use of measurement was clearly linked to communication with suppliers and therefore the measurement approach can be seen to support relational supplier-oriented PSM practices.

The actual measurement included partner-specific targets defined jointly by buyer and supplier. This reflects the model of partnership management by Tuten and Urban (2001), where both parties discuss the desired objectives before starting a partnership and those objectives are regularly discussed and monitored during the partnership. The way of setting joint targets was discussed at length in the workshops. The absolute monetary values gave rise to criticism among several participants. There was a fear that such targets might disclose confidential information about the case company to the suppliers. Hence relative targets comparing current results to previous ones were deemed more suitable. Targets were to be evaluated regularly and could be updated if necessary. The examination period of different targets might also vary, which should be accounted for in implementing the measurement approach.

The second important aspect in the measurement approach is the evaluation of target achievement. The company representatives perceived a need to commensurate the measures of the relationship level evaluation. Aggregated results could provide a more comprehensive understanding of whether the partnership approach is giving satisfactory results at the company level. Figure 3 illustrates an example of the measurement of a single partnership with imaginary monetary values. It presents results from four consequent years. In the figure a positive difference means that targets have been exceeded while a negative value shows that they have not been achieved. It also illustrates the aggregation of all the benefits in order to evaluate the success of a partnership more comprehensively. In this aggregation the targets and results of individual benefits are first summed up and then the difference between them is calculated.
Figure 3. Example measurement of a single partner

No actual data gathering with the measurement tool described was carried out during the examination period of this study. Data gathering will take some time due to the long duration of supplier partnerships and it may also cause some unforeseen challenges. The proposed measurement tool is tailored to a single partnership even though the use of same measurement objects enable comparable measurement results to be obtained from all partnerships.

4.3. Case C: Performance measurement in cross-functional integration

The purpose of the performance measurement developed

Better integration between purchasing and business was deemed important by all interviewees of case C in order to align the objectives of purchasing with those of business. This requires shared targets and integration of performance measurement. The purchasing employees interviewed in particular deemed it important that performance measurement should provide better information on value-added by purchasing – not only on the costs of supplies. Supplier costs were traditionally the most often utilized performance measure regarding purchasing.

Performance measurement linking business benefits and purchasing costs would be instructive for both purchasing function and business units. Purchasing can learn a proactive approach to decision-making with the added knowledge of the link between supply costs, offerings, and business impacts. In turn, business representatives can learn more about the value created by different suppliers and the practices by the purchasing function and improve their supply related evaluation criteria.

The measurement purpose described in Case C reflects the use of performance measurement as an informal control supporting learning by looking at data cross-functionally, i.e., in internal and cross-functional PSM practices. The discussion on the information needs reflected an ad-hoc and non-recurrent approach to combining data for proactive decision-making in purchasing. The starting point for analysis would be learning, but not recurring or standard reporting.

Development and testing of the new performance measurement

Performance measurement supporting cross-functional integration between the purchasing and business functions was carried out by combining two datasets. Similar integration of data had not previously been done in the case company. A case example for piloting the idea was identified in the purchasing category linked to practically all employees, namely travel.
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was specifically considered for the travel category and its potential benefits for the business with the intention to use existing measurement information.

The first dataset included purchasing cost information on employees’ travel. The data on business benefits included customer satisfaction, sales, and sales opportunities, which are value outcomes of personal contacts supposedly affected by the employees’ travel. Customer satisfaction was considered to relate to travel done after a sales deal, while travel before a sales deal was considered to relate to sales and sales opportunities. Table 5 illustrates the measures used in the analysis.

