

RATIONALE FOR ADOPTING ACTIVITY-BASED COSTING IN HOSPITALS

Three longitudinal case studies

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Tiivistelmä suomeksi



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Abstract

In the 1990's, a large number of Finnish hospitals began implementing new cost accounting systems, which were aimed at pricing the hospital outputs at full cost. Often the method of choice was activity-based costing, which was in the process of being transferred from the manufacturing industry to health care service production. The aim of this study is to analyse the motivations and rationale of this phenomenon in the light of three longitudinal case studies.

The first case study is archival, using documents produced between 1996 and 2002. In the second case study, the data consists mainly of research diaries and personal observation and covers a hospital district activity-based costing and pricing project of 2000–2001. The third case study covers budgeting and costing development in a private, non-profit hospital by analysing documents and field notes. Institutional theory is used to interpret the findings in the three case studies.

The theoretical framework used in analysing the data draws on Roberts and Greenwood's (1997) ideas, according to which an organisation's rational and efficiency-seeking actions are constrained by both economic (bounded rationality) and institutional factors. The results indicate that different constraints imposed on efficiency-seeking behaviour such as activity-based costing implementation may lead to different solutions concerning implementation. It is noteworthy that while all three case organisations represent the health care sector, their approaches to activity-based costing have been quite dissimilar. While institutional theory leads us to believe that managerial accounting systems may be converging due to the institutional pressures, evidence from the case studies supports the notion that this convergence seems limited to the adoption of the systems – function of the systems seems to remain characteristically different.

Keywords: activity-based costing, constrained-efficiency framework, cost accounting, full cost pricing, health care, hospital, institutional theory

Järvinen, Janne, Perusteluja toimintolaskennan käyttöönotolle sairaaloissa.

Kolme pitkittäisaineistoon perustuvaa tapaustutkimusta

Taloustieteiden tiedekunta, Laskentatoimen ja rahoituksen yksikkö, Oulun yliopisto, PL 4600, 90014 Oulun yliopisto

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Tiivistelmä

Useat suomalaiset sairaalat aloittivat 1990-luvulla laajamittaisia kustannuslaskentaprojekteja, joissa tähdättiin täyskatteiseen hinnoitteluun. Usein valittuna menetelmänä oli toimintolaskenta, jota siirrettiin teollisesta toimintaympäristöstä terveydenhuollon palvelutuotantoon. Tutkimuksen tavoitteena on tarkastella tämän ilmiön syitä ja motiiveja kolmen tapaustutkimuksen valossa, joista kaksi on sairaanhoitopiirejä ja kolmas on voittoa tavoittelemattoman yhteisön omistama yksityinen sairaala.

Ensimmäisessä tapaustutkimuksessa aineisto on dokumentteihin perustuvaa arkistomateriaalia vuosilta 1996–2002. Lisäksi kustannuslaskentamallien rakennetta on tarkasteltu käymällä läpi laskelmissa tehtyjä rakenteellisia ja teknisiä ratkaisuja sekä laskentasääntöjä. Toisessa tapaustutkimuksessa aineisto koostuu pääasiassa tutkijan päiväkirjoista ja havainnoista, ja sisältää sairaanhoitopiirin laajuisen kustannuslaskenta- ja hinnoitteluprojektin kuvauksen vuosilta 2000–2001. Kolmannessa tapaustutkimuksessa käydään läpi yksityisen sairaalan budjetoinnin ja kustannuslaskennan kehitystä dokumentteihin ja tutkijan muistiinpanoihin nojautuen.

Teoreettisena viitekehyksenä aineiston tulkinnassa käytetään Robertsinkin ja Greenwoodin (1997) rajoitetun tehokkuuden mallia, jonka mukaan organisaation tehostamispyrkimyksiä rajoittavat sekä taloudelliseen rationaalisuuteen liittyvät tekijät (rajoitettu rationaalisuus) että institutionaaliset tekijät. Tutkimuksen tulokset osoittavat, että erityyppiset rajoittavat tekijät vaikuttavat organisaatioiden tehokkuuspyrkimykseen (joihin toimintolaskentaprojektit on luettava) siten, että lopputuloksena on erilaisia sovelluksia toimintolaskennan käyttöönotosta. On huomionarvoista, että vaikka kaikki tutkimuksen kohteena olleet tapaukset ovat erikoissairaanhoidon organisaatiota, niiden tavat ottaa toimintolaskenta käyttöön ovat olleet toisistaan hyvin poikkeavia. Vaikka institutionaaliseen teoriaan perustuvasta tutkimuksesta voikin tehdä sellaisen johtopäätöksen, että ulkoiset paineet muovaavat organisaatioita samanlaisiksi, näiden tapaustutkimusten perusteella on mahdollista väittää, että samanlaisuuden paineet liittyvät laskentajärjestelmien käyttöönottoon järjestelmien toiminnan jäädessä varsin erityyppisiksi.

Asiasanat: institutionaalinen teoria, kustannuslaskenta, rajoitetun tehokkuuden malli, sairaala, toimintolaskenta, täyskatteinen hinnoittelu

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Oulu, November 2005

Janne Järvinen

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1 Introduction

1.1 Background

1.1.1 Motivations for research

This study explores the motivation and rationale of cost and management accounting change in three Finnish hospitals. More specifically, the management accounting change studied is the implementation and the adoption of activity-based costing systems, and how these systems, as well as the motivation to implement them, have changed over time. A new cost accounting system is implemented, i.e. an idea is conceived, a project is started and solutions are found. The initiative for the implementation may be intra-organisational or extra-organisational, and the motivation and rationale a combination of economic argumentation and pressure from the outside.

I had the opportunity to observe and be part of this change in cost management practices as a designer, project manager and a consultant. ABC systems have been implemented in public sector health care organisations since the beginning of the 1990's. A few years later the private hospital sector, which in Finland is smaller, and perhaps even of smaller significance, had begun experimenting with activity-based costing. The changes in management accounting coincided with changes in the environment, reform of the health care financing system, the introduction of managed care and prospective payment systems, and the accruals-based accounting reform in the public sector. The strong economically rational logic of ABC seemed often to be intertwined with the logic of legitimization - the portrayal of the organization as modern and innovative through the use of supposedly superior accounting techniques.

The main motivation for this study is to interpret empirical data to understand, and possibly bridge the gap between rationally oriented activity-based costing research and public sector management accounting research informed mostly by neo-institutional theory. The rational strain of ABC research has evolved from the early, prescriptive case study literature such as Cooper (1998), Cooper and Kaplan (1998), Johnson and Kaplan (1987) in various directions. Relating to technical environment which causes demand for

ABC systems, Abernathy et al. (2001) have provided a detailed account about the issue of product diversity as an antecedent to costing system adoption. They argue that prior research according to which product diversity will create demand for ABC systems provides an oversimplified view of the issue. This study will be more aligned with the latter view, the technology push that is analysed in the light of institutional theory.

Rationalistic studies of costing system implementation include e.g. Anderson (1995), Anderson and Young (1999) Kwon and Zmud (1987), Cooper and Zmud (1990), Gosselin (1997) Krumwiede (1998) and Shields and Young (1989). These studies have either developed or developed and tested (statistically) models which describe the process of ABC adoption, and analyse the antecedents of ABC success. Some of these studies model the various beyond-organisational factors influencing costing system design. For instance, Krumwiede (1998) considers pressure to adopt ABC to evolve from organisational need (pull) or technological innovation (push). These can be quantified as characteristics relating to cost structures and product diversity and the introduction of new IT systems.

