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Collaborative benchmarking in the Danish district-heating sector

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Abstract

Purpose – The purpose of this paper is threefold: to investigate why and how companies in voluntary networks engage in performance benchmarking; how requirements for a standardised chart of accounts are handled; and what the role of regulatory pressure is.

Design/methodology/approach – The paper is based on a longitudinal case study of an established group of six district-heating companies. The data sources are semi-structured interviews, observations and documents.

Findings – Both the forthcoming re-regulation of the district-heating sector and aims to improve efficiency were motivating the collaboration among the firms. An interpretation of common accounting rules can be negotiated in a collaborative network. The benchmarking model was embedded in routines internally in firms to facilitate learning and knowledge exchange, but it was also used to legitimise current operations.

Research limitations/implications – As the paper is based on a case study of a specific project, the issues discussed in the paper should be further investigated in similar firms being exposed to regulation.

Practical implications – Harmonisation of accounting data are of immense importance when benchmarking performance, but discretion in interpretations of data and results must be handled. Co-existence with existing rules and procedures should be allowed.

Originality/value – The paper contributes to research understanding the role of collaboration in voluntary networks when benchmarking is implemented.

Keywords Public sector, Collaboration, Benchmarking, Accounting change, Regulation, District-heating

Paper type Case study

1. Introduction

The Danish district-heating sector is characterised by a number of local monopolies. In order to avoid economic performance problems, such as excessive prices, production inefficiencies and costly duplication of facilities (Joskow, 2007, p. 1229), the sector is regulated based on a cost-of-service principle. This form of regulation does not in itself carry incentives to improve efficiency (Averch and Johnson, 1962; Munksgaard *et al.,* 2005). Consequently, the Danish Government has decided to introduce a new performance-based regulation scheme, which produces a quasi-competition (Agrell and Bogetoft, 2005) by benchmarking individual companies with best practice. However, the new regulation has been delayed several times, and in the meanwhile, companies in the sector are using different means to prepare for the re-regulation.

In this paper, we examine how a group of six large district-heating companies participating in an already established network group reacted in response to the forthcoming re-regulation by initiating a benchmarking project.

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In this network-benchmarking project (cf. Kyrö, 2003, 2006), the firms embarked on voluntary benchmarking (Bowerman *et al.*, 2002) in order to be prepared for the expected changes. The specific aim of this project, which we followed from 2009 to 2012, was to develop a benchmarking model, i.e. a set of accounting-based performance indicators, to be used as a basis for knowledge exchange and improvements in cost-effectiveness. Central to this benchmarking model are both the need to change accounting principles internally in the firms, including the adoption of a standardised chart of accounts prepared by the Danish District-Heating Association, and the need to be prepared for a forthcoming regulation based on benchmarking.

The introduction of a competitive regulatory mechanism in the district-heating sector is interesting, because the basic nature of public service providers is to avoid competing with each other. If one organisation succeeds in providing excellent solutions, these are available for others as well, and the focus is, therefore, more on cooperation than on competition (Kyrö, 2006, p. 95). Exchanging information and identifying a best practice that can be learned from and applied in another organisation to improve its results (Ammons and Roenigk, 2015) implies a more or less explicit benchmarking principle. Thus, benchmarking has a dual role in promoting competition and collaboration, and these elements must somehow be balanced (cf. Braadbaart and Yusnandarshah, 2008).

Although district-heating companies are not in competition and sharing of information would in principle be a benefit for the participating firms, several articles have reported difficulties in identifying benchmarking indicators and embracing the concept of benchmarking (Arnaboldi *et al.*, 2015; Bowerman *et al.*, 2001, 2002; Siverbo, 2014). Siverbo concluded in a recent study of the implementation and use of benchmarking in local government that "there is a link between benchmarking implementation problems and initiators' failure to build a strong network of benchmarking allies" (Siverbo, 2014, p. 121). Further, Siverbo (2014) concluded that the possibility that actors could use the results in the struggle for resources was associated with the use of benchmarking, and also that benchmarking being based on "factual enough" information was associated with benchmarking being used.

We study in the paper how the network of district-heating companies negotiates and agrees on common performance indicators to be used for benchmarking. What interested us from the outset of the study was whether the organisations would actually adopt a common chart of accounts or whether they would continue their previous ways of accounting. Research following the perspective of new institutional organisation theory (e.g. Meyer and Rowan, 1991) emphasises that the adoption of new techniques may be only loosely coupled to the way organisations actually function, since the adoption may reflect the fact that organisations feel a need to demonstrate that they are using seemingly efficient control models (Siverbo and Johansson, 2006). Therefore, we focus on whether actual changes in the companies take place and how the outcome of the project was influenced by the forthcoming re-regulation.

The research question is:

RQ1. How and why organisations in a network voluntary implement and use benchmarking?

