

PUBLIC PROCUREMENT BENCHMARKING: CONCEPTUAL MODEL AND FIRST EMPIRICAL FINDINGS

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ABSTRACT. Unlike the private sector, procurement benchmarking is not a matter of course in public entities, although performance comparison between public authorities might show potential for improvements by learning from best-in-class. This paper outlines the concept development for Public Procurement Benchmarking based on the three dimensions economic efficiency, political objectives and conformance with procurement law of Schapper et al.'s procurement management framework. The conceptual model includes 14 factors building on 85 indicators in total. The empirical findings of the subsequent web survey give a widespread insight into public procurement performance in Germany and hold true the initial suspicion: Enormous deficiencies exist in the field of procurement strategy, process effectiveness and information systems.

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INTRODUCTION

Especially in the light of the present financial situation of the public sector in Europe and the principles of sound financial management (European Parliament 2004), a transparent and efficient utilization of resources is of major relevance for the state and taxpayers (Arrowsmith et al., 2000; Murray 2007). The term public procurement refers to the purchase of products, services and public works by governmental, regional and local public authorities or statutory bodies governed by public law (Essig et al., 2010; Kashap, 2004). In order to fulfill public functions, a pro-competitive environment serves as driving force for reaching efficiency (Naschold et al., 2000). Benchmarking can stimulate competition (Nullmeier, 2004; Wegener 1997) that is necessary to create an incentive effect in terms of comparing one's practice to other's practice, experiencing best practice, locating performance gaps (Palaneeswaran and Kumaraswamy, 2000; Keehley and Abercrombie, 2008) and consequently to improve one's efficiency and performance (Triantafillou, 2007; Tauberger, 2008). For that reason benchmarking has been considered as particularly well suited for public administration (Pollitt and Bouckaert, 2000). Further, benchmarks are able to raise the standards of public services without incurring additional costs (Erridge et al., 1998, Kuhlmann, 2004).

In Germany, the total number of contracting entities underlying the rules of procurement regulations is regarded to be 30.000 (Bundesministerium des Innern and Bundesministerium für Wirtschaft und Technologie, 2004). The annual procurement volume of the German public sector in 2010 was close to € 478 billion (European Commission, 2011), which equates to about 19% of the gross domestic product. Accordingly, even small savings at a one-digit percentage of the procurement volume poses enormous economic impacts. The public procurement's leverage effect is shown in Figure 1 by means of several examples. For instance, taking into account the estimated purchasing volume of the German public sector of € 478 billion, a more efficient public procurement in the form of the realization of savings of only 1% corresponds to savings in the amount of € 4.8 billion. This sum equates to the doubling of the

German Ministry for Economic Cooperation and Development's budget.

Efficiency improvement in %	Savings in € billion	This is equivalent to:
0.5	2.4	Tax reform: Abolition of taxes on sparkling wines, spirits and alcopops (loss of tax revenues of approx. € 2.55 bn)
1.0	4.8	Development aid: Doubling of the budget of of the German Ministry for Economic Cooperation and Development (costs of approx. € 5 bn)
1.5	7.2	Tax reform: 5% reduction of VAT (loss of tax revenues of approx. € 6.3 bn)
2.0	9.6	Tax reform: Abolition of solidary tax (loss of tax revenues of approx. € 10 bn)
3.5	16.8	Government debt: Levelling of Germany's net borrowing 2011 (€ 17.3 bn)
5.0	24.0	Economic Recovery Plan: Doubling of the financing volume 2010 (€ 24 bn)

Figure 1: Leverage effects of public procurement in Germany

BENCHMARKING FRAMEWORK FOR PUBLIC PROCUREMENT

In the context of the public management discussion, the understanding of performance is often adopted to the control objectives economy, efficiency and effectiveness within the “three E-concept” (Cooper, 2003; Reichard, 2003). Thus, the three E-concept is considered as the foundation of economic evaluation into public administration (Budaeus/Buchholtz, 1997). The overall objective of an institution entrusted with a public function is broadly speaking the advancement of the common good (Arrowsmith et al., 2000; Koeckritz et al., 1999). Different from the private sector, profit orientation is of secondary importance in the public sector. But public contracting authorities are also facing the challenges of limited resources, thus their performance can be measured by efficiency standards (Sherman, 1991; Arnold and Essig, 2002). In addition to efficiency, objectives such as the rule of law, social justice and political goals are relevant for the public procurement