Later developments have included the institutional perspectives as well as irrational and legitimizing aspects of ABC adoption in activity-based costing implementation. A seminal field study by Ansari and Euske (1987) conducted in the U.S. military administration suggested that the use of cost accounting systems may not be consistent with the technical-rational perspective, but more suggestive of legitimising and institutional uses. This was evidenced by the emergence of local costing systems for operational control despite the fact that government applied coercion to develop uniform cost allocation requirements. Other field studies such as Granlund (2001), Malmi (1999), Modell (2001), Modell and Lee (2001) and Soin, Seal and Cullen (2002) have confirmed this viewpoint by studying institutionalized processes, isomorphic pressures and innovation diffusion.

A similar development can be found in the cost allocation debate, which is the central technical issue in any cost accounting system. Traditionally, cost allocation research has been informed by various economic theories and has addressed issues such as allocation criteria and behavioural effects (Belkaoui, 1988; Reichelstein 1992; Thomas, 1977; Thomas and Tung, 1992; Zimmerman, 1997); cost functions and linearity of allocation bases (Bromwich, 1997; Bromwich and Hong, 1999; Noreen, 1991; Noreen and Soderstrom 1997); and joint and common cost allocations (Biddle and Steinberg, 1985; Moriarty 1975, 1976; Thomas, 1977). Later, studies which have linked various institutional explanations for the diffusion of cost accounting techniques have emerged. For instance, Modell (2002) has provided an integrative approach to cost allocation techniques linking the institutional explanations for diffusion of cost accounting systems and the variations in the actions of individual organisations in response to such pressures.

The division between rationalistic and institutional discussions is also evident in the health care management accounting literature. While some studies such as Blanchard et al. (1986) and Eldenburg and Kallapur (1997) and Hill (2000) take the rational viewpoint, the neo-institutionally informed New Public Management literature seems to dominate the research. Some studies address the issue of cost accounting system adoption directly (Arnaboldi and Lapsley, 2003, 2004) while others focus attention on the characteristic of the institutional environment influencing health care; output measurement, financing and contracting mechanisms (Brignall and Modell, 2000; Covaeski et al., 1983; Lapsley,

1992; Modell, 2001; Preston et al., 1997) or the role of the medical profession in accounting (Comerford and Abernathy, 1999; Jones and Dewing 1997; Kurunmäki, 1999a,1999b,2004; Kurunmäki et al, 2003; Nyland and Pettersen, 2004 and Pettersen, 1995. This emphasis on institutional influences in the New Public Management research is probably due to the claim of some institutional theorists, according to whom market competition invariably weakens the institutional influence of organizational action (see e.g. Oliver, 1991). However, the view of how institutionally and rationally induced decision-making processes interact has been later elaborated by the institutional theorists (Oliver, 1992, Greenwood and Hinings, 1996)

While activity-based costing, cost allocation and health care management accounting literatures all display the more or less strict division between rationalistic and institutional approaches, the discussion between these viewpoints has been somewhat limited. It appears as if the discussion genres identified by Lukka and Granlund (2002) also apply to the management accounting debate in the public sector setting. Studies addressing this gap include Modell (2002) and Drennan and Kelly (2002). Drennan and Kelly (2002) employ both economic rationalistic and institutional motivations, but instead of bridging the gap see the relation of these two approaches as dialectic, opposed to each other. Theoretical arguments have been evinced by Modell (2002), who criticises the early neo-institutional cost accounting literature for one-sided attention to the institutionalization at the macro level, resulting in a portrayal of the adoption of institutionalized practices as a passive process, with little emphasis on pro-active agencies.

My personal motivation for the study is the desire to see the rationalistic elements of costing system adoption and the symbolic uses and institutionalized beliefs as the two opposite ends of a continuum. The apparent lack of attention to the interaction between rational decision making and institutional influences is thus one of the starting points of this study. This issue will be studied in a hospital setting, where individual decision-makers seek to improve the efficiency of their clinics despite the strong and visible institutional forces that inevitably influence and shape their actions.

1.1.2 Overview of the Finnish health care system

During the last decade, the health care sector in most European countries has undergone great changes. An important part of this trend has been the administrative separation of service providers and purchasers, a practice which has been implemented before Finland e.g. in the U.K. and New Zealand. These market-oriented reforms were originally implemented in countries where health care finance is insurance based (especially the USA). However, the market orientation has also had a great impact on the system in countries such as Finland, where health care is tax financed, and therefore traditionally strongly linked to the public sector, and, thus also to the ideals concerning the purpose, function and governability of tax-funded public organisations (Perrot *et al*, 1997; Robinson, 1998; Pasanen, 1999).

A managed care system imposed upon the health care district implies a provider-purchaser model, where the health care districts and the hospitals provide health services, and municipalities purchase them according to a community contract. This contract may

be either a block contract, where the contract roughly specifies the nature and volume of services provided for a specified lump sum of money for a certain time period, or a cost and volume contract. One finding in various international comparative studies is that the block contract system has been developed in various directions in both private and public health care organisations. In the U.K., for instance, block contracts were common in the early stages of managed care systems. As the systems develop over time, a need arises for more detailed contracts, or sophisticated block contracts, in which prices are set according to medical speciality or by grouping treatments into price categories like DRG (e.g. Coveleski *et al.* 1993; Levitt *et al.*, 1995; Raftery *et al.*, 1996; WHO, 1996; Perrot *et al.*, 1997).

In cost and volume contracts, the total price for the health care services provided is defined in terms of the volume of services provided, bed-days, surgical procedures and outpatient days (and combinations of these, the treatment packages) being used as indicators of volume. Each treatment package is then assigned an average price, which is usually assumed to be cost-based. Thus, the purchasing municipalities can pay for the health services roughly according to their consumption of the service. If the actual demand differs from the estimate specified and budgeted in the contract, the financial risk is shared between the purchasing municipalities and the providing health care district (Punkari *et al.*, 1995; Punkari, 1996)

A central issue in managed care is that it is claimed to introduce market-based resource allocation into health care, as demand becomes ex-ante specified. In order to specify demand, set prices, and plan future actions, various information systems and accounting control systems, e.g. a cost accounting system systems should be developed.

Much of this dissertation deals with setting of cost-based prices for health care outputs – an issue of great importance to the municipalities since primary and speciality health care spending amount to c. 50% of an average municipality's budget. The link between pricing and costing is strong, because public hospitals are, in principle, required to reimburse their services at full cost. A public university hospital finances its operations through patient fees, state subsidies for education and research, and the per-case reimbursement from the municipalities referring the patient.

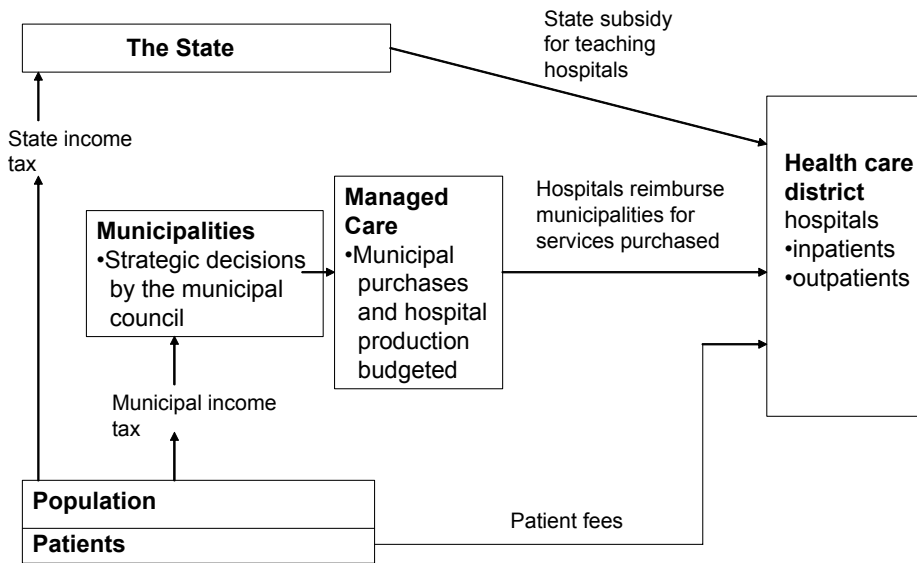


Fig. 1. Overview of the public hospital district financing system

According to the founding contracts of the joint municipal organisations (hospital districts), which are derived from the Municipal Act, a public hospital should not produce (accruals-based) profit or loss. Theoretically, this means that hospital services should be priced at full cost. In a budgetary sense, the revenues and the expenses of profit centres should be equal, which in practice may allow for cross-subsidisation within a profit centre.

