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Modernization through Benchmarking:
An Analysis of Three Utility companies

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Abstract

Benchmarking has become popular as a way of evaluating the efficiency of public organizations. This article illustrates how three public companies in the supply sector perceive the implementation of regulatory benchmarking, how they react, what actions are initiated and what dilemmas it involves. Emphasis is put on assessing whether benchmarking results in actual changes and how the companies react to the pressures of rationalization that challenge existing professional understanding. The article is based on ethnomethodology with the use of the notion of account, where primary data collection has taken place through research interview.

Keywords: Benchmarking, Ethnomethodology, Electricity Companies, Utility Companies

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1 Introduction

For a number of years, the public sector has been criticized for ineffectiveness. This has led to comprehensive changes where previous management practice has been revised (Lapsley & Pallot 2000). This reformation of the public sector, in literature referred to as New Public Management (Hood 1991, 1995; Pollitt 1995), has meant that companies within the public sector have been forced to broaden or reorganize their activities in relation to new needs and possibilities, or to reconsider their working methods by e.g. reorganizing or introducing new management practices (Stewart & Kimber 1996).

In an analysis of reforms in eleven countries, Olson *et al.* (1998) summarizes the changes in the financial control of the public sector under the heading New Public Financial Management. However, Olson *et al.* (1998, p. 11) also note that the actual changes in financial management often seem limited and even symbolic, at least in the short term. For example, in a study of budget reporting, Carlin (2002) questions the actual changes. Even though the public sector in Australia is one of the most reformed public sectors, Carlin (2002) shows that with regard to reporting there is a great difference between official expectations and actual budget reporting practice. Similarly Haveri (2008) finds in an evaluation of inter-municipal co-operation that although the rhetoric changes considerably actual practice undergoes much less change.

The utility sector – covering electricity, district heating, gas, water, sewage etc – with its monopoly-like structure has also been criticized for inefficiency. In line with NPM recommendations this has in many countries, including Denmark, resulted in a liberalization transforming the structures of the companies and changing the rules governing their operations (Jamاسب *et al.* 2003). For these companies it is particularly important that they demonstrate their ability to improve productivity (cf. Berman 1998), as productivity links the organization's objectives together with those of the stakeholders. Moreover, the public-owned utility companies are facing the dilemma that, on the one hand, their operations are heavily regulated and they have politically determined objectives, but, on the other hand, they are required to be accountable for financial measures in a similar way to private companies.

Benchmarking has been used to compare performance in a number of areas (e.g. Bowerman & Ball 2000; Bowerman & Francis 2001; Siverbo & Johansson 2006) to reveal dif-

ferences and to show ways of improving performance (cf. Helden & Tillema 2005). Benchmarking is also increasingly being used to calculate efficiency improvement targets in regulatory regimes based on price caps (Gronli 2001; Irastorza 2003; Jamasb & Pollitt 2003; Krauss 2006). Thus, benchmarking fits well with the NPM literature (Hood 1991, 1995; Osborne & Gaebler 1992) which places ‘rationality at its core’ (Lapsley & Pallot, 2000, p. 216), implying that decisions flow directly from an objective analysis of alternatives into actions.

However, Olson *et al.* (1998) emphasizes that the implementation of the new control and management techniques is not as simple as supposed and that attention should be directed to the fact that the public sector basically works on other premises than the private sector. Further, research following the perspective of new institutional organization theory (Meyer & Rowan 1977; DiMaggio & Powell 1983) emphasizes that the adoption of new management techniques and organizational forms may only be loosely coupled to the way organizations actually function, since the adoption may reflect the fact that organizations feel a need to demonstrate that they are using seemingly efficient control models (Siverbo & Johansson 2006).

In this article we will analyze the effect of implementing regulatory benchmarking by the Danish Energy Regulation Authority on three Danish public utility companies. We will focus especially on whether actual changes in the companies take place and how companies react to the pressure for improvements in the cost structure that challenge professional identity and understanding. The empirical foundation for the article is three Danish municipal utility companies; each responsible for the supply of water, district heating and electricity as well as related tasks such as sewerage and refuse collection in three corresponding municipalities. The data was collected from interviews with managers and employees, who, based on their perception of the situation, account for the actions and choices made. The analysis is based on ethnomethodology with the use of ‘the notion of account’ (cf. Garfinkel 1967; Scott & Lyman 1968).

The rest of the article is structured as follows: Section 2 describes the liberalization of the electricity sector in Denmark. After that, section 3 discusses the use of regulatory benchmarking, and section 4 describes the empirical basis of the article and the methodology. Subsequently, section 5 presents and analyses the empirical results, and finally the article concludes in section 6 with a discussion of the results and the implications.

2 The Danish Electricity Sector: From Monopoly to Market

The network industries, including telecommunications, natural gas, electric power, and railroads, have characteristics which historically has led to the creation of state-owned or

private regulated, vertically integrated monopolies in many countries (Jamash & Pollitt 2007). Over the last twenty years several of these network industries have been privatized, restructured, and some vertical segments deregulated.

The reform program typically involves so-called unbundling, i.e. the vertical separation of potentially competitive segments, which are gradually deregulated, from remaining network segments that are assumed to have natural monopoly characteristics and continue to be subject to price, network access, service quality and entry regulations (Joskow 2006, 2007; Newbery 2001).