We take Siverbo's (2014) conclusions as a point of departure and focus on the connection between the use of benchmarking and the firm's possibilities of using the results in negotiating resources, as well as on the role of a common chart of accounts in establishing factual information to be used for benchmarking. Thus, the

study contributes to the literature on benchmarking and to benchmarking in practise by identifying factors that can lead to implementation and acceptance of benchmarking.

Further, the study contributes new insights into the role of accounting in network. While the new public management movement (cf. Hood, 1991, 1995) emphasises the organisational boundaries, the network understanding (Kurunmäki and Miller, 2011; Pollitt, 2003) focuses on inter-organisational cooperation within the public sector. These two strands of literature are not only two different perspectives on the understanding of public sector activities, they also emphasise different perspectives on how to organise and manage. Although scholars have demonstrated the importance of inter-organisational relationships for more than two decades, it is only, as Kurunmäki and Miller (2011, p. 221) remark, in the last decade that the roles of accounting within networks of organisations have been studied.

In the following section, we introduce the Danish district-heating sector, the role of regulation within the sector, the principles of the present regulations, and the reasons why the sector is being re-regulated. Next, we briefly review the literature on benchmarking as a regulatory and cooperative instrument. The methodology is presented in Section 4, followed by the empirical basis for the paper in Section 5. We provide a historical wrap-up based on archival data and interviews and present how the companies negotiated interpretations of the new chart of accounts, how the benchmarking model was developed, and how it was used. In Section 6, the results are further analysed and discussed, while Section 7 concludes the paper.

2. The Danish district-heating sector

District-heating is a particular way of solving the demand, both business and domestic, for space-heating and hot water. It rests on the assumption that there is economy of scale in heat production as long as there are means for distributing the heat in an efficient way. There are almost 400 district-heating companies in Denmark, covering more than 60 per cent of all households. The majority are small and organised as cooperatives, having a pertinent history in Danish rural districts of overcoming the financial hurdle regarding economy of scale in agriculture by drawing on the cooperative movement. However, some companies are large and owned by one or more of the 98 Danish municipalities serving most of the inhabitants in these areas. Furthermore, about 80 per cent of the district-heating is produced by combined heat and power plants.

The sector is highly heterogeneous not only with respect to company size, and ownership form, but also with respect to the possibilities for separating the cost of the heat throughput from the distribution costs: Some companies are essentially closed systems of production and distribution while others, e.g. in the greater Copenhagen area, are supplied by district-heating from several large-scale combined heating and power companies. Here, heating is traded on a daily basis.

District-heating companies are, as concluded by Wissner (2014), non-contestable natural monopolies due to subadditivity of costs (Baumol *et al.,* 1982) with respect to the distribution grid and high barriers to entry due to substantial capital costs for construction. From an economics perspective (e.g. Joskow, 2007; Munksgaard *et al.*, 2005), the monopoly structure implies a need for regulation to provide efficient pricing, reduce production cost and provide an appropriate level of output and investment, as well as proper service quality. Further, as most households in Denmark have compulsory connection to and usage of district-heating, a natural monopoly is

actually enforced by law. Thus, price regulation is generally suggested to protect customers from exploitation (e.g. Giannakis *et al.*, 2005; Jamasb *et al.*, 2004; Joskow, 2007; Wissner, 2014).

The regulation of the Danish district-heating sector is, however, based on a cost-of-service principle, i.e. a non-profit principle, where prices may only reflect the necessary costs of production, distribution and administration. The Danish Energy Regulatory Authority (DERA) acts as independent regulatory authority (e.g. Thatcher, 2002) according to the Heat Supply Act. Pursuant to the act, DERA interprets the energy legislation and establishes which costs can be factored into prices. There may be large differences between the costs of each plant and thus also between the prices charged by the plants. These differences in costs and prices can be attributed to several circumstances, such as differences in costs of equipment, type of installation, size and number of customers. In addition, the individual plants may be subject to various framework conditions such as choice of fuel, and consumers may be subject to a duty to connect to the grid.

In general, cost-of-service regulations fail to provide incentives to minimise costs (Averch and Johnson, 1962; Munksgaard *et al.,* 2005) as the price scheme is based on reimbursement of costs. Therefore, some years ago, the Danish Parliament decided to introduce a new regulation scheme with a primary aim of improving efficiency in the sector and reducing consumer prices (Danish Government, 2006, p. 96; Danish Energy Agency, 2007, p. 20). The specific details were not decided on, but the preferred approach in the energy sector is to apply best practice benchmarking, known as yardstick competition (see Schleifer, 1985), where the benchmark for cost reimbursement is based on the performance of the other companies in the sector (Munksgaard *et al.,* 2005). Fundamental for the best practice benchmarking approach is that it exposes the regulated firms to a quasi-competition (Agrell and Bogetoft, 2005) where firms with a favourable benchmarking score are rewarded and firms with an unfavourable score are punished (Munksgaard *et al.,* 2005, p. 1889).