In public hospitals, the cost-based prices are an essential element of managed care – a provider-purchaser system of financing the hospital districts through purchasing the hospital outputs. A study by Hill (2000) conducted in the United States, however, indicated that the link between changes in revenue reimbursing schemes and the introduction of new costing systems has been tenuous. He found the institutional factors influencing managerial accounting quite dominant, and that the market played a relatively minor role in the introduction of new cost accounting techniques in the U.S. hospital sector. Drawing on the research motivations already mentioned, the broad subject of the research can be defined as cost based pricing in public and private hospitals. More precisely, it is the change of the accounting tools that enable full cost pricing, namely cost accounting and activity-based costing, and the interaction of these accounting tools with the various embedded organisational practices. Although cost information may be used by several parties (including municipal decision-makers, public policy makers etc.) the actual cost accounting systems are implemented for the health care provider organisations. Therefore the analysis is limited to the hospitals. In this respect, the objectives of this study are different from those of e.g. health economic research, where the costs to society as a whole are in the focus of research. Especially in the public sector,

the financing system and the pervasiveness of health economic argumentation may cause actors to view relevant costs from a different angle (see e.g. Kurunmäki 1999b). The view on the subject organisations as a producer whose problem is to price the product is drawn from economic thinking, the real production sphere that can be conceptualised in terms of a production function that maps inputs into outputs, and where the control of the organisational activities constitutes a problem where a management accounting system can provide various solutions (see e.g. Dietrich 2001).

Additional issues not directly linked to the research question, but still providing further motivation for the research include the interaction of output pricing with the managed care system, and contrasting public sector accounting practices with those of the private sector. Furthermore, cost accounting is subject to different vested interests within the health care sector, which makes the field an interesting object of study. These include the fact that cost-based prices are often used as proxies for costs in health economic analyses relating to policy-making, approval of new treatments etc., which should be of interest both to scholars and health care and its financiers as well as the medical industry.

In addition to the two public university hospitals, an ABC implementation project at a private hospital is also studied. More than a contrast or a comparison, this last case study represents that part of the Finnish health care sector which is not publicly owned. Here, it should be noted that the terms public and private relate to the ownership of the organisation – private institutions may be either profit-seeking organisations (firms) or non-profit organisation (third sector). Evans (1998) argues that hospital cost management should be pursued by empirical academic researchers for several reasons. First, the role of the government in the health care sector is extensive, and this provides opportunities to study public service, which entails prescribed reporting requirements, which may be burdensome for practitioners, but fruitful for researchers. Second, the organisational forms in health care are changing rapidly, and the professional role of the physician is somewhat anomalous, as they are managers of the health care organisation, but also trusted agents hired by the patient to take care of his or her medical problems. As a third argument for empirical research, Evans evinces the availability of cost data. He argues that generally, most (American) hospitals need to improve the quality of their cost data. The situation is likely to be similar elsewhere. Existing cost data tends to be overly aggregate and not oriented towards responsibility accounting and cost control.

1.2 Research approach and objectives of the study

ABC implementation research has developed from rationalistic survey-based research to case-based research addressing institutional factors. Examples of non-rationalistic and institutional activity-based costing field and case studies include Soin, Seal and Cullen (2002), Granlund (2001) and Malmi (1997 and 1999). It is argued, however, that both the arguments (economic rational implementation and institutionally influenced implementation) have been used in a rather one-sided fashion. Likewise, studies on health care accounting focus almost solely on the institutional factors of accounting system adoption (with little interest on managerial accounting systems). This study uses an

integrative theoretical framework which combines the economic rational and institutional views, and applies it to the health care setting.

Only few activity-based costing studies have considered both the institutional and the economic rational views for implementing the systems in health care settings. One example of such a study is Covaleski et al. (2003) which addresses the issue of case-mix systems reflecting institutional pressures as much as economic realities.

This study sees a relationship between economic thinking and institutionalism that is complex and not mutually exclusive. Both the leading new institutional theorists (Mayer-Rowan 1977, DiMaggio-Powell 1983, Carruthers 1995) as well as the proponents of old institutional economics (Burns 2000, Scapens 1994, Burns-Scapens 2000) argue for the existence of a relationship between the institutional perspective and economic variables – yet they do not analyse this explicitly nor do they empirically investigate it in detail. Granlund and Lukka (1998) adopt an approach in which economic and institutional pressures, while conceptually separate categories, are simultaneously in effect and are intertwined in practice. Their economic variables, however, are macro-level and structural, including global economic fluctuations, increased competition, the emergence of new production technologies and new information technology. In this study, a classical / micro-economic approach is emphasised over structural / macro analysis. The study will present a framework drawn from organisational theory that includes both economically rational decision-making properties and institutional influences, with the purpose of contributing to the discussion on institutional theory.

The three longitudinal case studies will provide detailed accounts of factors influencing activity-based costing implementation, thus contributing to the implementation literature, particularly implementation process studies such as Anderson (1995) and Anderson and Young (1999), who find reward expectancy, quality of information systems, management support and labour involvement important for successful management accounting change. Potential beyond-organisational factors instigating activity-based costing implementation have been evinced e.g. by Malmi (1999), who argues that competition and union support influenced the Finnish industry to activity-based techniques. The study by Anderson (1995) also found union support and the influence of consultants to be significant, suggesting the possibility of institutional pressures for ABC adoption. The main point here is that while in some circumstances the adoption of ABC may be argued to promote efficiency through the improvement of production processes or more accurate pricing, there is good reason to believe that the adoption is also partly a response to pressures to change. Hospitals may wish to appear legitimate, adopting new costing systems because other organisations have done so, or some organisational actors might want to jump on the bandwagon of modernity and implement ABC because it gives a modern image to those advocating it.

1.2.1 Research questions and anticipated contributions

The research problem is to explain the motivations and rationales of the case hospitals for adopting new cost accounting systems, specifically ABC systems, and the change of those motivations and rationalisations over time in the longitudinal case studies. For the

purposes of this study, these motivations are classified as relating to economic rationale and institutional pressure. Economic rationality assumes that utility maximization forms the basis for human behaviour, while institutional motivations is related to the concept of *institution* that is influencing the individual and, at least in part, motivating his or her behaviour.

A central point of interest is the *interaction* between the economic and institutional rationale for adopting activity-based costing. Both the economic rational and institutional motivations are in effect simultaneously, and the three longitudinal case studies will reflect different interactions of these motivations. Concerning responses to institutional pressure of change, Oliver (1991) predicts expected reactions as pertaining to economic and/or social fitness (social fitness corresponding to institutionally motivated behaviour i.e. organisations reacting to outside pressure by seeking legitimacy for their actions). This study will employ an integrative framework which allows for an in-depth analysis of this interaction.