2.1 The electricity sector

The electricity sector comprise distinct but inter-related activities: Generation, transmission, distribution and supply (cf. Jamash & Pollitt 2007). *Generation* comprise production and conversion of electric power as well as the *supply* consisting of metering and billing of end-users. These two areas are generally considered as potentially competitive activities. The two other types of activities, *transmission* which involves long-distance transportation of high-voltage electricity and *distribution* which is the transportation of low-voltage electricity involving cables, transformers, control systems etc. are both characterized as natural monopolies.

In Denmark the generation of electricity is separated from the transmission and distribution. It is the transmission and distribution performed by the grid companies that are in focus in this article. The electricity system is divided in two subsystems where West Denmark (Jutland and Funen) is synchronous with the European Continent, and East Denmark (Zealand and Lolland-Falster) is synchronous with the rest of Scandinavia. Electricity is generated at central power plants and small decentralized plants as well as wind turbines, and sold on commercial terms where the market is regulated by the Competition Act.

The grid companies performing transmission and distribution are run on the basis of licences, giving them a monopoly in the transfer of electricity to the customers in their licence area. There are three types of grid company: The overall 400 kV transmission grid is operated by the state-owned company Energinet.dk, while twelve regional transmission companies own grids covering 9,000 km in total with a voltage level of 132/150 – 30 kV and transfer electricity to the distribution grids. Finally, about 120 local distribution firms own grids covering 150,000 km in total with a voltage level of 20 – 0.4 kV. These distribution companies transfer electricity to the final customers and are responsible for metering etc. (Danish Energy Regulation Authority 2007).

The grid companies operate according to the financial principle that revenue and expenditure must balance. Hence the electricity prices reflect to a certain extent the cost level

and thus the efficiency of the companies. However, there are many local conditions which make the companies' electricity cost, and thus prices, difficult to compare, e.g. depending on whether the companies primarily operate in rural or city areas, whether the companies transport large amounts of energy to just a few customers, and depending on the types of cables used.

2.2 Change in the Market Structure

The European liberalization was put into force in 1996 as the European Court of Justice had on several occasions ruled that electricity is a good and not a service. This implied that supply of electricity should be subject to the normal rules of competition as established by the EU treaties of Rome and Maastricht from 1957 and 1993, respectively. Most importantly this led to the unbundling of activities because of the separate legal treatment of the commodity electricity and the supply of electricity which is a service. The process has been manifested by EU directives (see Meeus *et al.* 2005 for an overview) and has resulted in changes leading to more market-based regulations where incentive regulation mechanisms are introduced.

The expectation has been that more powerful incentives would lead regulated firms to reduce costs, improve service quality in a cost effective way, stimulate (or at least not impede) the introduction of new products and services, and stimulate efficient investment in and pricing of access to regulated network infrastructure services (Joskow 2006). Further, it has been emphasized by the Danish Competition Authority (1998) that the supply systems are now so developed that they should be subject to competition, and it has been argued by the European Commission (1999) that the technological development also means that the boundaries for natural monopoly are starting to change.

The problem with the monopoly structure in the electricity sector is undoubtedly that it has been a source of inefficiency and provides limited financial incentives to pursue cost minimization or innovation. Thus, it was the expectation of the Danish Competition Authority (1998) that competition within the sector would help bring about efficiency gains and socio-economic advantages, while the remaining monopolies would be closely monitored and made accountable for their costs to ensure efficiency.

In order to change the market structure in the electricity field, it was necessary to change the legislative basis. Hence a new electricity law was adopted by the Danish Parliament in 1999. Since then, liberalization has taken place over several stages. Finally, the opening up of the market, which became applicable to all consumers as of 1 January 2003, has meant that electricity utility companies as well as consumers are now free to choose which supplier they subscribe to. In this way, the grid is maintained as a monopoly, but it is open to

other providers of electricity according to the principles of third-party access (Meeus *et al.* 2005).

The legislative requirements have resulted in a number of regulatory and organizational changes in the electricity sector including the requirement to establish an independent regulatory authority with a certain set of competencies (Larsen *et al.* 2006). In Denmark two agencies are jointly responsible for the economic regulation of the energy sector: Danish Energy Authority and Danish Energy Regulation Authority (see Somicid 2005 for a more detailed description of the responsibilities) while the general regulation regarding competition is undertaken by a third agency: the Danish Competition Authority. All the agencies are very active in improving competition and efficiency in the sector and the companies are now facing demands for market orientation and modernization in general as there are not only from the independent regulators but also from the public considerable interest in the performance of the sector.

In order to ensure survival in the long term, the companies must not only possess the necessary competencies, they must also preserve economic legitimacy, i.e. in the eyes of the various stakeholders (including consumers and authorities), they must appear as competent actors capable of making the right strategic decisions and managing the companies in accordance with the expectations. Here, benchmarking, based on both economic and institutional reasoning (cf. Brignall *et al.* & Modell 2000) can, as demonstrated by Helden and Tillema (2005), be seen as a mechanism for economic legitimacy.