3. Benchmarking: management or regulatory instrument?

As a management tool, benchmarking rests on the assumption that organisations can learn from one another and that best practice can be learned and applied in another organisation to improve its results (Ammons and Roenigk, 2015). From this perspective, it is often suggested that regulatory benchmarking can foster cooperation and learning from best practise as the information provided by the model "enables the firms to learn from successful technologies, routines and organisational forms" (Agrell and Bogetoft, 2005, p. 1351). From an economic theory perspective, benchmarking is, as mentioned by van Helden and Tillema (2005), often viewed as a substitute for market forces, implying that benchmarking provides incentives for firms to operate more effectively and efficiently. Consequently, it is expected that benchmarking will result in performance improvements and that organisations will show a certain degree of conformist behaviour when benchmarked.

There is, however, as noted by Ammons and Roenigk (2015), doubt in the literature whether "much analysis and learning actually occur" (Ammons and Roenigk, 2015, p. 309) from benchmarking. It is well known that any performance measurement, including benchmarking, implies incentives to manipulate data and that benchmarking can have a number of unintended consequences (e.g. Bevan and Hood, 2006; van Helden and Tillema, 2005). For example, that average rather than excellent performance is the outcome, and that well-performing organisations worsen performance (Llewellyn and

Northcott, 2005). Results benchmarking (Bowerman *et al.,* 2002) often lead to managing by the numbers and target regimes (Bevan and Hood, 2006; Hood, 2006), and providing quantitative information to managers is, as stated by Moynihan (2008, p. 167; cf. Ammons and Roenigk, 2015), unlikely to be as effective as dialogue.

Further, Bowerman *et al.* (2002, p. 429) conclude from a study of local UK government benchmarking that "the reasons behind benchmarking within the public sector are confused as pressures for accountability may mitigate against real performance improvement" and that "an appropriate balance between the use of benchmarking for control and improvement purposes is yet to be achieved". Compared to a setting where either organisations devise their own indicators for benchmarking or regulators determine what indicators should be used for benchmarking, voluntary benchmarking in networks is likely to be different. The collaborative arrangement where performance information is exchanged creates complexity (Arnaboldi *et al.,* 2015), and the participants' own interests can prevail over the common or shared purpose and create obstacles to effective benchmarking (Siverbo, 2014). But the voluntariness of the benchmarking also creates flexibility in the use of benchmarking and possibilities for avoiding some of the pitfalls.

Benchmarking is a management accounting innovation (cf. Siverbo, 2014, p. 122) that can be used for performance measurement and improvements in both the private and public sectors. Voluntary benchmarking between companies in a network requires inter-organisational cooperation in the sense that cooperation is a fundamental part of the benchmarking. Thus, factors that influence the success of inter-organisational accounting in the public sector in general may also be relevant for studies of voluntary benchmarking in networks of public sector companies, and vice versa. In a literature review on accounting in inter-organisational relationships within the public sector, Kraus and Lindholm (2010, p. 119) conclude that there "is little discussion of on-going day-to-day cooperation between independent public sector units/organisations and the role of accounting therein". Notable exceptions are Kurunmäki and Miller (2006) and Miller *et al.*'s (2008) studies.

Several researchers have considered the role of benchmarking in the context of inter-organisational relations within the public sector: Saunders *et al.* (2007), who study a mixture of public and private organisations performing benchmarking in networks; van Helden and Tillema (2005), who develop a theoretical framework for studying public sector benchmarking; and Ammons and Roenigk (2015), Askim *et al.* (2008), Johnsen (1999), Knutsson *et al.* (2012) and Siverbo (2014), who study municipal benchmarking in networks. In one of the first articles to develop a theoretical framework for benchmarking in the public sector, van Helden and Tillema (2005) formulated a number of hypotheses regarding organisations' willingness to engage in benchmarking, and performance improvements from benchmarking were stated. Although illustrations of many of the hypotheses could be found in their analysis of benchmarking of Dutch water boards, van Helden and Tillema (2005) also concluded that some factors that influence willingness to take part of benchmarking projects might conflict with each other and that economic reasoning cannot address all explanations for response patterns of public sector organisations participating in benchmarking projects.

The empirical material in our study does not allow us to determine whether possible performance improvements are due to firms participating in the benchmarking project. Rather, we focus on the factors related to the collaborative activities that influence the district-heating companies' willingness to engage in benchmarking and to make

changes necessary to implement the benchmarking model. Van Helden and Tillema (2005, p. 344) suggested in this respect two hypotheses: The less the stakeholders of a public sector organisation disagree about engaging in a benchmarking project or about the nature of a desired performance improvement, the more likely it is that the organisation will engage in a project or improve performance; The higher the degree of interconnectedness among the organisations within its organisational field, the more likely it is that a public sector organisation will engage in a benchmarking project or improve performance" in ways that are likely to be influenced by the collaborative project.