**Table 5. Measurement objects for cross-functional performance measurement**

<table>
<thead>
<tr>
<th>Measurement object</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement representing business</strong></td>
<td></td>
</tr>
<tr>
<td>Sales value</td>
<td>Total contract value of sales and contracts, €</td>
</tr>
<tr>
<td>Sales opportunity</td>
<td>Weighted opportunity value</td>
</tr>
<tr>
<td></td>
<td>No. of active sales opportunities</td>
</tr>
<tr>
<td></td>
<td>Percent of opportunities gained</td>
</tr>
<tr>
<td>Customer satisfaction in projects</td>
<td>A project customer satisfaction survey result (average)</td>
</tr>
<tr>
<td>Project size</td>
<td>Number of working hours per project</td>
</tr>
<tr>
<td><strong>Measurement representing purchasing</strong></td>
<td></td>
</tr>
<tr>
<td>Travel costs</td>
<td>Total travel costs per project, €</td>
</tr>
<tr>
<td></td>
<td>Total travel costs per month, €</td>
</tr>
</tbody>
</table>

The data for these variables already existed in the case company’s information systems and no additional data collection was needed. However, at the time of the case study the reported measures were in different information systems and purchasing employees were not aware of the measures related to projects or sales.

The data on travel costs consisted of around 10,000 travel expense reports from the same business unit with the same time interval. Monthly travel costs were paired with sales data in the first dataset for analysis. Customer satisfaction data consisted of around 3,500 customer satisfaction survey reports for 2,000 projects. Of these 2,000 projects 155 included both travel expense reports and customer satisfaction survey reports assigned to their project number. The 155 projects were considered to involve travel and were chosen for the statistical analysis. The travel expenses reports compiled per project and customer satisfaction survey reports assigned to these 155 project numbers formed the pairs in the second dataset for the analysis.

The results of testing the new measurement approach gave some indication of the benefits of travel. A relationship was found between the average chance of clinching a sales deal and travel costs. This implies that goal-oriented business travel should not be underestimated. The results of the statistical analysis were presented in a workshop and possible implications, benefits, and challenges for similar data-driven integration were discussed with the representatives from the case company’s purchasing function. The representatives found the analysis eye-opening. Understanding the link between a purchased entity and its added value was considered an important aspect of the analysis. Presenting relevant, proactive information on the value provided to business units could enable purchasing to influence and support decision-making in business units better. This would serve to transform the purchasing perspective from being cost-focused towards becoming value-focused. For example,
purchasing might focus more on developing travel to become more goal-oriented to maximize the value it contributes.

A key challenge in the cross-functional measurement approach was the lack of responsibility. According to the company representatives, whoever identified a cross-functional issue was at that time responsible for finding a solution. Feasible and effective analyses require that employees have a good overview of the available performance data.

Another challenge was more technical. There was no formal platform for sharing measurement information between purchasing and business units. Gathering information from different information systems was time consuming, which inhibited information sharing. The project-specific information was available only for a limited time period, meaning that less data was available for use in the analysis. Due to limited support from information systems and lack of dedicated resources, the representatives of Case C considered that this type of measurement could only currently be considered as a one-off study.

The measurement illustrated in Case C represents a tailored approach to a specific interconnection between purchasing and business units. Even though similar idea on combining data is possible in purchasing categories other than travel, the measures utilized should be tailored to the specific purpose.

4.4. Results summary: case studies and supported PSM practices

Table 6 sums up the key results of this study. It is presented that the case studies support different PSM practices as follows:

- Case A illustrates performance measurement supporting non-relational supplier-oriented PSM practices
- Case B exemplifies performance measurement for relational supplier-oriented PSM practices
- Case C exemplifies as performance measurement supporting cross-functional integration.

However, the differences are not straightforward when comparing the two supplier-oriented practices. The analysis was based on the predominant characteristics in performance measurement, its purpose and its design. There were characteristics in the performance measurement developed in Case A which can be considered to support relational practices including the intention to use performance measurement transcending organizational boundaries. Such an approach to performance measurement requires the effort and information sharing on the part of both supplier and buyer (cf. Terpend et al., 2008). In turn, in Case B the intention of demonstrating benefits for the buyer can be characterized as non-relational with unilateral motives.
Table 6. Summary of the results