3 Benchmarking

Benchmarking is one of the private sector managerialist tools whose application and significance is rapidly increasing in the public sector (Bowerman *et al.* 2001; Bruder & Gray 1994; Helden & Tillema 2005). Broadly, benchmarking can be defined as comparison of some measure of actual performance against a reference or benchmark performance (Jamasp & Pollitt 2001) but some researches, e.g. Siverbo & Johansson (2006) find that benchmarking imply that the evaluation of performance should be follow by a comparison of processes in order to identify reasons for discrepancies in performance. However, many of the evaluations performed in the public sector are only based on relative performance evaluation (Siverbo & Johansson 2006; Nortcott & Llewellyn 2003) and are thus not benchmarking in a more narrow sense.

Often benchmarking is seen as a substitute for market forces since it provides a mechanism which stimulates poorly performing suppliers to operate more effectively and efficiently (Bowerman & Ball 2000; Helden & Tillema 2005). This was for instance the case in

the UK water industry, where the purpose of using benchmarking was to use “the examples of the best to set standards for the others to introduce an element of comparative competition” (Ogden 1997, p. 542). Thus, benchmarking is often in the programs of reform emphasized in relation to the need to spread best practice and encourage others to follow the example of the best (Bowerman *et al.* 2001). However, benchmarking is based on the assumption that organizations want to copy best practices and that performance comparisons results in performance improvements (Camp 1989; Spendolini 1992; Bruder & Gray 1994) although these assumptions as remarked by Helden & Tillema (2005) rarely are examined.

It is especially in regulated industries that benchmarking is seen as alternative to market forces, and it has become a widely used tool as a regulatory device (Giannakis *et al.* 2005; Helden & Tillema 2005). Further, tests of competitiveness or elements of a comparative competition are often referred to in the policy documents arguing for the use of benchmarking (Bowerman & Ball 2000, p. 21; Ogden 1997). This was also the case with the Danish electricity grid, where direct competition could not be established due to the monopoly structure.

3.1 Regulatory benchmarking

When distribution utilities are regulated the traditional cost-of-service regulation allow companies to recover their costs, often including a risk free-free fixed rate of return and companies therefore have little incentive to minimize costs. In several countries, an important part of the reform agenda has included the introduction of incentive regulation mechanisms for the remaining regulated segments as an alternative to traditional cost-of service or rate-of-return regulation (Grønli 2001; Joskow 2006; Norton et al 2002).

Incentive and performance-based schemes are designed to provide incentive for productive efficiency by compensation the companies with part of their cost savings. There has been proposed a large number of methods (see Joskow 2007 for an overview) including price (or revenue) cap schemes and Yardstick competition to mention the two main methods used in practice (Farsi *et al* 2007). *Price cap regulation* sets the maximum rate of increase in end-user prices to equal the inflation rate minus a productivity growth offset referred to as the X-factor. In the most simple models employed by many US regulators the X-factor is set to the estimated total factor productivity growth for the whole sector (Sappington *et al.* 2001), but in many new regulatory schemes adopted by European regulators the X-factor is set as an annual target for each individual company (Jamasp & Pollitt 2003). Therefore the regulator most often employs a benchmarking model to set the differentiated price caps based on companies performance relatively to other firms (Farsi *et al.* 2007). This latter method is known as *Yardstick competition* (Shleifer 1985; Dassler *et al.* 2006).

There are several different approaches to determining the benchmark. In principle it could be done by statistical analysis of existing companies data as has been done in the UK (Dassler *et al.* 2006; Irastorza 2003) but many European regulatory authority (Jamasp & Pollitt 2001; Ajodhia *et al.* 2003; Nillesen & Pollitt 2007) have used the technique Data Envelopment Analysis where an efficient production frontier is calculated using mathematical programming techniques. See e.g. Farsi *et al.* (2007) or Jamasp & Pollitt (2003) for more details on the specific models used.

None of the regulatory models are without problems and opportunistic or strategic behavior by regulated firms has been discussed extensively in the literature, both in the context of traditional regulatory models, i.e. cost-of-serve and rate-of-return regulation (Armstrong *et al.* 1994; Vickers & Yarrow 1993), and the benchmark based models (Irastorza 2003; Jamasp *et al.* 2003, 2004). Broadly speaking strategic behavior refer to the type of behavior that aims to increase profit without achieving real efficiency gains or behavior that are directed towards avoiding lowering cost and hence prices even though it might be possible to do so. Such behavior is not necessarily illegal and should be considered part of the regulatory process, but from a regulatory point of view the strategic behavior should be taken into consideration when regulatory models are designed. See also Joskow (2007) for a detailed treatment of regulation of natural monopolies, including regulatory models and strategic behavior.

3.2 The Danish regulatory model

At the time of collecting interview data for this article The Danish Energy Regulatory Authority (2004) had adopted a regulatory model based on yardstick competition, where companies are compared based on their cost levels and where a revenue cap was determined in advance based on a company's positioning in the cost based benchmarking. Compared to the models used in some of the other European countries the Danish Energi Authority chose deliberately to use a model which was considered, in principle, to be simple. The hope was that it would be easier for companies to understand how they were positioned in the benchmark and that this would improve the acceptance of the model in the sector.