In order to benchmark, suitable data must be available. This requirement is by no means uncomplicated (Dassler *et al.,* 2006), and using accounting data in benchmarking can be especially troublesome (cf. Tagesson, 2007, p. 259). Sufficient attention must be paid to benchmarking design, an appropriate accounting system, and balancing collaborative and competitive elements such as problems of data quality, comparability and the struggle involved in designing meaningful performance indicators based on different accounting systems (Braadbaart and Yusnandarshah, 2008, p. 431; Walter *et al.*, 2009, p. 231).

Benchmarking accounting data in the district-heating sector implies introducing a standardised chart of accounts across a diverse set of companies. Jamasb and Pollitt (2007) warn that "the informational requirement for conducting a robust benchmarking exercise has proven to be more complicated than expected" and that "establishing the appropriate reporting formats, standardisation of data, and ensuring the quality of data has been non-trivial" (Jamasb and Pollitt, 2007, p. 6172). For instance, it has been stated that firms may attempt to seek higher capital expenditure to reduce operating costs if only operating costs are included in the benchmark (Jamasb and Pollitt, 2007, p. 6172; Shuttleworth, 2005), and it has been suggested that benchmark rankings lead to "average" instead of "best practice" (Knutsson *et al.,* 2012). Vinnari (2006, p. 164) even suggests that a less rigid system based on self-assessment by an interest organisation would serve the public better because the expertise of the interest organisation would lead to a more efficient, cost-effective and flexible approach than more regulatory ones.

The majority of Danish district-heating companies are members of the Danish District-Heating Association, which has established a standard chart of accounts to be used for the voluntary benchmarking. Despite being voluntary, it is used by a growing number of district-heating companies. This accounting nomenclature is organised by function-based principles and is meant to facilitate the calculation of many key figures. Further, the District-Heating Association has suggested that the standardised chart of accountings should form the basis for regulatory benchmarking.

4. Methodology

The paper is based on a qualitative field study of a project where participants from six large Danish district-heating companies participate in a network in order to develop a model to be used for performance benchmarking. The group of companies constitute a formal network known as the six-city group. This network was formed more than ten years before the benchmarking project was initiated. The participating companies were originally owned by the six largest municipalities in Denmark and served customers

from these same municipalities. However, due to mergers with similar companies formerly owned by smaller municipalities, several of the companies now serve customers from several municipalities. Although the companies were all established with the purpose of serving households and firms within specific municipalities, have similar ownership structure and operate under the same legislation, they are also somewhat dissimilar, with respect to the plants and distribution network, the type of fuel they use and the dispersion of the customer base.

The research was conducted over a period of three years focusing on the group level as an expression of both inter- and intra-organisational processes. However, the persons participating in the project are embedded in their respective organisations. Thus, the research design has elements of an embedded multiple case study design (Yin, 2014). Following Silverman (2011) and Ahrens and Chapman (2006), we focus on methodology "understood as a general approach to the study of research topics" (Ahrens and Chapman, 2006, p. 819), where our aim is to study the accounting practice where people in organisations "make specific use of widely available accounting solutions, how such solutions come to their disposal, and how their use might change existing accountings and give rise to new accounting solutions that others can use" (Ahrens and Chapman, 2007, p. 99).

We followed the companies in the period from March 2009 to the end of 2012. The managers from each company participating in the group were interviewed two times: the first six interviews were in October 2009, and the next six interviews were in May/June 2012. In total, there were 12 interviews. The semi-structured interviews lasted between one and one and a half hours and were all taped and transcribed. Furthermore, one researcher participated as observer in five meetings in the group where participants also included accountants in addition to the six-city managers. We also studied documents, meeting notes, etc. from the project, and the corresponding author was included in the mail correspondence in the group between meetings.

Reliability of the interviews was given attention in the interview situation, e.g. by avoiding leading questions. The interviews were transcribed and codes were added to the text throughout the process of analysing and working with the data. Descriptive codes used to describe the individual interviewee, as well as more formal/descriptive information about the company, were added. Next, topic codes were used to label text pieces according to specific topics, and were therefore mainly used to code text describing specific topics addressed in the interviews. Finally, analytical codes were used for interpretation and reflection on meanings. In order to ensure that the coding scheme was applied in the same manner across time, the data were revisited following the initial coding. In order to strengthening the reliability, particularly illustrative interview sequences were extracted as quotations to be used in the presentation of data.