(Cohen/Eimicke, 2008; Eichhorn, 2001). Public procurement follows substantially legislative provision and implementing regulations, namely the contract awarding law in respect of transparency (Erridge, 2007; Essig 2008). Another distinct feature of public sector procurement is the demand for high level accountability and efficiency (Lian and Liang, 2004; Erridge, 2007) in the way of a best possible value for money in procuring goods and services (Arrowsmith et al., 2000). Further, it becomes apparent in the recent past that the exploitation of the demand of public procurement serves as steering instrument (Wissenschaftlicher Beirat, 2007; Kashap, 2004). Other policy objectives such as economic development within the promotion of SMEs as well as the promotion of sustainability and innovation (European Commission, 2006) shall be achieved through public procurement. As a consequence, the objectives of public procurement are multidimensional and partly conflict with one another. By taking into consideration the specific conditions, the analytical management framework of Schapper et al. (2006) will be used for evaluating the performance of public procurement (Schapper et al., 2006). Premises defined for public procurement activities, political goals, efficiency and compliance with public law are taken into account by that framework. The adherence to the framework conditions is subject to the partly competing goals of strategic management, process management and performance management.

METHODOLOGY

Operationalization

A survey carried out within the research project “REPROC-Excellence” funded by the Federal Ministry of Economics and Technology includes 14 factors described below to measure public procurement department’s performance in Germany. The project aims at developing and establishing a performance benchmark and a Public Procurement Index for public procurement. The four-phase research process applied within the project and following the recommendation by Forza (2002) is demonstrated in Figure 2.

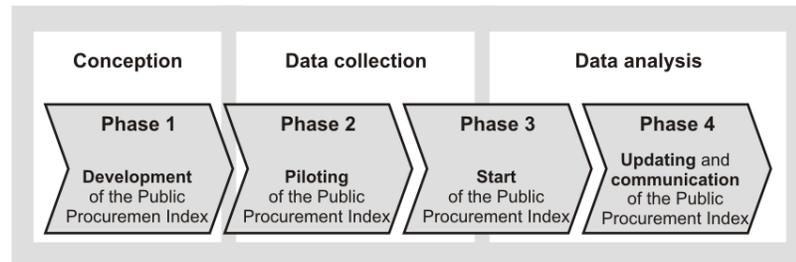


Figure 2: Research process

Phase 1 includes a literature based and empirical identification and determination of central dimensions, factors and indicators of an efficient public procurement and the amalgamation of the defined indicators into one score per dimension and into an overall index respectively. The result of this phase is a method based questionnaire for determining the performance level of public procurement in Germany in terms of a Public Procurement Excellence Index. The evaluation phase begins with Phase 2 and includes the testing of the defined Public Procurement Excellence Index. Prior to the launch of the wide-ranging evaluation phase (Phase 3), the questionnaire is taken to a pre-test evaluated by public contracting authorities and by means of objective satisfaction categories. The pilot phase subsequent to the pre-test represents a first data collection process that should identify improvement potentials for the large evaluation phase. Phase 3 primarily contains the initial launch and roll-out of the research project based on results gained in Phase 2.

The results of Phase 3 are qualitatively and quantitatively data sets with which the performance of public procurement in Germany can be evaluated. The aim of Phase 4 is a continuous development of the study project and the establishment of the Public Procurement Excellence Index as benchmarking standard. The results of the pilot phase will then be presented in this paper.

In line with the definition used by Essig et al. (2010), the performance of an outranged and excellent public procurement is characterized by: "Public Procurement Excellence comprises all activities of a public institution geared towards ensuring an economic

and efficient supply of goods which are needed but not self-produced, with these activities to be evaluated as outstanding with respect to Strategic Management, Performance Management and Process Management.” (Essig et al., 2010). Appropriate 14 factors illustrated in Figure 3 are used for measuring these three dimensions.