The overall principle in the benchmarking model is that a so-called *grid volume* is calculated for each company as an aggregated output measure (see below). Based on the grid volume a simple *cost index* is for each company calculated for operating expenses and capital expenses (i.e. depreciations) respectively as the actual cost in the two categories divided by the netvolumen. This means that the cost index reflects the capital expenses and the operating expenses per unit of net volume. Next, the efficiency of each company is calculated by dividing the cost index by the best practice cost, where the best practice cost is defined as the 85%-fractile for transmission companies and the 75%-fractile for distribution companies. Finally, the revenue cap for each company was determined based on two components: All

companies were imposed an annual efficiency requirement of 3%. Moreover an individual efficiency requirement was determined for the companies which are not placed in the best practice fractile. The individual efficiency requirement could be up to 20% in total for the two-year-period 2002 and 2003 on operating costs and 3% for the two-year-period on investment costs.

In the model outlined above the most complicated part was the calculation of the grid volume. The basic principle was that a weighted sum of the number of transformer stations and the kilometers of cables within the following categories: 132-150kV, 30-60kV, 10-20kV and 0.4kV were calculated. These elements were considered to be the main cost drivers and the weight had been determined for capital expenses and operating expenses separately in a detailed study of accounting data for all the companies in the sector. The grid volume was corrected for a few factors where the most important was that the grid volume of the distribution companies were adjusted by a factor reflecting the density of the distribution net calculated as the number of customers divided by the kilometers of 0.4kV cables.

While the overall principle is simple, the calculation of the specific weights and adjustment factors were based on more complicated studies of the cost structure and the specific position of the companies. Further, the precision of the model was dependent on the accounting data provided by the firms and how the different types of grid were classified. As the revenue caps determine the allowed cost structure and thereby also the prices the company is allowed to charge the customers the positioning in the benchmarking had in practice very far-reaching implications for the companies. See Grönli (2001) for further details of the Danish regulatory model as compared to the other Scandinavian countries.

At the end of 2003, however, benchmarking based regulation of the prices was temporarily abandoned due to problems on the one hand with calculating the capital expenditures on a comparable basis and on the other hand because a number of the companies unexpectedly accumulated reserves in the form of 'unused revenue caps'. From 2004, the solution was essentially to fix prices at their realized levels from January 2004 so that grid companies with high prices were allowed to continue charging high prices, while companies that had cut costs had to continue with lower charges (Sumicsid, 2005). In 2007, the Danish Energy Regulation Authority developed a revised version of the benchmarking model, which is effective from 2008. Based on the revised model the company-specific requirements for cost reduction will be 0-4%. However, this model is basically based on the same principles as the one described above and it has been put in effect after the data for this article was collected.

4 The Companies and the Methodology

The article is based on a qualitative field study conducted in three different Danish electricity companies over a period of three years. The research can be said to be partly based on an “Embedded Multiple Case Study Design” (Yin 2003), the results of which are potentially more compelling than the results from a single case study.

Following Silverman (1993) and Ahrens & Chapman (2007) we focus on methodology rather than method and we see the qualitative methodology fundamentally as an alternative to positivism. In the empirical part of the paper we adopt ethnomethodology (Ten Have 2004) as the methodological approach, and the subsequent analysis of the three case companies is based on descriptions of what the actors do and how the practitioners in the individual utility companies as a community of members create and maintain order and comprehensibility in their social lives (cf. Ten Have 2004, p. 14).

4.1 Analysing accounts

This article is based on the use of ‘accounts’ (cf. Garfinkel 1967; Scott & Lyman 1968), where the point of departure is descriptions of what the practitioners do and how the individual companies as a community of members create and maintain order and comprehensibility in their social lives (cf. Ten Have 2004, p. 14). These accounts are, as emphasized by Scott & Lyman (1968, p. 47), used when people are in situations where actions cannot be taken for granted and where the actors are not sure of the role they themselves or other actors play. The utility companies may be said to be in such a situation that they are on their way from being public monopoly companies to a new, unknown situation.

The methodology opens up for analyzing the accounts of the everyday actions which are normally not questioned. Ethnomethodology introduces, as stated by Czarniawska (2004, p. 6) ‘the notion of accountability’. This is also a notion used by Garfinkel (1967) who by this means ‘observable’ and ‘reportable’ (1967, p. 1) in a way that actors for instance sees and tells about a practical situation. Moreover, Garfinkel (1967, p. 3) emphasizes that accounts are not independent from their social context. They must be recognizable to appear rational.

In this study, interviewing is used to generate *accounts* – i.e. statements where actors by means of explanation, justification, description and in other ways find logic and order in the events, persons or actions which they talk about (cf. Baker 2002; Scott & Lyman 1968). In such interviews, we deal with a staged situation where the researcher plays the role of ‘the stranger’ and the practitioners agree to tell about their actions (Czarniawska, 2004, p. 91). The knowledge produced in an interview is always embedded in the context and the “unearthing of local meaning and uses of management accounting information” has as mentioned

by Ahrens & Chapman (2007, p. 310) often been regarded as central to the task of the qualitative researcher.

Originally, ethnomethodologists attached importance to analyzing 'natural' conversations which are untouched, neutral and unbiased (Silverman 1985, p. 156). Thus, Ten Have (2004, p. 56) writes that to ethnomethodologists interview is more the subject, and observation rather than interview is emphasized as primary data source. Ten Have (2004, p. 75) however recognizes the interview in some form as method as it is often more efficient to invite people to a 'special conversation session' than to listen to what they are saying while they are busy living their ordinary lives. Silverman (1985) is more open to the interview and does not only recognize it as an object, but also as a resource in an ethnomethodological study because as he writes: 'Interview data display cultural realities which are neither biased nor accurate, but simply "real"' (Silverman 1985, s. 157).