According to Kvale (1996, p. 238), validity concerns the conformity of the phenomenon studied and the way it is studied. Similarly, Miles and Huberman (1994) emphasise that one must ensure both internal validity and external validity The central question in relation to internal validity is whether the conclusions make sense to the people studied and to the readers. A preliminary version of the analysis in the paper has been circulated among the participants, who were given an opportunity to comment on the analysis and suggest changes in interpretations. Further, the interviewees were given the opportunity to comment on the way in which their statements were presented.

The central question in relation to external validity is whether the results can be generalised to other situations where other firms participate in voluntary cooperation in networks. This could either be other firms or other conditions, or it could be similar firms

and conditions but collaborative projects with other purposes. It should be noted that the companies in the six-city group are relatively large, non-profit, semi-autonomous companies embedded in municipal decision-making processes, which makes them different from other public and non-profit organisations. However, we believe that the results are valid to some degree when public companies that are subject to pressure for regulation or modernisation in general enter into voluntary collaboration.

All six companies are among the ten largest district-heating companies in Denmark, but the identities of the specific companies are disguised, and we refer to them as Company A to F. Additionally, we refrain from mentioning the names and specific managerial responsibilities of the interviewees, instead referring to the participant from "Company A" as "Manager A", etc.

5. The formation of a benchmarking model

Comparability of the benchmarking indicators is a key issue irrespective of the purpose of the benchmarking, as has also been emphasised by the Danish Energy Agency and Danish Competition Agency (2004). Consequently, about 15 years ago the Danish District-Heating Association decided to develop a standardised chart of accounts to facilitate cost benchmarking and to prepare themselves for the regulation that was on the regulatory authorities' agenda at that time. A preliminary version of the chart of accounts was issued in 2002, and this was followed by a guideline in 2008 (Danish District Heating Association, 2008) suggesting five distinct key figures for benchmarking: cost of production and fuel, cost of operation and maintenance, cost of administration, distribution losses and finally investments in plant and equipment (see Danish Energy Regulatory Authority, 2007, p. 2).

Simultaneously, in 2002 the six-city group undertook the first benchmarking initiative. One of the managers recalled in 2009 that "the intention was to establish a way to compare costs related to the establishing of pipelines for distribution" (Manager A) in order to be prepared for the forthcoming regulation. The project, however, "became very political, in the sense that we used it to establish good results in the benchmarking. That was more important than to learn" (Manager B), and the project was discontinued. When asked about possible reasons for the lack of success, Manager B answered that they were not able to agree on a common model and that every firm were allowed to make individual corrections, using a so-called city-factor on their accounting data when they compared it with that of the other companies:

> We had to compromise on a pragmatic solution where we reached two results […] one with a city-factor and one without, and the participants were free to choose (Manager B).

Although it was possible to accommodate the differences among the firms, it was, at the same time, making the results less relevant:

> Then you had these correction factors, blurring the results completely as they could be set to anything. Not a lot more than those results came out of it, and then it died out (Manager D).

5.1 Preparing for a new benchmarking model

The six-city coalition initiated a new benchmarking project in 2008. The chairman of the group described the aim of the project in February 2009 in a note to the participants:

> The working group shall lead, follow, and carry out benchmarking based on the chart of accounts prepared by the […] Danish District-Heating Association as the point of departure for reporting data […] These key figures shall afterwards make the foundation for the desired learning process of the district heating companies.

The first meeting, in March 2009, confirmed that the group was to take advantage of the standardised chart of accounts and the guidelines prepared by the Danish District-Heating Association. It was especially emphasised that the group was "not to make the same mistakes as last time" (Manager B). Several of the members expressed enthusiasm regarding the importance and relevance of the benchmarking model both for their internal work and for the forthcoming regulation. It was decided not to become too detailed with respect to the accounting details, but it was soon realised that:

> […] to make real benchmarking, you need to do your accounting in the same way, that is, you have a chart of accounts, and you agree upon how to account the costs the same way, or else it's difficult to benchmark, you compare apples and oranges, (Manager A).

Several meetings followed where the specific details of data definitions, interpretations of the chart of accounts, and implications for the benchmarking indicators were discussed. After each meeting, a detailed summary was prepared, and the group moved gradually towards an agreement on how the indicators should be compared.

Depreciation was an especially difficult issue, and an accountant participating in one of the meetings remarked, "We are changing the principles of depreciation from year to year depending on the price we charge the customers" (Accountant, Company C). Therefore it was agreed to manually adjust the accounting figures regarding costs and to distinguish among administration, production and distribution. However, this was not a straightforward task, and a participant remarked that much discussion centred around:

> […] how we interpret the different items in the chart of accounts. There are prominent differences regarding how the companies do their accounting. There are many ways to interpret and at the same time stay within the definition (Manager D).

In the process, the interpretations were implemented separately from the existing management accounting system in the companies, but a consistency between the two sets of numbers was maintained in order to facilitate learning from each other:

> […] We have made this general benchmarking, then, if there are places where we fall outside, we can go a step further and dive into the single element, and then we can do a process benchmarking on it (Manager D).