Both the economics based accounting research and the institutional views highlight the rational features of costing system adoption and implementation in different ways. On the one hand, hospitals may receive institutional benefits, i.e. economic gain resulting from yielding to pressure from the institutions. On the other hand, Brignall and Modell (2000) predict that hospitals may pay lip-service to the demands of economic efficiency, but in practice decouple the financial performance measures if the interests of funding bodies and the professional service organisation conflict with each other. A framework for studying these questions is presented in Chapter 2.

Thus, the economics-based rational view holds that the use of accounting practices yields benefits as a means of achieving efficient decision-making or an efficient organisational control system. On the other hand, the institutional views hold that organisations may adopt costing systems because of institutional benefits, i.e. the benefits gained through political reasons concerning legitimacy and power (Carruthers 1995). For instance, the diagnosis-related groups (DRG) system may have been developed and enacted in the U.S mainly because of government pressure. Similarly, many organisations have jumped on the ABC bandwagon to gain benefits by appearing “modern” and “cost-conscious”(Covaleski et al. 1993, see also Jones-Dugdale 2002).

Institutions in this study refers to a set of beliefs that we hold to be self-evident and true. In the institutional economic context, they are not created merely in the minds of individual actors in the organisations, but have a wider existence. Often, the set of “prevalent ways of action” is inherited from the older members of the organisation and passed on to new ones. Arbnor and Bjerke (1997, pp 179) characterise the relationship between the actor and the institution in action science as follows: “*When, between different actors, there is a common typification of some habitual act, we can say that an institution has emerged*”.

The anticipated results of this dissertation are twofold. First, the three case studies will present three institutionalised sets beliefs about the benefits of implementing and adopting activity-based costing systems in health care. Second, the fact that case studies are longitudinal allows for the analysis of how these belief systems came into existence, and how they have changed over time.

These two anticipated results, institutions regarding the usefulness of ABC and the change of those institutions, are then expected to contribute especially to the institutional

ABC literature. This involves works such as Abrahamson (1996), Abrahamson-Rosenkopf (1993) and Abrahamson and Fairchild (1999) studies on bandwagon effects and management fashions as institutional forces, and Malmi's (1997) study on ABC diffusion and Agbejule's (2000) study on the institutional processes of ABC adoption. In addition the studies by Granlund and Lukka (1998) and Jones and Dugdale (2002) on the phases of ABC discussion will prove crucial to answering the research question. These studies addressed the issue of management accounting system change due to institutional factors, and in some cases, how these ideas have come to evolve over time.

Secondly, this study is expected to make contribution to institutional health care accounting studies such as the Brignall and Modell (2000) study on adopting private sector management techniques, and the Modell (2001) study on DRG adoption, which also makes use of institutional theory. The anticipated contribution arises from the fact that this dissertation is not only a study of the management accounting change in hospitals, or a study on the evolution of managerial accounting systems over time, but first and foremost, a study of the rationale and motivations that are evinced to justify that change. An important aspect of this is to study how rationality and efficiency-seeking behaviour in the three case studies has been constrained by institutional forces, which can be taken-for-granted beliefs or legitimacy-seeking behaviour.

1.3 Structure of the dissertation

The rest of this dissertation is structured as follows. Chapter 2 will present the theoretical framework, a literature review and empirical research design. The theoretical framework will be used to integrate the economics-based rationalistic and institutional motivations for costing system design. The literature review will present the relevant findings of institutional theory literature, with special reference to activity-based costing systems and New Public Management (NPM) discussion. Empirical research design will then describe the data and its collection process, as well as how the theoretical framework is used in interpreting the data.

Chapter 3 describes the Oulu University Hospital case. This is an archival, retrospective and longitudinal case study that focuses on the perceived economic benefits of costing system implementation, with emphasis on the concepts of accurate pricing and internal efficiency for decision-making and control. The costing system is initiated by the demands of accurate pricing, but the running of the costing system is deemed costly. Therefore, many of the individual costing models have been abandoned, or used only from time to time to check the status of pricing, whether the product prices are correct. In the profit centre of surgery and intensive care, ways have been sought to link the activity-based costing system to other information systems, and routinise and simplify the costing. With little loss of accuracy, the costing system has been simplified significantly, and therefore, costs of running the system have decreased. The sub-case of a neurological ward illustrates the cross-subsidisation of products facing stiff competition with the profits of products where the willingness to pay is great – a sign of utility maximising behaviour. The sub-case of integrated teaching of dentistry portrays the problems of cost

allocation. An activity-based costing model is constructed, but runs into a joint cost problem, which is solved by distributing costs in a manner deemed fair by all parties.

Chapter 4 describes the Tampere University Hospital case, which focuses on the institutional benefits of ABC adoption. This is a longitudinal case study based on personal observation of the project meetings. The case study includes a detailed account of the activity-based costing and pricing project, and its origins in the pressure applied by municipal and legislative bodies. The case study is more focused on the actions of institutions rather than individual actors. The case hospital had been subject to extensive criticism from the municipalities concerning pricing. The budget had been repeatedly exceeded, and the revenues had fallen behind, so there were also economic criteria. However, pressure from the public auditors as well as local media were pivotal in making the decision to start the new project. The benefits of management accounting change are studied as institutional benefits of appearing modern in the eyes of the municipalities and legislative bodies.

Chapter 5 describes the Private Hospital case. The case study is longitudinal, and based on personal observation and actor involvement. In this case study, the internal processes of institutionalisation of new management accounting practices will be explored. The benefits of management accounting change are studied as personal benefits of organisational change, or resistance to change.

Finally, Chapter 6 presents the main findings of the thesis, and discusses the potential insights, and provides a basis for assessing the contribution of the study.

The focus in the first case study is in the use and structure of the costing system, and its functioning as a cost-efficient cost allocation scheme under circumstances in which, although profit/utility-maximizing behaviour exists, the economic gains are vague. The second focuses on the externally motivated implementation process of a cost accounting system, and the interaction of cost accounting with other control systems. The third case focuses on the process of accounting change in a privately-owned, non-profit but increasingly profit-conscious organisation.

2 Framework and research design

2.1 Theoretical framework

The following sections present the theoretical framework of this study. The transaction cost economic framework is based on the economics of the organisation and presents a rationalistic view on how organisations work. Organisational behaviour is viewed as rational actions guided by utility maximization, although this rationality may be bounded due to lack of information-processing capabilities. An individual actor's motivation is intrinsic, seeking individual welfare. Therefore, organisational control systems, such as cost accounting systems, should be designed so as to align the (economic) interests of the individual and the organisation as a whole.

The institutional paradigm, on the other hand, is more focused on the extrinsic motivations to adopt new cost accounting systems. These include outright pressure from outside institutions, tradition and taken-for-granted ideas and norms.

2.1.1 Transaction cost economic approach

The transaction cost economic approach has its roots in the neo-classical view of management accounting research. According to this view management and cost accounting must be based on certain assumptions about reality, which, in the classical economic framework would be for example, that utility maximisation is the foundation that determines rational human behaviour within an organisation, and that transactions take place in markets where marginal costs are equated with prices. Within this framework the principle of different costs for different purposes implies that once a utility function is agreed upon, it should be possible to determine the appropriate true cost information by deductive reasoning. This view based on microeconomics also holds that costing systems should reflect the so-called real processes of the firm, or production function (see e.g. Christensen and Demski, 1999, Noreen and Soderstrom, 1997, Bromwich 1997). Costs are incurred as resources are consumed in the production

process, and product costing through cost accounting is the valuation of this resource consumption.

According to this view, a hospital can be treated as a multi-product enterprise with a production possibility frontier that allows for output mixes which can vary within specific bounds (see e.g. Butler 1985). A notable aspect in a multi-product production function is the prevalence of joint and common costs i.e. costs that are not attributable to any output in terms of rational decision-making. In terms of the cost function, joint production occurs if the total cost of producing the two output levels together is less than the cost of producing them separately. On the other hand, non-jointness implies that the marginal cost of producing the each product is independent of the output level of any other product.