Interviewing is often perceived as a method of collecting data, but in accordance with Baker (1997) and the ethnomethodological point of departure, we just as much view the interview, which constitutes the basis for this article, as a process in which data is generated. Here, the interview is understood as a process where the interviewer and the interviewee are both involved in generating a version of the social reality built around categories and activities in a collaborative effort (cf. Kreiner & Mouritsen 2005).

Questions such as the following were posed to the companies: 'Has being a utility company changed during recent years?' And 'Do the surroundings place different demands on you than previously?' This means that the interviewed parties were asked to account for their situation and actions (cf. Scott & Lyman 1968, p. 46). Such accounts may also be understood as sense-making (Weick 1988) through which the participants by means of explanation, justification, description and in other ways find logic and order in the events, persons and actions which they talk about.

4.2 The Case Companies

The companies which took part in the project were three municipal utility companies which are shortly presented with factual information in textbox 1. The study was initiated because all three companies participated in a project concerning development of intellectual capital statements which was initiated by the Danish Commerce and Companies Agency in cooperation with the trade association of the utility companies. In connection with the study of the companies' work with intellectual capital statements, we had the opportunity to study modernization in general and the companies' work with different management techniques in relation to this.

We followed the companies from the period from August 2001 to the summer of 2004 and started interviewing one person in the companies twice in August 2001 and April 2002, respectively. Then, with a view to making a more specific study of the effects of the benchmarking project an introductory interview was carried out in each of the case companies at the end of 2002. In the summer of 2003, further interviews were conducted. A total of nineteen interviews with managers and employees were made, allocated with nine, four and six interviews at Forsyningsvirksomhederne Aalborg, Roskilde Forsyning and Frederiksberg Forsyning, respectively..

Forsyningsvirksomhederne Aalborg (FA) handles the supply of gas, district heating, water and electricity and ensures sewers and refuse collection in the municipality of Aalborg. FA services close on 118,000 customers. The company is operated as a self-financing, non-profit business unit under the municipality of Aalborg and has 450 employees, of which 89 are employed in the administration. Besides from the political management in the form of the supply committee and the alderman, the company consists of the managing director who together with the administration handle the day-to-day management and operation. Moreover, the individual supply companies are divided according to type of supply. As a consequence of the Danish Electricity Act, Aalborg Kommune Elforsyningen (AKE) has been divided into three companies: AKE Net, AKE Forsyning A/S and AKE Enterprise A/S. AKE Forsyning has together with five other North Jutland distribution companies created Nordjysk Elhandel to obtain sufficient capacity to operate on the liberalised electricity market (www.aalborg.dk).

Roskilde Forsyning (RF) handles the electricity, water and heat supply in the municipality of Roskilde and has approx. 40,000 customers. The company has 72 employees. By the end of 2000, RF was given the opportunity to gather the supply departments in one place, and a new organisational structure with division according to work function was chosen as replacement for the old division according to type of supply. The services rendered by the supply department are 100% user charged. The electricity supply is divided into a network company which will continue to be a part of the local government services, and a supply company (Roskilde Energi A/S) which is 100% owned by the network company. (www.roskilde-forsyning.dk)

Frederiksberg Forsyning (FF) is in charge of the supply of gas, district heating, electricity and water as well as the drainage of waste water in the municipality of Frederiksberg. There are 180 employees to supply approx. 60,000 customers in Frederiksberg. FF is 100 % owned by the municipality of Frederiksberg. On 1 October 2000, the company was reorganised across types of supply, and a process organisation which aims to ensure that FF can handle the free competition on the electricity market was created (www.frb-forsyning.dk).

Textbox 1: The three utility companies

The interviewees at *Forsyningsvirksomhederne Aalborg* were: the vice-director, the store and purchase manager, the manager of the technical secretariat, the manager of IT planning, the manager of the recruitment office, the manager of the customer centre, the chief financial officer, the manager of the secretariat, and the manager of the energy centre, at *Roskilde Forsyning*: the supply manager, the operational manager, the chief financial officer, the department engineer and a controller, and at *Frederiksberg Forsyning*: the manager, a recruitment consultant, the process consultant, a controller, the administration manager and the customer and communication manager. The individuals are identified by their initials.

The interviews were based on a thematic question guide and lasted typically from one hour to one-and-a-half hours. Subsequently, a few clarifying questions were asked by telephone. Besides from interview, observations are also used where especially meetings among the utility companies have been a source of inspiration to formulating the research questions, but the further the project came in the process, the less the observations seemed to be the right way to generate data.

4.3 Quality Criteria of the Study

In qualitative studies *reliability* is related to the consistency of the results, interview, transcription and analysis in such a way that special attention is paid to minimize the errors and biases i.e. by raising leading questions. *Validity*, in comparison with this, concerns, according to Kvale (1996, p. 238), the conformity of the phenomenon studied and the way it is studied. The question of reliability takes as Ahrens & Chapman (2007) emphasize a different significance in qualitative studies that are not characterized by the use of research instruments even though they might be used as done in the empirical part of the project where a loosely structured, thematic interview guide has been used

Social reality is fundamentally context specific and the interviewees “can, and do strive to undo their history and invent new concepts, images, and ways in which they want them to infuse action” (Ahrens & Chapman 2007, p. 311). Therefore we have on the one hand no hard data in the form of e.g. questionnaire data that can be subject to statistical tests and on the other hand a number of context factors, including the dialog with the researcher and the researchers framing of the interview and the researchers theoretical interests cannot be separated from the data. This means as also emphasized by Ahrens & Chapman (2007) that we “should not expect identical results when two researchers study the same organization from different points of view” (Becker 1970, p. 20), but we should expect that “the conclusion of one study do not implicitly or explicitly contradict those of the other” (ibid.). Thus, the methodological considerations in this thesis will primarily emphasize validity and reliability.