The use of the standardised chart of accounts and the guideline was discussed at the meetings, and it was realised that "there is no single way to interpret it, and two persons will never do the accounting in the same way" (Accountant, Company D). Therefore it was decided to concentrate on areas where the benchmark numbers were obviously wrong.

5.2 Benchmarking as a fact?

In October 2009, the first version of the benchmarking model was presented at a meeting, with data supplied by each company. The benchmarking was presented as a bar chart for each indicator. The immediate reaction from the participants when looking at their data in the bar chart was positive, and it was discussed how the number could be used and how the indicators should be named in the charts. The participants expressed surprise when realising how they ranked, and it was stated "we have indeed new knowledge after this" (Accountant, Company C).

The general satisfaction with the result was indicated by phrases like "we are on the way to produce a description for our board […] this will be a best seller" (Manager A)

and "this is something which is in demand in our organisation" (Managers C and D). After the meeting, the report was reviewed once more by all participants, and at the next meeting in November 2009, the participants decided on specific items to be changed in the final report. Importantly, it was decided to keep the report confidential and not to disclose in the report how the specific companies were ranked.

We interviewed the participating managers about the outcome of the project and asked especially for the implications with respect to the forthcoming regulation. One of the participants remarked:

> They threatened to benchmark us already now in 2009 on our accounts from 2008, but it has faded out. Therefore, when there is no demand for it, we have chosen to voluntarily do what we are doing now. And maybe also to be a little prepared […] if it comes to a real benchmarking […] but it is also because we think, we can learn from each other (Manager A).

Another manager explained:

> […] in my opinion you get lots of information from these various bar charts […] but we know for sure the input data we have used are not of the best quality, and if we were to perform a detailed benchmarking, we should be more thorough in our implementation (Manager B).

When Manager D was asked whether all district-heating companies were able to reach the same understanding of the standardised chart of accounts, he answered:

> It will be very challenging, but surely, with some training […] there will be adjustments all the way. In other words, it gets better and better as you go through this. If you just do the ordinary benchmarking where you send data to the Danish District Heating Association, and they again put them into some tables they have and just throw the results out in your face, then you can't relate to them. You are to sit down around a table as we have done now and discuss what it is that we put into the different boxes. Because, if you just report your data, and they appear in some surveys or similar, then no one has the faintest idea how the numbers have come into existence (Manager D).

Regarding the experiences from the implementation and use of the benchmark model, he continues:

> […] the purpose of this project was to learn how to do our accounting and how to interpret the standardised chart of account's guideline (Manager D).

Although Company D did not adopt the benchmarking model in their daily work, the participant from the company stated that they have learnt a lot. Further, he remarked that the participation of the managers in the project improved the legitimacy of the report. Other companies decided to implement the data model as part of the management accounting systems: "We are converting [our chart of accounts] to the standardized chart of accounts. It's our plan that when we reach the end of the year it shall be ready, and we'll be on the standardized chart of accounts next year" (Manager F).

5.3 Benchmarking in use?

In April 2012, the six-city group met again to exchange experiences with the original benchmarking report, updating the data from 2008 with accounting data from 2010. Again the definitions of the benchmarking indicators were discussed in relation to variations in accounting principles, and adjustments were suggested. Manager E commented on the work so far: "The more we have worked on this, the better we can argue to the authorities on the best way to do benchmarking".

The second round of interviews took place in May and June 2012 as a follow-up on the meeting. When Manager A was asked about the results from the six-city benchmark project in her organisation, she answered:

> We have a business plan […] where we plan our activities for the next 13-24 months. Here we use benchmarking, because we have targets for everything related to personnel, environment, etc. But we also have something on competitiveness. We have to be competitive. This we measure in relation to the general statistics for the sector, and more specifically towards the six-city numbers (Manager A).

Company A also decided to incorporate the benchmark model into the targets approved by the board. The manager stated: "[W]e are now well equipped to enter a dialogue on how to make benchmark numbers, if the authorities introduce the benchmarking regulation".

Company B also included the benchmark model into their own organisation in an internal benchmarking based on data for three successive years. In addition, Company B revised their internal accounting guideline. There are still, however, some points which have to be settled, especially with regard to how to account for depreciation, as this is an important source of discrepancy between companies.

When asked directly whether the benchmark numbers were used in the organisation, Manager B answered that they had:

> […] used them in a management seminar a month ago, where we agreed to split up the overall objectives into the individual sections. Our section managers are now trying to set up some targets. So it's an on-going process (Manager B).

Regarding how they produce data for the benchmarking, several of the companies included dimension in their chart of accounts in order to prepare for consistent and repetitive benchmarking. In Company B, the benchmarking was used in the dialogue among managers, but no targets were set. Rather, the benchmarking was used to identify best practise and then visit the other companies as a learning process.