However, the proponents of organisational economics, through rooted in neo-classical economics, do not perceive the organisation as a production function, but as a nexus of contractual arrangements or as a governance structure. An important branch of organisational economics, transaction cost economics (TCE), views firms as departures from the “classical norm”: market exchange. TCE provides intentional explanations for observed organisational forms. It explains phenomena in terms of the deliberate choices of rational decision-makers striving for optimal solutions in the area of organisational forms, and is an efficiency argument for the present state of affairs (Vosselman, 2002, see also Vromen, 1995 and 1999). The deliberate choice of organisational forms is supposed to rest upon their anticipated consequences (effects). In the transaction cost economic approach, management accounting change and the adoption of an improved costing system will have consequences for organisational performance by improving the effectiveness and efficiency of the production function on the one hand (positive economic consequences) and generating governance costs on the other (negative economic consequences).

According to Roberts and Greenwood (1997), three critical assumptions characterising the neoclassical approach are hyperrationality in the pursuit of efficient organisational designs, that organisations face competitive pressures that drive them to efficiency frontiers and that institutional influences play no part in determining which organisational designs are adopted. On the other hand, the proponents of TCE supplement hyperrationality with *bounded rationality* and cognitive constraints. Bounded rationality implies that cognitive limitations make it unlikely that organisational decision-makers will form a completely accurate assessment of the efficiency implications of each organisational design (Dow, 1987). In any case, although their rationality is assumed to be bounded managers will, in general, understand in general terms the relationships between their decisions and organisational outcomes.

In emphasising bounded rationality, proponents of TCE dispense with the neo-classical view that organisations are efficiency maximising and adopt the more plausible position that they are efficiency seeking subject to cognitive constraints and institutional influences. A central manifestation of bounded rationality is satisficing search behaviour, which has been labelled the cornerstone of evolutionary economics. Satisficing search behaviour holds that only in the extreme case of perfect competition would organisations be forced to adhere to the strict comparative-efficiency framework, and be in continuous pursuit of designs with optimal efficiency properties. It is more accurate to suggest that organisations face pressure to adopt designs that embody efficiency properties that are at

least sufficient (satisficing). It is important to note that even then, efficiency really matters.

The rationale for the adoption of a particular management accounting technique, such as activity-based costing, is its expected benefit compared to the expected costs of implementation and operation, the net benefits compared with other options, including the option of non-adoption. The concept of economic Darwinism (Zimmerman 1997, see also Johnson and Kaplan 1987) implies that if managers do not, at least to some extent, understand the relationships between their decisions and the outcomes, the organisations will eventually cease to exist. Likewise, efficiency-based competitive pressures should ensure that observed organisational designs will be those in which organisational efficiency is optimised. Thus, if the long-run costs of managerial accounting systems exceed the long-run benefits, the accounting systems will not last in the long term. However, it is important to realise that the TCE approach and the satisficing search behaviour implies a weak-form, rather than strong-form, selection. This means that, in a relative sense, it is the more, and not the most, efficient organisational designs that survive.

In the TCE framework, one central role of management accounting is to provide prices for internal transactions, and to monitor and coordinate activities. But managerial accounting systems must often be standardised while variable, tailor-made systems would be more effective; there are costs associated with decentralising large, complex systems which do not occur in small systems (see Perrow, 1986). A management accounting system will improve the efficiency of the organisations in two ways: improved decision-making, which allows for actions such as pricing that lead towards economic equilibrium or improved organisational control, which reduces the inefficiencies of the organisation (see e.g. Chan, 1985 and Zimmerman, 1997).

Of the two, the control objective is more closely related to the transaction cost economic approach, while the decision-making objective is more closely related to the neo-classical approach. According to the control objective, accounting operates in a principal-agent relation. The idea is that the agent reports on how he has managed the resources allocated and the results of the actions performed. It is assumed that the information received by the principal is true. This view is held by, for example, Ijiri (1975). Without fair and true information the principal will not be able to control the agent. In external accounting, these concepts also relate to the judicial interpretation of the concepts of truth and fairness. According to some writers such as Mellempik, Monsen and Olson (1988), in accounting the concepts are not necessarily of a juridical, but of a moral nature, and also relate to the decision-usefulness of the information to the principal. The decision-making objective focuses on a slightly different interpretation of what is meaningful cost information. This view holds that accounting should provide information useful in making economic decisions. Decisions are characterised as economic goods, in the sense that they refer to resource allocation (Belkaoui, 1981). The true, or at least fairly accurate, information in accounting reports consequently makes it possible to allocate resources more efficiently. Both control and decision-making objectives imply that information should produce certainty, or at least reduce uncertainty, with regard to the way the agent has managed the resources or the way resources should be allocated (Mellempik, Monsen and Olson, 1988).

Johnson and Kaplan (1987), Zimmerman (1997) and Walker (1998) explore the issues of costing systems evolving over time. In their transaction cost economics inspired view, existing costing systems must have something good in them; otherwise they would have perished. All systems must face the cost-benefit test to survive. According to Thomas (1977), cost allocations are inherently *arbitrary*, yet they are necessary for goal congruence and organisational purposes. Arbitrariness refers to the costs having to rely on the objective function of the user of the cost information – costs are different for different purposes. The inherent *ambiguity* in cost allocations makes reference to the extent to which the costs attributed to specific cost objects vary with the selection of different allocation methods. For instance, Datar and Gupta (1994) show that different levels of aggregation in cost pools yield different costs for cost objects.

The existence of organisations relies on economic realities, but they are also able to resist change. As the economic realities change, new impulses are generated which the organisation adopts, partly or wholly, and transforms into organisational practice. Drawing on a framework based mainly on transaction cost economics, Dietrich (2001) argues that while any management accounting system is made up of formal rules, the rules also create routinised behaviour. The routines are not subject to direct change, but can be transformed through changes in the formal rules. According to Dietrich, changes in environment will only cause accounting change if this is incremental to the current practices i.e. its effects are localised and consistent with the current routines.

Dietrich (2001) raises the question to what extent management accounting systems are “locked-in” i.e. taken-for-granted ideas with the potential to resist change. Part of the potential to resist change is economically founded, i.e. switching costs. In the economic framework, locked-in management accounting systems have high set-up costs and associated overheads, constitute routinised behaviour in which learning is essential for effective functioning, and act as a common language and a visibility tool between organisational actors.

2.1.2 Institutional paradigm

The new institutional theory refers to the study of organisational accounting practices through institutional theory and its economic and sociological variants. It introduces institutional sociology (NIS) in the study of organisations that are not bounded or relatively autonomous, nor composed of rational actors. Adopting these ideas is seen as completion of the excessively simplified economic-based views of the organisation, particularly justified in case study research. According to Scott (1995:33) “*Institutions consist of cognitive, normative and regulative structures and activities that provide stability and meaning to social behaviour*”. Organisations which operate in similar environments are said to experience comparable demands regarding what is generally regarded as acceptable behaviour, - and consequently, will have similar structures and processes (DiMaggio and Powell, 1991). An organisation that conforms to societal rules acquires external legitimacy and increases its chances of survival, irrespective of whether the new rules make the organisation more effective (Carpenter and Feroz, 2001, pp.569). By adopting these structures and activities organisations increase their legitimacy and prospects of survival (Meyer and Rowan, 1977). It is safe to assume that organisations conform to institutional environments because this ensures them better resources. In

addition, Meyer and Rowan (1977) and Scott (1987) argue that organisations conform to external institutional pressures because they form a set of beliefs that are taken as constituting reality. Institutional theory demonstrates how non-choice behaviours can occur and persist, through the exercise of habit, convention, convenience, or social obligation (Oliver, 1991 pp 151). Therefore, in NIS research the organisation is *not* viewed solely as a production or exchange system, and factors other than those influencing efficiency are considered.