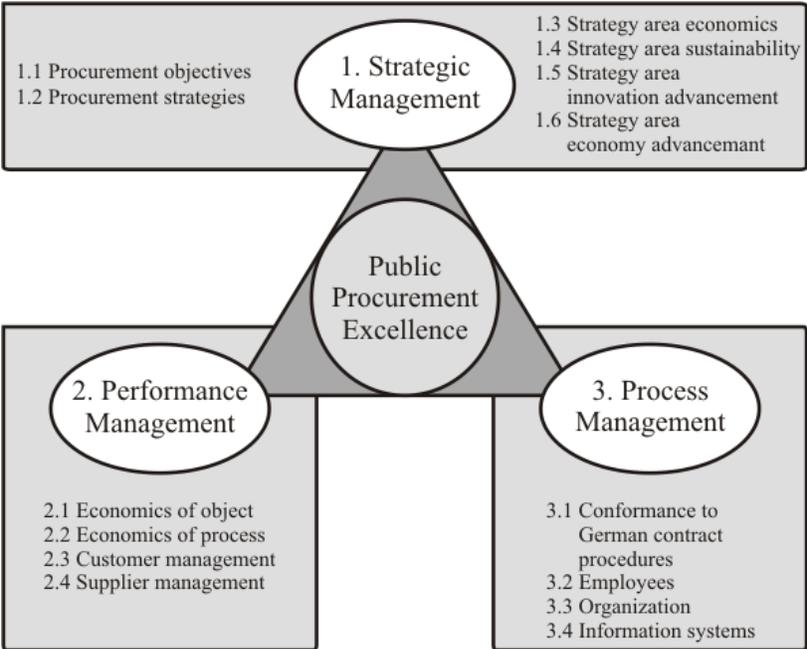


Figure 3: Measurement model of Public Procurement Excellence (Essig et al., 2010).

Measurement

The web-survey contains the indicators derived from the factors of Essig et al.'s (2010) benchmarking framework for public procurement. Likert scales (Likert, 1932), Fishbein scales (Fishbein, 1963) and Trommsdorff scales (Trommsdorff, 1975) have been used for measuring public purchasers' attitude. At the beginning of the survey, each participating contracting authority has the choice between a general benchmark and an in-depth benchmark requiring further information and greater effort by the contracting authority. For questions rated on five point Likert scale, 5 indicates the strongest degree of agreement with a particular statement and 1 the strongest degree of disagreement. For five point Trommsdorff and Fishbein scales belonging to multidimensional rating scales, a cognitive and an affective component are measured for each product characteristic. Trommsdorff scales investigate the current situation and the target state (e.g. procurement objective "Low prices/ Low costs") whereas Fishbein scales ask about the current situation and degree of importance of the particular characteristic (e.g. defined procurement objectives). An overview of the measurement indicators and belonging rating scales are shown in Appendix A.

Data collection

When it comes to generating validated empirical data, different data collection methods exist in literature (Schnell et al., 1999). In the project, a standardized, web-based questionnaire was chosen as data collection technique, as this method bears the advantages of small expenditure of costs and time, and higher case numbers compared to personal interviews (Griffis et al., 2003; Kinnear and Taylor, 1991) as well as the exclusion of interviewer-bias. Announcement was made through regional conferences and workshops (Tag der öffentlichen Auftraggeber 2010, BME-Symposium 2009) and several magazines related to public procurement (BehördenSpiegel, Best in Procurement) to invite public procurer to fill out the web questionnaire. Moreover, 7,000 contracting authorities were contacted by postal letters and flyers containing major aspects and information on our research study and the link to the survey conducted. Besides that, public contacting authorities were informed about the project through the Council of German Municipalities and

Regions' (Deutscher Staedte- und Gemeindetag) mailing list. Every public contracting authority in Germany could participate once in the survey period of four weeks in 2010. As a result, a total of 96 contracting authorities have registered to get access to the web survey. Of these, 34 contracting authorities have released their responses.

Subsequent to the data collection, a descriptive analysis of the collected data shows that the objective to convincing a broad range of public purchasers for participation was achieved. 9% of the respondents belong to federal state level, over 14% are regional authorities and 38% are local authorities. Another relatively large group with 15% is characterized by companies with mandatory application of the contract award law. The group "Other" is mainly composed of all kinds of research institutions. Sectorial contracting entities, independent public-law institutions and corporations of public law make up 3%, 3% and 6% of the participants respectively.

The distribution of the surveyed contracting authorities shows that, quantitatively, tenders in accordance to VOL/VOF (Contracting Regulation for the Awarding of Works or Services/Contracting Regulation for the Awarding of Professional Services) are primarily published. 40% of participating contracting authorities issue tenders accordingly to VOL/VOF whereas no procurement department participated in the survey issues tenders only as per VOB (Contracting Regulation for the Awarding of Public Works). Only 4% of the respondents put predominantly, but not exclusively construction works out for tender. In contrast, 12% of the participants say that they predominantly issue tenders according to VOL/VOF. 44% of the contracting authorities use both VOL/VOF and VOB.