The benchmarking was also used in Company C:

> We must improve more than the others […] We have the strategy that our prices must be reduced compared with those of the other six-city members. That we can't do if we haven't a benchmark for it (Manager C).

When asked about the six-city benchmark model in use, Manager E answered:

> We use it a lot internally in the department […] If we do well or not so well, we look at these benchmarks for inspiration. We are quite proud of ourselves, but some people out there do it differently, giving them better results, and then we have a talk on what these differences are (Manager E).

Further, the manager from Company E explained they used the benchmarking model "as process benchmarking, especially in the cases where we say: here is something we don't understand".

In Company E, the benchmarking was used in relation to the board of directors, where action plans were presented if potential for improvement was identified:

> We have a topic on one of our yearly board meetings where we go through three different benchmarks: the six-city benchmark for heating and the two water and wastewater benchmarks (Manager E).

Finally, when Manager F was asked about the six-city benchmark model in use, he explained:

> I think we get better and better at using it, because […] now we get an overview, and see if anyone is outstanding, and you can see and discuss the explanation, where some are inexpensive, and some are more expensive on the same level. And start to learn from each other, and that's why we have started this process benchmarking within the six-city group on distribution pipelines where we look into renovating them, we look into administration and so forth (Manager F).

6. Discussion

From our observations at the meeting and the interviews with the participants, it was clear that the benchmarking model existed as a point of reference in most companies. It had substance as a report with specific indicators and bar charts, and in several of the companies it was embedded in accounting manuals, charts of accounts, spreadsheets and accounting routines. The report was circulated within the companies, and it formed the basis for presentations to the board of directors, to management groups and to other members of the Danish District-Heating Association.

Apparently, the benchmarking model formed part of strategies, it was the basis for improving operations and it was taken as a point of departure when performance targets were set for either departments or the whole organisation. The respondents emphasised the importance of the common framework with agreed-upon definitions and a common chart of accounts when we interviewed them. Standardising the indicators to be used in the benchmarking and deciding on a common set of accounts was no easy exercise since each firm had their own accounting system and each had their own accounting principles. But the agreement on the chart of accounts was instrumental in creating a basis for the benchmarking that was accepted among the firms as "factual enough" information, as Siverbo (2014) also found in his study of benchmarking in a network.

The harmonisation of accounting principles and definitions of data, as well as adjustments of accounting numbers to fit into the representation of the model, were key themes at the meetings. Although these were necessary technical steps in the development of the model, the meetings and the exchange of information gradually increased mutual understanding of differences and similarities among firms, created trust and strengthened the relationships within the network.

At the same time as standardisation was pursued, much flexibility was allowed. Importantly, however, the companies did not follow the same approach as the first attempt to develop a common model some years earlier, where the project ended up in two different models: one based on the already available accounting data and one where each company were allowed almost any correction to their own data when comparing it with that of the other companies. This time, much care was taken to understand differences, come to agreement and negotiate a common order where all companies were represented in the same model. Of course, this produced a ranking, but dissimilarities were emphasised, and differences in rankings were attributed just as much to differences among firms as to differences in managerial performance. Furthermore, the specific points of reference were disguised when presenting the model.

The format of a new performance measurement like the benchmarking model can be highly pertinent in the process of institutionalisation (Dambrin *et al.,* 2007), and radically new or rigid techniques may have more difficulty being accepted than flexible

and ambiguous techniques. As it contained at the same time a new common point of reference and a part of the usual way of doing accounting, old and new ways of doing things were allowed to co-exist in the new benchmarking approach. In all organisations except Company F, the new benchmark model was merged with old habits and existing systems and the benchmarking model seems to be accepted in the organisations. Even in Company F, it was not abandoned. Linking familiar organisational routines, such as accounting, budgeting and strategy, together with new rules and procedures, such as the introduction of the benchmark model, thus seems to represent a satisfactory solution (cf. Burns and Scapens, 2000, p. 12) shaped by the existing routines and institutions in the selection and implementation process.

In their survey of public sector benchmarking, Braadbaart and Yusnandarshah (2008) emphasised problems of data quality and comparability, as well as the struggle involved in designing meaningful performance indicators related to internal accounting systems as a hindrance to successful adoption of benchmarking. This was also the case in the six-city process, although many obstacles were overcome when the model was operationalized as bar charts.