Thus, being efficient is not the only way for organisations to survive. Legitimacy in the external environment, that is, from the state, government, parent companies and external bodies, is another means of ensuring survival (Carruthers, 1995). Such congruence in organisation structures and processes, grounded in environmental pressures, is said to have emerged through a process of *isomorphism*.

Isomorphism is a prominent construct within the institutional theory (Westney, 1993). Institutional isomorphism is based on the idea that environments are collective and interconnected, and that, in order to survive, organisations must be responsive to external demands and expectations (see e.g. DiMaggio and Powell 1983, and Oliver 1991). The constituents that exert these institutional pressures are bodies such as central and local government, professional bodies and public opinion.

DiMaggio and Powell (1991, pp 66) identify three mechanisms through which institutional isomorphic change occurs, each with its own antecedents. The first is *coercive isomorphism*, which stems from political influence and the problem of legitimacy. It is the response to both formal and informal pressures exerted by organisations by other organisations (and external factors such as government policy, regulation etc) upon which they are dependent and by cultural expectations in the society within which organisations function (DiMaggio and Powell, 1991).

The second mechanism is *mimetic isomorphism*, which occurs when organisations face uncertainty and model themselves on other organisations. Organisations will generally tend to copy those organisations in their organisational field that are perceived to be more legitimate, or outside their organisational field that are similar to themselves in complexity (DiMaggio and Powell, 1991, Tolbert and Zucker, 1983). This view is often adopted in management accounting research, which perceives the external / institutional factors driving the convergence of managerial accounting practices (see e.g. Granlund and Lukka, 1998, Malmi, 1997). These include the imitation of leading companies' practice (either benchmarking or the imitation of external features / appearance) and the consultancy industry as a driving force producing similar solutions in different environments. Thus, we would expect also the management accounting systems of different organisations coming to look alike by imitating the superficial attributes of leading firms.

The third mechanism is *normative isomorphism* which is associated with professionalisation (DiMaggio and Powell, 1991). It occurs when professionals operating in organisations are subject to pressures to conform to a set of norms and rules developed by occupational / professional groups (Abernathy and Chua, 1996). In this form of isomorphism, organisations feel obliged to adopt structures and processes that have been advocated by dominant professions and professional bodies (Burns, 2000). However, the three types of isomorphism may exist simultaneously and therefore may not be mutually exclusive (see Modell, 2000). Oliver (1991) proposes a distinction between voluntary

responses to institutional pressures (corresponding to both normative and mimetic isomorphism) and legal / governmental coercion (corresponding to coercive isomorphism). According to Modell (2002), the coercively imposed cost allocation techniques, endorsed by governmental bodies, often seem to be encountering implementation problems.

The process of institutionalisation may be *pre- or postconscious*. According to *preconscious institutionalisation*, organisations operate and make choices in environments where much is taken for granted. These taken-for-granted elements, which are either infused with excess value (Selznick, 1957) or constructed in the process of social interaction (Berger & Luckmann, 1966) serve as a powerful schema of frames, shaping the decision-making process by influencing what is or is not perceived by decision-makers. According to *post-conscious institutionalisation*, institutional forces in an organisation's environment directly or indirectly divert design adoption away from the proposed dynamic in transaction cost economics (i.e. comparative efficiency) and toward the dynamic of legitimacy.

There are several models of how institutional change will actually take place. For instance, Burns (2000) and Burns & Scapens (2000) adopt the view of Barley and Tolbert (1997) according to which new concepts and ideas, are adopted, non-adopted, or transformed into practice by a process of *routinisation*, a process of transforming rules into routines, where the previously formulated rules are modified as the group which implements them locates mutually acceptable ways of implementation. According to Burns and Scapens (2000), rules are the formalized statements of procedures whereas routines are the procedures actually in use. Rules are normally changed at discrete intervals, but routines have the potential to persist in a cumulative process of change as they continue to be reproduced. Rules are institutionalised as routines (encoding), and the institutionalised routines influence the new rules, which is the process of institutionalisation.

In another approach to the process of institutional change, Seo and Creed (2002) adopt a dialectical view, where any change in the social arrangement requires a change in the praxis of social actors. Their basically Hegelian-Marxist view is focused on the contradictions which emerge as potential change agents gradually shift their collective consciousness to favour change. If institutions are weak, gradual change occurs while a crisis is likely if the existing institutions are strong. Here, Seo and Creed adopt the prediction of Greenwood and Hinings (1996), according to which "*radical change in tightly coupled institutional fields will be unusual, but when it occurs, it will be revolutionary*". According to Seo and Creed (2002) the key question to understanding institutional change is "*under what conditions do socially embedded, unreflective actors become conscious of the social arrangements in which their interests are unmet, mobilise other similarly situated actors and take collective action for change?*"

2.1.3 Integrative framework: The constrained efficiency framework

Williamson and Ouchi (1981) conceded that transaction cost theory is more applicable to commercial rather than non-commercial enterprises (see also Williamson, 1981, 1993).

However, the institutional environment envisioned by many transaction cost theories is limited. At the same time, institutional theorists (e.g. Meyer and Rowan, 1977) suggested that the relative emphasis placed on technical versus institutional concerns varies across organisational context. According to institutional theorists, organisations operate in both institutional and competitive environments. The institutional environment considered by institutional theorists includes more cognitive and sociological elements, such as patterns of social relations (Burns & Wholey, 1993) and embeddedness interpretations (Meyer & Rowan, 1977). Modell (2002) studies the interplay between cost allocation practices and institutional influences, with an emphasis on decoupling an organisation's internal controls and external demands on how costs are allocated. He calls for empirical studies on how cost allocations are influenced by the organization's technical and institutional environment.

Roberts and Greenwood (1997) introduced the constrained-efficiency framework in order merge transaction cost and institutional paradigms. Their framework moves in the direction of integration by introducing cognitive constraints and satisficing search behaviour into an efficiency-based design adaptation framework. Thus the constrained efficiency framework, while founded on rationalistic principles, recognises that rational choice is limited by cognitive constraints (bounded rationality) and institutional constraints (pre- and post-conscious institutionalisation). This framework is described in Figure 2.