The importance of performance measurement in public procurement is reflected by the structure of participants. Half of the public procurers surveyed are at least head of a procurement department. Apart from that more than 85% and 35% of the interviewees are employed at least five years and 15 years respectively in the surveyed procurement department. In just under 10% of participating contracting authorities employ a staff of more than 50 people. A little less than 50% of the procurement departments comprise of less than 10 employees. In average, 5.956

employees work in the public authorities surveyed and 23 employees in a procurement department. 80% of the employees are responsible for operative or strategic procurement activities whereas about 10% work as support staff.

As interviewed contracting authorities have either awarded a small number (44% of procurement departments handle less than 500 contracts annually) or a very large number of contracts (around one quarter of procurement departments handle more than 5,000 contracts per year) the gap between them is regarded as huge. The average number of contracts awarded totals 4,349 with regard to the procurement department and 8,833 referring the contracting authority per annum.

The procurement volume of the respondents varies greatly among the procurement departments and shows a similar distribution to the distribution of contracting authorities by employees. The average procurement volume of contracting authorities surveyed is € 118.94 million whereas 25% of the respondents reported that their contracting authority spends more than € 100 million. In contrast, 37.5% of the contracting authorities procure less than € 1 million annually.

FIRST FINDINGS

The Public Procurement Index score of the analyzed contracting authorities totals on average 0.71, on a scale from 0 (bad) to 1 (excellent). Despite the high index scores, procurement is not yet broadly regarded as excellent for each procurement department surveyed. The strengths of the participating contracting authorities are in strategic management (index score of 0.79) and process management (index score of 0.72). In contrast, the dimension performance management only reaches an average index score of 0.62. But, some participating contracting authorities are already working very efficient and effective. A Public Procurement Index score of 0.97 was reached by a participant as an example of best-practice. The overall need for action for public procurement results from an index-based comparison of the analyzed factors (see Figure 4). Thereby the blue line represents the results of the top 10 performing

contracting authorities and the red inner cycle reflects the results of all analyzed contracting authorities.

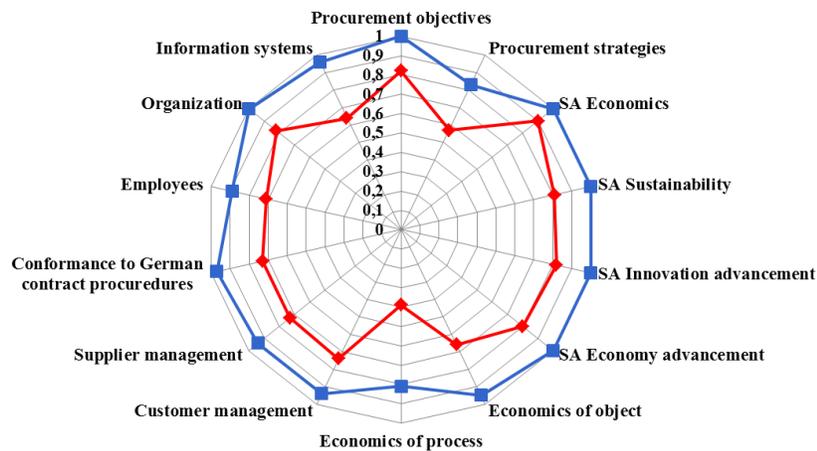


Figure 4: Factor-based analysis

Potential for improvement can be tapped by comparing the individual index scores with the average index scores and the best index score for each factor. In general, the greatest need to act is in the area of process management. Further, the factor-based analysis reveals deficiencies in the factors procurement strategy and information systems.

The indicator-based analysis shows, in part, significant discrepancies between the actual and the target situation. Particularly striking is the assessment of the statement, that the price or costs respectively represent a dominant criterion for public procurement departments (score of 4.03, on scale from 1 (strongly disagree) to 5 (strongly agree), but it should not be to such an extent (3.71). Further, the promotion of SMEs in the current extent should not be further promoted (actual score of 3.39; target score of 3.03). In contrary, respondents stated that the awarding objectives sustainability (actual score of 3.18; target score of 3.91), promotion of innovation (actual score of 2.64; target score of 3.18) and regional promotion (actual score of 2.47; target score of 2.67) should be

stronger held in focus, even although some of these are already on a relatively high level.