<table>
<thead>
<tr>
<th>PSM practices supported</th>
<th>Measurement objects</th>
<th>Measurement method or approach applied</th>
<th>Characteristics observed in the given measurement purpose (RQ1)</th>
<th>Characteristics observed in measurement content (RQ2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-relational supplier-oriented PSM practices</td>
<td>Outcome quality and its drivers: • process quality • business relationship • supplier capabilities</td>
<td>Case A: • A survey measure for evaluating the quality framework • Combination of objective and subjective quality measures</td>
<td>The use of performance measurement as a formal control for diagnosing problems, rewarding, and comparisons (e.g. comparison of suppliers and own production units)</td>
<td>• Standard measures for all suppliers enabling comparisons • Measurements highlight the buyer’s perspective (e.g. benefits for the buyer in Case B) • Intended measurement purpose requires high measurement frequency</td>
</tr>
<tr>
<td>Relational supplier-oriented PSM practices</td>
<td>Relationship benefits: • quality optimization • supplier capability utilization • attractiveness as a business partner • cost and risk decrease</td>
<td>Case B: • A target-oriented measurement tool for management of partner supplier relationships • Method for aggregating information on individual supplier relationships</td>
<td>The use of performance measurement as an informal control to support bilateral learning between supplier and buyer</td>
<td>• Tailored measures for each supplier relationship • Transparency in targets and measurement results is required • Frequency of measurement was linked to existing meeting structure with suppliers</td>
</tr>
<tr>
<td>Cross-functional PSM practices</td>
<td>Business value (sales value and success, project customer satisfaction) linked with costs</td>
<td>Case C: • Cost-benefit analysis combining statistically the purchasing spend information and business benefits</td>
<td>The use of performance measurement as an informal control supporting cross-functional learning</td>
<td>• Tailored measures for each purchasing category (e.g. travel) • Technical challenges due to lack of information system support • Measurement was an one-off study</td>
</tr>
</tbody>
</table>

In case A, the performance measurement had most standard features and it was used in formal control characterized by problem diagnosis, rewarding, and comparisons. In case B performance measurement was intended to be used as a learning tool in supplier meetings. The intended measurement approach resembled collaborative performance measurement (Busi and Bititci, 2006) where bilateral communication should be facilitated (Noshad and Awasthi, 2015; Prahinski and Benton, 2004). This was found to require measures tailored to each supplier relationship and performance measurement was linked to existing practices in a specific supplier relationship. At case C performance measurement supported cross-functional integration. Performance measurement in this context was informal and tailored to a specific purchasing category. The benefits of this approach to measurement were linked to the learning by both business unit and purchasing function.
5. Discussion

The characteristics of measurement purpose in the context of PSM has been rarely investigated in the literature. This study analyzed measurement purpose from the perspectives of PSM practices and management control type (Chenhall, 2003). Whereas existing literature presents, often implicitly, PSM performance measurement as an embodiment of formal control (e.g. Caniato et al., 2014; Morgan and Dewhurst, 2007), this study finds that the more interactive PSM practices (cross-functional and relational) are supported by informal control structures.

Standardization of performance measurement in the PSM context is a widely shared objective (Bruno et al., 2012; Morgan and Dewhurst, 2007) but there is also indication in the literature that non-standard measurement is sometimes desirable (Andre et al., 2015). The findings of this study support the claim by Trautmann et al. (2009) on the formal and standard characteristics of information processing supporting vertical integration. Non-relational supplier-oriented practices often require vertical integration in the form of standard measurement practices enabling supplier benchmarking and reflecting the strategic objectives of the buying company (cf. Morgan and Dewhurst, 2007). Such intention was characterized in the performance measurement development at case A aiming at a standardized approach to supplier quality measurement. However, the more interactive PSM practices of cases B, C required that performance measurement is tailored to a specific supplier relationship or purchasing category.

The results demonstrate the importance of performance measurement supporting the understanding cause-effect chains in the PSM context. Whereas this has for long been identified as a characteristic of sophisticated performance measurement (Cocca and Alberti, 2010), connecting measures for understanding causalities is still often problematic. In case A, it was deemed important that the new measurement connects the capabilities of a supplier and its service results in order to analyze the potential causes of good or poor performance. In case C, the main purpose for implementing the new performance measurement was to link supplier provided benefits and costs involved. In case B, the developed performance measurement system first appeared as a list of separate measures but it was intended to be utilized in interactive meetings with the supplier unveiling the potential causes of observed measurement results. The findings demonstrate the need for more analytical approach to performance measurement in PSM, mere availability of balanced performance measurement information does not suffice.