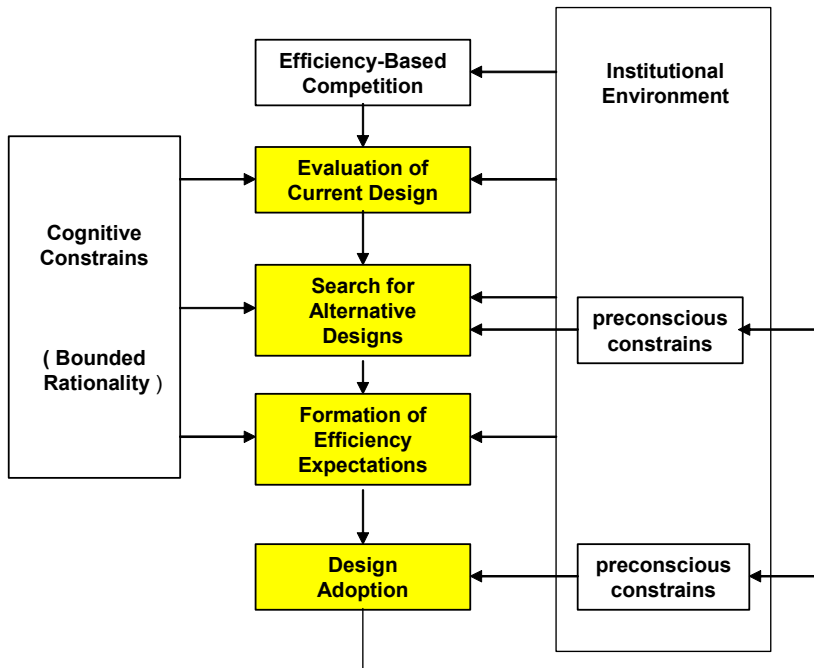


Fig. 2. Constrained efficiency framework

The constrained efficiency framework starts out with efficiency-based competition, which influences organisational designs (such as management accounting systems). As shown in Figure 2, cognitive limitations (bounded rationality) drive satisficing search behaviour, which constrains the evaluation of current organisational designs. The extent to which an organisation is driven to evaluate the efficiency of its current design is influenced by the institutional environment. The institutional environment also delivers two types of legitimacy: preconscious (cognitive legitimacy) and postconscious (sociopolitical legitimacy). Preconscious legitimacy refers to what organisational actors accept as being taken-for-granted, unquestioned facts, while postconscious legitimacy takes place when organisational actors realise the need for change, but are only able to consider a limited range of socially and/or politically acceptable alternatives.

Preconscious and postconscious institutionalisation may also be discussed in relation to Scott's (1995) normative and cognitive pillars of institutional theory. According to Scott (1995: 38-39), the normative pillar refers to sets of expectations within a particular organisational context of what constitutes appropriate, and thus legitimate behaviour. Scott's cognitive pillar of institutional theory was focused on the frameworks of meaning by which actors interpret and make sense of their world.

Normative institutionalisation (Scott, 1995) and preconscious institutionalisation (Roberts and Greenwood, 1997) overlap to some extent. However, as soon as actors deliberately consider alternatives, the normative expectation is no longer preconscious. Postconscious institutionalism is evident when organisational actors are aware of the need to change, but actively consider only a limited range of alternatives, each of which is acceptable in the prevailing institutional context.

All in all, according to Roberts and Greenwood (1997) a major deficiency of the transaction cost perspective is its inability to adequately account for the evolution of organisation designs. The existing account – that is, the comparative-efficiency account – is limited because of assumptions about rationality, but more particularly because of the slight attention to institutional forces.

For the purposes of this study, the constrained efficiency framework is utilised in the health care setting where the organisation is considering implementing an activity-based costing system. The concepts provided by the framework are used to interpret the findings in the case studies. Thus, it is assumed that while competition may not be the main driving force of these reforms, the organisations wish in any case to improve their economic efficiency by implementing these systems. The decision onto implement a new costing system, however, is influenced by institutional factors such as pressure from the regulators and financiers, mimicry of successful organisations etc, and taken-for-granted organisational realities (preconscious institutionalisation). From the rationalistic point of view, the search for a new system is satisficing i.e. the organisations may not settle for optimal solutions, but instead settle for a system that satisfies their conditions and criteria for a new system. This may include perceptions on the cost-benefit –tradeoff of the new system. However, some of the benefits of the new systems may relate to the ability to ensure resources by yielding to institutional pressures. Thus, legitimating actions influence the adoption of new costing systems.

For the rest of the dissertation, the constrained efficiency framework, alongside its underpinnings, transaction cost and institutional paradigms, will be used to interpret the findings of case studies presented in Chapters 3, 4 and 5.

2.2 Literature review

This literature review is organised as follows. First, empirical studies over activity-based costing implementation and adoption are reviewed. For the purposes of this study, these are divided into two categories: rationalistic studies (including case and survey studies), and institutional studies of ABC adoption. Second, the body of literature dealing with public sector management accounting systems is reviewed, with special reference to institutional theories.

2.2.1 Studies on activity-based costing implementation and adoption

For the purposes of this study, the following are used as organising themes for the activity-based costing literature 1) rationalistic ABC implementation case and survey studies 2) institutional aspects influencing the adoption of ABC and the extent of its use, which form the most important body of literature from the viewpoint of the contribution provided by this dissertation.

According to Lukka and Granlund (2002), there is no definite agreement on where and by whom the concept of activity-based costing was created (Johnson, 1992, Kaplan, 1998; Staubus, 1990). In any case, rationalistic views on activity-based costing adoption derive from the idea that ABC is a technical system specially designed for the management of overheads and product diversity, notably in the globally competing manufacturing industry. It is used for rational decision-making concerning strategic issues such as pricing, product line decisions etc. This view was developed in its pure form by Johnson and Kaplan (1987), who analysed the history and (the contemporary) state of managerial accounting. Their view was inherently rationalistic, akin to economic Darwinism, according to which changing circumstances may cause the obsolescence of managerial accounting systems. Thus ABC was originally introduced mainly because of the growing importance of manufacturing overheads and increasing product diversity. Early studies include e.g. Cooper (1988) and Cooper-Kaplan (1991).

The ABC/ABM consulting literature has been reviewed extensively by Granlund and Lukka (1998) and Lukka and Granlund (2002). They find the ABC-literature to be fragmented into three non-discussing genres, consulting research, basic research and critical research. Bjørnenak and Mitchell (2002) confirm the US-based predilection for quantitative approaches, while qualitative case studies are mainly a European phenomenon. One of the first UK-based early ABC application studies was in fact that by Holford and MacAulay (1987), who described the use of ABC in a health care setting. According to Bjørnenak and Mitchell (2002), US-based case studies have mainly come from US-based researcher / consultants writing in domestic practitioner journals. The early ABC case studies also include some implementation studies foreshadowing the quantitative implementation studies conducted mainly in the U.S.A. in the 1990's. A seminal implementation study is Shields and Young (1989), which introduced the 7 C's model subsequently tested in many survey studies. This model, while not a survey but rather a generalisation over early ABC case studies, has since been tested by Shields (1995) and McGowan and Klammer (1997). Another major early ABC implantation field

/ case study is Anderson (1995). She tested a model based on an information technology and organisational change framework in order to evaluate ABC implementation at General Motors based on archival and field study evidence. Interestingly, this case study later influenced several ABC implementation survey studies such as Gosselin (1997), Krumwiede (1998) and Foster and Swenson (1997).

However, some case studies have challenged the capacity of ABC to deliver more accurate product costs, and have argued that disaggregate costing systems themselves introduce inaccuracies and distortions. For instance, Abernathy et al. (2001) studied the impact of product diversity on costing system design choice. They found that while product diversity drives overhead costs, costing system choice is influenced by other, situational factors than simply diversity and cost structure. Likewise, a survey study by Gosselin (1997) explored the question of organisational structure and strategy as an explanation for why some firms did not implement activity management or activity-based costing systems. His main finding was that business units following a prospector strategy are more likely to adopt activity-based systems because they continually implement and change organisation as they seek out new opportunities.

While most of the rationalistic activity-based costing survey research does not address institutional influences, proposed beyond-organisational factors instigating activity-based costing implementation have been evinced in by Malmi (1999), who argued that competition and union support have been influencing the Finnish industry in favour of activity-based techniques. In a similar fashion, Agbejule (2000) argued for the existence of beyond-organisational factors and administrative and institutional motives in activity-based costing implementation in Finnish firms. He employed the Cooper and Zmud (1990) implementation model with six stages starting from initiation and ending with adoption. His institutional and administrative approach also distinguishes between coercive implementation processes (by edict), interventional implementation and interdependent implementation (out of curiosity).

One of the few ABC implementation case studies to explicitly address the issue on both the economic and institutional motivations and rationales is Drennan and Kelly (2002). Their study of an Australian bank found that while costing systems are used for operational and strategic decisions in the conventional (economic rationalistic) sense, the motivations for embarking upon such a project also include the building of community support, and maintaining the role of the organisation in the community in which it is situated (institutional factors). Much of the conceptual non-empirical activity-based costing research shares these views, e.g. Armstrong (2002) and Jones and Dugdale (2002) depict the adoption of ABC by institutions (private or public sector) as mimicry - as an attempt to portray themselves as 'modern corporations'.