There are major differences between the assessment of the actual situation and the importance of this appropriate indicator. For instance, the existence of a procurement strategy is rated with 3.50, but the importance of procurement strategies is evaluated by the participating contracting authorities with 4.41. This kind of difference is existent for several strategies, even if the level of existence or importance greatly varies. Supplier, material group, product standardization, bundling and internationalization strategy as well as strategies relating to inter institutional procurement cooperation are all considered to be more important than they are implemented at present. The assessment of efficiency measurement indicates a major gap between the actual implementation and the importance of this instrument: The actual implementation level is rated as 1.91 by the respondents while its importance is appraised as 3.45.

DISCUSSION

Viewed against the background of the importance of public procurement in the context of the tense financial situation of the public sector and the fact that this aspect is scarcely entered into the public debate, this paper analyses the current performance level of public procurement in Germany by means of an online web survey containing multidimensional goals of public procurement.

The web survey conducted within the pilot phase of the study project results in a small sample which though allow us to show certain broad trends and conclusions. The results of the web questionnaire not only show participating contracting authorities their current performance level and performance gaps, but also create incentives by comparing their performance with other participants' one. Multidimensional and sometimes conflicting goals of public procurement are taken into account in the survey to attain a comprehensive picture of the status quo of public procurement in Germany.

Further, the overall results from the survey can be fed into policy making as they represent the feedback of public procurers with respect to specific awarding goals. On the one hand awarding goals such as the promotion of SMEs should not be further promoted to the current extent, on the other hand strategies, for instance the inter institutional procurement cooperation strategy should play a more important role than at the moment. Politicians can use these inputs, for example, for changing appropriate regulatory conditions of public procurement or adapting other instruments in the achievement of policy goals.

In order to obtain a larger sample, the roll-out of the evaluation phase is accompanied by different additional measures. At the end of the pilot phase registered contracting authorities that have not release their responses were asked for their reasons. Because many contracting authorities has indicated the effort needed to fill out the web survey, the web questionnaire from the pilot phase has been modified in terms of simplifying the content and making changes to the user interface for increasing the usability. Moreover, selected politicians from the Federal government and the Federal states (Laender) as well as the municipal level were asked for writing a statement to motivate contracting authorities to participate in the web survey. These statements written by the Assistant Secretary of the Ministry of the Interior, the State Secretary of the Hessen Ministry of Finance and the State Secretary of the Ministry of Finance of Free and Hanseatic City of Hamburg were published in "BehördenSpiegel", a magazine focusing in public administration.

Within the evaluation phase with five months duration, regional information events are held in order to present the research project and the appropriate web survey directly to public procurers and to lower entry barriers for participation. In this context, a tool for collecting and preprocessing statistical data required in the web survey, such as annual procurement volume in accordance to VOL, VOB and VOF, and number of contracts awarded, is implemented by the contracting authority selected as best practice in the pilot phase and is presented within the information events as well. As a result participating contracting authorities of the evaluation phase can better prepare for the web survey. In sum, politicians as well as

participating contracting authorities can benefit from the results of the current research project in measuring and identifying the public procurement's performance level in Germany.

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APPENDIX A: TABLE OF PRELIMINARY INDICATORS

No.	Factor	Indicator	Scale
1.1	Procurement objectives	Defined procurement objectives	Fishbein
		Relevance evaluation of procurement objectives	Ordinal ranking
1.2	Procurement strategies	Defined procurement strategies	Fishbein
		Defined supplier strategies	Fishbein
		Defined product group strategies	Fishbein
		Defined product standard strategies	Fishbein
		Percentage of standard products awardings	Ratio scale
		Defined global sourcing strategies	Fishbein
		Percentage of awardings to suppliers in the EU outside of Germany	Ratio scale
		Defined internal bundling procurement cooperative	Fishbein
		Percentage of framework agreements	Ratio scale
		Defined external procurement cooperation	Fishbein
		Percentage of awardings within procurement cooperation	Ratio scale
1.3	Strategy area economics	Awarding criteria price/costs	Trommsdorff
		Percentage of awardings with sole award criteria price/costs	Ratio scale
1.4	Strategy area sustainability	Awarding criteria sustainability	Trommsdorff
		Percentage of awardings with awarding criteria sustainability	Ratio scale
		Percentage of awardings requiring environmental standards	Ratio scale
		Relevance evaluation of environmental standards	Ordinal ranking
		Percentage of awardings requiring labor and social standards	Ratio scale
Relevance evaluation of labor and social standards	Ordinal ranking		
1.5	Strategy area	Awarding objective promotion of	Trommsdorff