Reliability deals with the reliability of the interviews, where special attention must be paid to the danger of unintended leading questions. The interviews were taped and subsequently transcribed word by word. With a view to strengthening the reliability, questions and whole interview sequences often were included in the presentation of data. Therefore, readers are able to evaluate the data for themselves. The questions are therefore included in the account given by the interviewee, as they are often not as open as in ethnographical interview methods.

Miles & Huberman (1994) emphasize that one must ensure that both internal validity and external validity are related. The central question in relation to *internal validity* is whether the conclusions make sense to the people who have been studied and to the readers. In other words, has an authentic portrait been given of what has been studied? In the presentation of the collated material, the data generation and data analysis were, as earlier mentioned, described and the interviewed practitioners 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 generalized and transferred to other areas. It is to be expected that cultural context plays a role and that it is primarily in Scandinavia or maybe more broadly in a Western European context that the results are valid. However, we believe that the results to some degree are valid for utility companies in many different settings and to public companies subject to pressure for modernization.

5 Benchmarking is Materialized

This article focuses on the Danish Energy Regulatory Authority's benchmarking project, an initiative that can be seen as an attempt 'at a distance' (cf. Latour 1987) to carry through politically defined goals (Ogden, 1997; Miller, 1991), where the politically determined requirement of cost minimization is pursued all the way to the individual organization. However, cost based benchmarking in utility companies opens up a potential conflict between the financial rationales which the benchmarking concept sets the stage for and the rationale which the practitioners enforce. Especially, there exists a conflict between cost savings focus in the benchmarking and the quality of service which from the point of view of politicians, customers and employees have a high priority.

Asked initially whether the liberalization and especially the benchmarking have any influence on the utility companies, KH from Roskilde Forsyning answers:

Yes, things are happening and the employees cannot quite understand it, it is difficult, ... I am about to claim that it is fashionable and, in three-four years, nobody is interested in [benchmarking] anymore because then the politicians have obtained what they wanted with it.

The statement underlines on the one hand the fact that the benchmarking project was initiated by politicians to make the financial consequences of actions taken by the utility companies more transparent and on the other hand that KH is very well aware that management concepts in the public sector come and go as political priorities change. But the question is whether this means that the benchmarking project can be ignored and will only become loosely coupled to the way the organizations function as suggested from the perspective

of institutional theory (DiMaggio & Powell 1983; Siverbo & Johansson 2006) maybe changing the rhetoric of the organizations (cf. Haveri 2008) but not the practice.

5.1 The Death Spiral

According to the practitioners, the benchmarking system is not only a question of enhancing efficiency to the extent possible, at least not if one wants to maintain earnings which ensure that the ability to secure the supply of electricity is maintained. The starting point for the benchmarking was the 2002 accounts, which serves as basis for revenue caps in the following years. This means, says JB from Forsyningsvirksomhederne Aalborg, that ‘if we cut costs too much in 2002, it is actually a disadvantage for us’. No matter what the level of cost is, a 3% cost reduction target is imposed. If expenses are kept right down, the revenue cap will still be reduced, meaning there will be less to cover the cost of operating the supply network. The companies are therefore well aware that it is not necessarily an advantage in the long run to be at the top of the Danish Energy Regulatory Authority’s list of efficient companies.

The practitioners act strategically according to the characteristics of the benchmarking model very much in line with Jamasb et al.’s (2003) survey of gaming in regulatory benchmarking based regimes, which confirms Helden & Tillema’s (2005, p. 356) hypothesis that organizations will tend to improve the indicator rather than the performance itself if the benchmarking indicator is perceived as ‘soft’. That this is the case is confirmed by BJ from Roskilde Forsyning who says:

... We were actually positioned rather well in benchmarking so that we only got the standard three [percent reduction]. Thus, we did not get individual [cost reduction] requirements. And from the beginning of the first benchmarking period – i.e. from 2000 to 2003 – we were actually in the top three. We probably won’t be positioned next year, but we have decided to say that we want to take advantage of the framework available. It’s the choice you make. But benchmarking has clearly given, an indication that you look at your organization in a somewhat different way than you did before because now there are suddenly figures against which you are weighted. So you pay attention when you are drawing up budgets, and you probably become a little bit more particular about how those budgets are structured.

Also VB from Frederiksberg Forsyning says:

We then had the great pleasure in 2001 to be the third most efficient electricity company in Denmark ... [but] we found out that ... if you reduce cost too much, you risk screwing yourself into a death spiral. The situation is such that your earnings levels are reduced each year no matter whether you are efficient or not. Those that are inefficient must then save more, but as you need to make it cheaper than you did the year before, and you then look at a new period, you take a look at the previous period and the year when it was best - i.e. was lowest. You can see that if you

are always compared to the year in which you had the lowest costs, you run the risk of suffering the benchmarking death in the end ... So it is also something we plan for, how to act in that system and not just cut costs to the death.