Another characteristic of all the cases was the contemporary challenge of measuring the benefits of services purchased. Whereas the importance of costs were widely acknowledged, they were not emphasized in the measurement development. This demonstrates the shift in performance measurement towards the strategic intentions of PSM (Paulraj et al., 2006). The benefits were typically seen as multidimensional consisting of more objective (e.g. business results, process performance) and subjective (e.g. customer satisfaction) elements requiring data gathering also outside from the traditional ERP systems. This finding can also be related to the specific nature of performance measurement in services (Dawson, 2010). It indicates that service, as an object for purchasing, increasingly requires attention towards outputs and outcomes (Axelsson and Wynstra 2002) instead of inputs.
Earlier literature has presented that supplier relationship management is specifically important to service supply chain management due to the service delivery process characterized by supplier’s direct participation (Baltacioglu et al. 2007). This characteristic was visible in the both cases concentrating on the performance measurement of suppliers (A, B). At case A, there was a separate section for measuring the status of supplier relationship. Performance measurement was also seen as a mean to make the interaction with suppliers more frequent. At case B, one of the measures was intended to capture the satisfaction of supplier (i.e. customer’s attractiveness as a business partner). At case B the importance of supplier relationship management was also visible in the characteristics of measurement highlighting interaction with supplier in presenting and analyzing the results. Also the importance measuring of intangible inputs (i.e. supplier capabilities) was visible in cases A and B. This may indicate a specific characteristics of service performance measurement (Jääskeläinen et al., 2014) stemming from the personal-level interaction with the supplier.

6. Conclusions

The existing research on PSM performance measurement has examined the issue especially from the viewpoint of supplier performance measurement (Cousins et al., 2008; Gunasekaran et al. 2004; Prahinski and Benton, 2004) with the emphasis on recurring evaluation of suppliers (Caniato et al., 2014). While a fairly well established understanding of PSM practices can be found in the literature (Terpend et al., 2008), earlier performance measurement studies are often not explicit with the practices supported by performance measurement. This study contributes to the literature by comparing the characteristics of performance measurement supporting different PSM practices. It finds that identification of causalities between measurement objects and the measurement value benefits are contemporary issues of performance measurement development in the PSM context. The study also provides new understanding on the specific nature of performance measurement in service PSM. It is found that the measurement of outputs and outcomes instead of inputs and supplier relationship management are increasingly important in the service context.

This study enhances the current understanding of the purposes (control structure) and content (standardized nature) of performance measurement in three PSM practices: cross-functional, relational, and non-relational supplier-oriented practices. It study provides a rare case example (cf. Luzzini et al., 2014) of performance measurement supporting cross-functional integration between the purchasing function and business units. It also contributes to the discussion on collaborative performance measurement (Busi and Bititci, 2006; Papakiriakopoulos and Pramatari, 2010) by providing a case example of performance measurement supporting relational supplier-oriented PSM practices.

This study also has implications for managers. First, it provides practical examples of performance measurement supporting three different PSM practices, illustrates the characteristics and variation of performance measurement in the PSM context, and highlights the need to extend the scope of measurement. Second, it analyzes and structures performance measurement purposes and design which support practitioners in developing performance measurement to satisfy contemporary needs. Third, it illustrates cross-functional perspective on performance measurement in the PSM context and raises the importance of new research and development work in this area, e.g. in the form of information systems. Fourth, it discusses the potentially specific characteristics of PSM performance measurement in the service context.

This study has limitations, as indeed have most qualitative studies. Only three case settings were studied. The external validity of the findings should be improved by further empirical research. More studies reporting the characteristics of performance measurement supporting different PSM practices
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in different industries and with different supply relationships are called for. This study investigated the issue solely from the perspective of the buyer company; the perspective of suppliers would be beneficial, especially in the case of relational supplier-oriented PSM practices. The study concentrated on the development of performance measurement and further research should report the experiences of using different measurement approaches.

References


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