No.	Factor	Indicator	Scale
	innovation advancement	innovation Percentage of functional specification in tenders Percentage of awardings with admission of alternative bids Percentage of competitive dialogue Relevance evaluation of innovation advancement elements	Ratio scale Ratio scale Ratio scale Ordinal ranking
1.6	Strategy area economy advancement	Awarding objective promotion of SMEs Percentage of awarding to SMEs Percentage of awardings on a lot-by-lot basis Percentage of awardings with admission of subcontractors Percentage of awardings with admission of bidding syndicates Relevance evaluation of SME-promotion elements Awarding objective regional promotion	Trommsdorff Ratio scale Ratio scale Ratio scale Ratio scale Ordinal ranking Trommsdorff
2.1	Economics of object	Measurement of the efficiency of procured goods and services Relevance evaluation of methods to measure efficiency Reporting/Controlling to measure overall efficiency Percentage of awardings with overall efficiency measurement Relevance evaluation of methods to measure efficiency Conditions of payment	Fishbein Ordinal ranking Fishbein Ratio scale Ordinal ranking Likert
2.2	Economics of process	Number of awardings per type of awarding Awarding volume per type of awarding	Metric Metric

No.	Factor	Indicator	Scale
		Measurement of process costs per type of awarding	Fishbein
		Amount of process costs per type of awarding	Metric
		Measurement of process time of awardings	Fishbein
		Negative influences of process time	Nominal
		Lead time per type of awarding	Metric
2.3	Customer management	Customer oriented mentality	Likert
		Number of internal customers	Metric
		Number of external customers	Metric
		Measurement of customer satisfaction	Trommsdorff
		Customer complaints	Likert
		Percentage of customer complaints	Ratio scale
		Relevance evaluation of causes for complaint	Ordinal ranking
2.4	Supplier management	Systematic supplier management	Trommsdorff
		Measurement of supplier satisfaction	Trommsdorff
		Number of active suppliers	Metric
		Number of bids per type of awarding	Metric
		Number of customers which request documents for participation per type of awarding	Metric
		Change of supplier	Trommsdorff
		Supplier evaluation	Trommsdorff
		Supplier database	Trommsdorff
		Supplier development	Trommsdorff
3.1	Conformance to German contract	Compliance with German contract procedures	Fishbein

No.	Factor	Indicator	Scale
	procedures	Relevance of internal legal know-how	Fishbein
		Relevance of external legal know-how	Fishbein
		Percentage of employees with detailed legal and contractual knowledge	Ratio scale
		Percentage of reprimanded awardings	Ratio scale
		Percentage of admissible verification procedures	Ratio scale
		Percentage of awardings cancelled by the procurement division itself (in case of formal mistakes)	Ratio scale
3.2	Employees	Number of authority's employees (full-time equivalent)	Metric
		Number of department's employees (full-time equivalent)	Metric
		Distribution of tasks of the employees	Constant sum scale
		Knowledge of purchased goods and services	Fishbein
		Market know-how	Fishbein
		Knowledge of administrative economics	Fishbein
		Business management knowledge	Fishbein
		Legal knowledge	Fishbein
		Technical knowledge	Fishbein
		Percentage of employees per type of knowledge	Ratio scale
		Relevance evaluation of knowledge types	Ordinal ranking
		Relevance of further education	Trommsdorff
		Average number of days for further education	Metric

No.	Factor	Indicator	Scale
		Relevance evaluation of further education possibilities	Ordinal ranking
		Budget for further education	Metric
3.3	Organization	Internal central procurement	Trommsdorff
		Percentage volume of internal central procurement	Ratio scale
		External central procurement	Trommsdorff
		Defined process description of entire procurement processes	Trommsdorff
		Defined formal control methods	Trommsdorff
3.4	Information systems	Use of an information system	Fishbein
		Number of applied information systems	Metric
		Relevance evaluation of types of information systems	Ordinal ranking
		Use of "eVergabe"	Fishbein
		Percentage of awardings by "eVergabe"	Ratio scale
		Percentage of electronic tenders	Ratio scale
		Year of introduction of "eVergabe"	Metric
		Electronic catalog system	Fishbein
		Percentage of electronic framework agreements	Ratio scale