The six-city members embarked voluntary on the benchmarking project and were in this sense both "initiators" and actors (cf. Siverbo, 2014) in the project, although institutional pressure from the authorities for a future benchmark regulation of the sector was present. The framing of the forthcoming regulatory changes was the obvious reason for initiating the project in order to stay ahead of the regulation and to influence "the forging of tomorrow's rules" (Scott, 1993). The data indicates that the results from the benchmarking project were used to position the organisation while waiting for the benchmarking regulation and the results were used defensively to demonstrate accountability (Bowerman *et al.,* 2002, p. 441) to protect the organisation from potential criticism, for example, to stay ahead of an upcoming compulsory benchmarking, or to prepare for an external review. But the concerns for efficiency improvements and cost control were just as much present in the dialogue at the meetings and when we interviewed the participants.

Studies of changes in public organisations have often emphasised that another management rationale prevails in public companies and that public sector companies often only ceremonially implement new control tools. Consequently, it is, as Siverbo and Johansson (2006) point out, difficult to determine whether benchmarking-based control models affect organisations or whether the models are decoupled from practice. The interviews in this paper, however, show that the benchmarking model affects the managerial rationales and that actual changes appear to be initiated.

The benchmarking project has brought about a certain pressure for improvements. Most of the companies have made changes in their management practices and accounting principles as a result of the new project, but there has not been a revolutionary change in the companies as most existing practices seems still to be in existence (cf. Johnsen, 1999). However, new practices have been initiated, and the benchmarking model is being put to use.

The indicators in the benchmarking reduce the overall performance of the companies to a few bar charts even though there are more complicated calculations behind them. From the interviews, it seems as if the results are regarded almost as factual demonstration of performance, although they are based upon negotiations, adjustments and recalculations. Whether the actual ranking of the firms is based on strategic behaviour when constructing the benchmarking model, we cannot tell from the reports.

7. Conclusion

The firms in the six-city group engaged in the voluntary inter-organisational collaboration because they expected increased coercive institutional pressure from stakeholders and from re-regulation in particular. The results indicate that the companies actively used the results from the benchmarking project in their organisations but also that the results were used simultaneously to legitimise and rationalise current operations. Further, the case demonstrates how the participating organisations were able to negotiate and agree on the meaning of accounting guidelines and not just continue their previous way of conducting their accounting.

The benchmarking project was initiated at a time when the Danish Government decided to introduce a new performance-based regulation scheme by benchmarking individual companies with best practice. The institutional pressure from the forthcoming regulation was influencing the development of the benchmarking model, and it seems likely that the firms' interest in being prepared for the regulation in order not to be met with excessive demands for efficiency improvements was an important factor for the implementation of the model. The results from the benchmarking were also used by some of the firms in their negotiation of resources internally, and, similarly to Siverbo's (2014) conclusion, this use of the model seems to be important for its implementation across the network and internally in the firm.

We also find support for Siverbo's (2014) conclusion that the establishment of factual (or "factual enough") information to be used for benchmarking is a prerequisite for implementation of benchmarking. Actually, the whole benchmarking project we followed was centred on the creation of factual information through charts of accounts, reports, indicators and bar charts. The respondents had experiences with a previous project where they had not focused enough on the common and agreed-upon definitions of data and where the implementation had failed. In the project we followed, accounting information was made factual and the firms were able to cooperate and strengthen the network through the project.

Although care should be taken when reaching conclusions on a case study, we assert that organisations in a network-benchmarking setting actually can improve operations and learn from each other's experiences, e.g. when the network members, based on their relative performance evaluations, are exchanging experiences of more process-related matters. However, we also suggest that the benchmarking project was used for agenda setting and the "forging of tomorrow's rules" (cf. Scott, 1993, p. 296). Thus, the study exemplifies "how embedded agents influenced by institutional contradictions take collective actions in order to achieve institutional change" as suggested by Sharma *et al.* (2010, p. 262). So, instead of benchmarking leading to either learning or politics, the study indicates that these two aspects are not mutually exclusive.

The study of the six-city project has demonstrated how the interpretation and understanding of accounting rules and standards differ among companies and how order and interpretations are negotiated in a social process. If similarities and differences are not dealt within this process, it seems unlikely that a standardised chart of accounts will actually contribute to standardising data and ensuring a sufficient data quality for benchmarking purposes. Additionally, it became more and more evident during the benchmarking process that accounting principles in relation to assets, including depreciations, represent a specific challenge. No easy solution to this problem is obvious because most district-heating companies do not have a (traditional) balance sheet where assets are recognised.

Bringing six somewhat similar companies together and agreeing on a common understanding of accounting-based indicators was possible. But introducing a standardised chart of accounts based on a mutual agreement among 400 heterogeneous companies within the Danish district-heating sector will probably be extremely complicated if not impossible. Among the key factors that seem to have contributed to the agreement realised among the six-city group is that it was a small group of large companies with the technical expertise to solve the challenges in relation to the accounting principles. Furthermore, it is important to note that an agreement was reached to keep the ranking confidential. The necessity for this was realised ten years earlier when the same companies attempted to develop a benchmark model but failed because ranking was not held confidential.

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