Both BJ and VB thus explain that the companies take advantage of the framework available. The practitioners are skeptical about the usefulness of the model and from their point of view; the Danish Energy Agency has not succeeded in developing a financial system which immediately makes it an advantage to enhance efficiency to the greatest possible extent. On the contrary, money needs to be spent on being granted a revenue cap in the future to cover the costs of operating the companies. Similar experiences, according to Irastorza (2003, p.36), have been reported from the UK electric distribution utilities where the use of revenue cap based regulations gives companies distorted incentives to adopt an inefficient mix of capital and operating expenses.

5.2 A Flexible Goal

JB from Forsyningsvirksomhederne Aalborg emphasize that the companies do not have any influence on the criteria according to which the companies are assessed. Having detected a certain critical tone of voice, we asked if the criteria were reasonable and JB tells about how he experiences the criteria for comparison of the companies as unfair to companies operating the larger cities as the assessment of what is town and what is city is interpreted differently. JB experiences that some 'country companies' themselves define cables in villages as 'city' and thus gets a favorable revenue cap compared to the actual expenses.

JB: [The benchmark] was then based on some standard values of things and there we think that the rural companies have been treated unfairly compared to the city companies. It is sort of difficult to explain.

I: Is it the valuation of the plants, or how?

JB: Well, it is also being calculated in different ways because ... a cable in a city is much more expensive to maintain and bury and remove again when it needs to be removed than a cable in a greenfield... and the Danish Energy Regulatory Authority has then distinguished between city, town and rural districts. And what is city and what is town and what is rural district? Well, in the open field, I can figure that out, that is a rural district, but we have also experienced that some have cheated on the weight. A village, saying that it is a city – but it is not. It is not so expensive to dig up in the town Ringe at Funen, in the main street of Ringe, as there is not so much traffic, the traffic is perhaps easier to bypass. Whereas when we dig up in the midtown of Aalborg and Copenhagen ... we may have to do it at night, and all the time it must be in a way so that the traffic is able to be there. It is not grass areas or something that just need to be seeded ... and there are many other cables which need to be taken into consideration. It is much more problematic to dig into the ground when there are electrical cables, gas pipelines, district heating pipelines, sew-

age pipes, water pipes, telephone cables, data lines and everything else that are laying down there in the ground. So we think it has been a little unfair to the big cities.

Establishing a comparison that seems fair and tamper-proof is not an easy matter and the increasing use of benchmarking analysis in electricity industry has as shown in Shuttleworth (2005) critical review of the literature raised serious concerns among regulators and companies regarding the reliability of efficiency estimates. The Danish Energy Regulatory Authority has attempted to improve on the sensitivity of the model and JB from Roskilde Forsyning tells in the interview how selected companies was asked to send in cost data for different types of cables, and based on this, an average has been created in order to make comparison possible.

However, it is probably a general weakness that the estimated efficiency requirements are sensitive to the adopted benchmarking approach (cf. Jamasb & Pollitt 2003; Estache *et al.* 2004; Kraus 2006). Thus, the choice of the approach can as also the companies in this study is very well aware, have important effects on the financial situation. Also BJ from Roskilde Forsyning expresses that the benchmarking model is complicated. He explains:

‘... That model, it is quite simply so sophisticated that if you attempt to explain it, nobody will understand it anyway. ... So it is not a simple model. The way the figures have been calculated, it is sophisticated, but what comes out of it, it is probably very general.’

LT from Frederiksberg Forsyning gives an example of the ‘rubber band’ of the benchmarking model: Another electricity company gave their customers incentives to assign the ownership of the service lines – from the pavement and into the customers’ house – to the company. LT further tells: “We know very well why [the other company] wants the service lines. Because in the whole benchmarking is included how many kilometers of cable you have. So therefore they would like to have all those service lines because then they get more kilometers of grid”. At Frederiksberg Forsyning, however, they do not believe that companies should include the service lines into the houses, and the before mentioned company has also been criticized quite a lot on that account.

5.3 As Ripples in the Water

Forsyningsvirksomhederne Aalborg has previously participated in voluntary benchmarking projects, especially a project in cooperation with five other utility firms where processes in a number of areas was benchmarking, and also in other areas within the utility sector have benchmarking been used. TC from Roskilde Forsyning tells about how in the water area they have begun with benchmarking together with 41 other water supplies. The benchmarking project takes place through the trade association in the water and sewer services area.

TC: ... [benchmarking] has been initiated within heat and also within water, and how we end up there, we dare not say yet, but probably not so well. Especially for water, there has been a tradition that they “just” spend money ... However; they have also begun to understand that they need to look at it rationally. ... They did not look at what they spend or the way they did it, if it could be made cheaper. So they could just raise the water price ... It has been considered as a virtual monopoly where they could do as they pleased and nobody could come and take it away from them. ... But anyway, now we are making this benchmarking and if we cannot live up to the requirements, then some others are going to come around and say to us: Then you must do so and so and so”.

Also in the district heating area, a process has been started, and that is probably because, tells BJ from Roskilde Forsyning, ‘you would like to be on the cutting edge if it should be announced from ministerial side that they want to make some cross-disciplinary benchmarking models like they have in the electricity area’.

It is from the many practitioners explanations clear that a process has been started where there is increased attention to the cost not only at areas that are already regulated through the benchmarking model but also in areas that could potentially be subject to similar regulation at another time. At Roskilde Forsyning, they have realized that they cannot consider the utility area as a monopoly where they without questions can raise the price. Therefore, it is necessary to aim for a reasonable cost and price level, otherwise TC knows very well that others are going to decide how things must be done. The argument is supported by KH who says: “[Previously] we just charged the money from the customers. Now within electricity, it is an open market, so you have to think twice – i.e. what is it you are doing? But the supply reliability still has a high priority’. The projects initiated by the government agencies thus seem to get consequences within the individual companies, positive as well as negative.

An example of the negative consequences it can, according to KH from Roskilde Forsyning, be expected to see an increase in the number of prolonged supply failure. Another example is a proposal about merging the emergency support systems in the different supply areas. This will save a lot of money, but will also have consequences, tells KH:

KH: ...it is a habit that when you tweak the water tap, there is water, when you tweak the radiator, there is heat, and when you press the contact, light is turned on, and then we of course need to think about – should it still be this way.

I: You mean one perhaps should get used to ...?

KH: Yes, prolonged interruptions of the various things, it may be a consequence of the developments taking place, but again also e.g. our emergency support systems... For me it would be OK to [merge the emergency systems], they just need to make a quantitative impact study of it before

they do it so that you are prepared for some of the things that may happen. I do know politicians; when the shit's hitting the fan, as they say, there is a line forming to wash hands. What kind of service would we like? Because it matters if it takes one hour or two hours before you arrive ... It is also a consequence of the liberalization.

The increased financial pressure may imply that we must reconsider what kind of supply security is needed. To date there has not, according to Peerbocus (2007), in the literature been any formal evidence that the restructuring of the electricity industry has caused a decline in system security. So the question is if service reliability really is at risk or KH's comments reflect a more general skepticism towards benchmarking (cf. Siverbo & Johansson 2006).

6 Discussion and Conclusion

The studies of changes in public organizations have often emphasized 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 & Johansson (2006) point out, difficult to determine whether benchmarking based control models affect what happens in organizations or whether they are decoupled from practice. The interviews in this article, however, show that the benchmarking model affects the control rationale and that actual changes appear to be initiated.

However, the article also points to the many problems and challenges that public companies face when, as recommended within the NPM discourse, they adopt control and management practices known from private companies. First and foremost, the practitioners are concerned about the supply security. But they are at the same time conscious of the fact that if they themselves do not initiate a modernization of their management control practice, then initiatives will come from government level forcing the companies to implement specific cost minimization such that they lose their opportunity of influence.

The benchmarking project has brought about a certain pressure for improvements, with the revenue caps emulating the effect of competition. The three companies have all had to adopt changes in their management practices and accounting principles as a result of the new demands. But, according to the practitioners, the focus on efficiency and improvements is subject to interpretation. In the opinion of the practitioners, the benchmarking model sets the stage for inappropriate behavior in that the companies can save themselves to death if they keep the cost level too low. Therefore, the practitioners are also creative in their use of the benchmarking model and attempt to position themselves as favorably as possible in comparison.

Further, the benchmarking figure is described as 'simple' even though there is a complicated calculation behind it. It also shows that there is a problem in reducing the company's revenue basis to one single key figure. After all, how much of the company's performance is based on strategic behavior within the benchmarking system, and how much is an actual measure of the service which the customer is offered and the company's costs minimizing efforts? Or even if a company improves its cost structure, its ranking in the benchmarking is evidently influenced by the performance scores of other companies that might or might not attempt to minimize cost (cf. Jamasb *et al.* 2003, p.70). The benchmarking figure says nothing about this. Thereby, a certain type of decoupling of the benchmarking measure takes place in order to maintain a level of earnings at which secure supply can still be delivered.

None of the companies express any discontent with the fact that some kind of measuring takes place. In general, there is an understanding that in one or the other way it is necessary to measure the performance supplied by the companies. As Berman (1998) writes, it is necessary to measure the productivity to maintain the trustworthiness of the public sector. Several of the practitioners, however, express concern over the consequences which liberalization may have on supply security as revenue allowances are continuously reduced. The benchmarking figure says nothing about the supply security, only the relative cost level. Actually, the differences in performance reflected in the benchmarking model merely measure the extent to which the model has failed to explain cost, as Shuttleworth (2005) points out, and whether this is a matter of inefficiency or whether it stems from some other factors not part of the model.

While there was much awareness about how the mechanisms of the benchmarking worked and how a company should act strategically to ensure the best possible terms, the companies also made real changes to their practice. As a consequence, the companies actually moved in the direction of customer orientation and greater cost efficiency, exactly the intention behind the implementation of the reforms.

The political agenda to improve the efficiency of the utility sector by means of benchmarking must in conclusion be said to be at least a partial success, as the companies have been forced to look at costs and also in a wider sense implement a more cost-conscious behavior. However, we do not yet know the long-term consequences of introducing a financial control rationale which challenges the technical control rationale, and time will only tell whether the wish for an efficient utility sector, in technical and financial terms, lives up to our expectations of a modern supply.

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