In conclusion, empirical activity-based costing research started out as empirical case study research, with an original focus that was rather technical and rationalistic. These views on activity-based costing adoption derive from the idea that ABC is a technical system specially designed for the management of overheads and product diversity, especially in the globally competing manufacturing industry. Since 1995, quantitative survey studies on ABC implementation have gained much attention. These predominantly American studies provide statistical evidence on e.g. on the antecedents of ABC adoption. Lately, empirical activity-based costing studies which at least partially abandon the rationalistic views and acknowledge the role of institutions have emerged,

predominantly in Europe. However, much of the research on ABC implementation is based on rationalistic views with the role of the institution only being recognised in a few studies, and only very few of them (such as Arnaboldi and Lapsley, 2003, 2004) in the hospital or public sector environment.

2.2.2 Management accounting in health care

Management accounting research in health care has been dominated by case or field studies employing neo-institutional sociology (NIS). In addition, a few rationalistic studies have originated from the U.S.A. For instance, Blanchard et al. (1986) and Eldenburg and Kallapur (1997) studied hospital profit-maximising behaviour in a situation where payment rates are limited (prospective payment schemes). Hill (2000) provided a historical perspective on the adoption costing systems in the U.S. hospital sector; he adopts a rationalistic perspective that explains the utilisation of cost information as related to the hospital finances.

However, accounting changes in hospitals have been studied increasingly from an *institutional perspective* as reforms originating from outside the health care sector, and the health care sector and hospitals reacting to outside pressures. Arnaboldi and Lapsley (2003, 2004) see the adoption of ABC as a legitimating exercise, as organisations seek to portray themselves as modern. Modell (2001) addresses the issue of the institutional aspects of diagnosis-related groups. He sees the adoption of new output measures as institutional pressure, and uses Oliver's hypothesis to predict responses to the adoption of the new reimbursement schemes. Jackson and Lapsley (2003) adopt an innovation diffusion perspective, where new public management practices are interpreted as a technology with the potential to spread within a population of potential adopters. Innovation diffusion has, however, a tendency to adopt a pro-innovation bias, where problems relating to the adoption process of new technologies, accounting or other, are overlooked. The concepts of diffusion and pro-innovation bias can be interpreted as isomorphic processes, linking them to the institutional theory. While not explicitly a health care study, Brignall and Modell (2000) predict that as institutional pressures to adopt private sector management techniques increase in the public sector, de-coupling of performance measures and actual activity is likely to take place. The concept of decoupling resembles what Meyer and Rowan (1977) call *sagacious conformity*, in which new technologies and techniques appear to be in use, but may not be acted upon. Interestingly, Northcott and Llewellyn (2002) found a significant variation in the calculation methods of the cost information reported by UK hospitals, regardless of the fact that the costing methods were supposed to be standardized.

The management accounting literature often takes the viewpoint of the manufacturing industry. Health care differs from industrial surroundings because its output measures are a subject of debate, and these outputs are not traded on a free market. Instead, outputs have to be defined as bed-days, treatment packages, diagnosis-related groups (DRG's) etc. and these outputs are traded between purchasers and providers in quasi-markets, where the user of the health services is not the party responsible for payments. Relating to this, the study by Covaeski, Dirsmith and Michelman (1983) as well as Modell (2001)

and Brignall and Modell (2000) cited previously focused on the institutional aspects of changing output measures and adopting new reimbursement mechanisms. In fact, the study by Preston, Chua and Neu (1997) addresses the issue of diagnosis-related groups (DRG) -based reimbursement schemes with special reference to the problem of rationing health care services (i.e accounting as a way of limiting access to health care). Their study highlights the linkages between accounting and distributive aspects of government – a fact often overlooked by many accounting researchers.

Studies that link reimbursement mechanisms to the existence of public sector purchaser-provider models and contract negotiation include Preston, Cooper and Coombs (1992) and Ferlie (1994). Purchaser-provider models, the corporatisation of health care and the impact of these on accounting have been studied extensively in Sweden by Aidemark (2001) and Aidemark and Lindkvist (2004). They find mixed evidence for the influence of organisation on managerial accounting practices, mainly budgeting. Likewise, Modell and Lee (2001) find that while the Norwegian government adopted a cautious stance to implementing new management accounting techniques in the health care sector, these techniques were nevertheless voluntarily implemented at the hospital level. Siverbo (2004) compares Swedish and U.K. purchaser-provider models as expressions of new public management practices, and finds no support for economic rationale in these reforms.

One key argument of the new public management literature is that organisations where accounting was virtually absent have adopted new accounting practices and are increasingly using accounting concepts in decision-making (Preston et al 1992, Jones and Dewing 1997, Lapsley 2001, Arnaboldi and Lapsley (2004). Kurunmäki (1999a,1999b, 2004) studied the acceptance of accounting practices in health care, and the professional organisation of accounting in Finland, where much of the managerial accounting and pricing –related tasks are carried out by health care personnel. She claims that management accounting in Finnish health care has become a “hybrid profession” where management accounting tasks are increasingly carried out by physicians, and where medical and accounting expertise is intertwined. This may have the effect of physicians and nurses having to compromise between professional ethics and financial concerns (Comerford and Abernathy, 1999). In a similar fashion, Pettersen (1995) and Nyland and Pettersen (2004) find the role of physicians vital in linking the hospital budgets with management practices in Norway. *Comparative* studies include Fitzgerald and Dufour (1997), who compare management practices between Canadian and UK hospitals, and Kurunmäki et al. (2003), who study the use of accounting information by health care professionals.

Thus, both rationalistic and institutional explanations for accounting systems exist in the health care accounting literature. While the rationalistic views have been of limited number, and often US-based (where health care funding is predominantly insurance-based), the main body of health care accounting literature has been published inside the new public management discussion, predominantly in Europe but also in Australia and New Zealand. The main conclusions drawn from the NPM research are that accounting practices often have a symbolic or ritualistic role in health care organisations, and that clinicians are reluctant to adopt, or resist accounting information.

2.3 Empirical research design

2.3.1 *Qualitative method and the role of the researcher*

This section addresses the overall methodological foundations of this study. In addition, case-specific descriptions of data and the research process will be found in Chapters 3, 4 and 5, as the empirical material consists of three separate case studies, in which the data sources differ somewhat. In the first case, the main source of material is archival. It includes project plans, project documents, cost accounting models and their descriptions, pricing information and e-mail exchanges mostly concerning the dates and minutes of the project meetings. By using these, the structure of the system is plotted as it evolved in the course of years, which is used to illustrate the implementation process. Although originally based on personal observation, it may be appropriate to label the case of Oulu University Hospital as a retrospective and archival case study. All the data were gathered by researcher involvement in the projects.

In the first case study the project documents range from September 29th, 1996 and January 25th, 2002, covering a time span of more than five years. In addition, 4 ex-post interviews were conducted in 2005, addressing the issue of interviewees' opinions of the original motivations behind the activity-based costing projects. The data for this case study is presented in Appendix 1. For the two other cases, a bound research diary exists. In the second case study, Tampere University Hospital, the data is also longitudinal, ranging from September 26th, 1999 to May 23rd, 2001, covering roughly one and a half years. The data for the second case study is presented in Appendix 2. In the Private Hospital case the present author had the opportunity to attend meetings, but also to take on much responsibility for the entire project, negotiating the aims and targets with the hospital management. In addition, interviews, of which notes were taken, were conducted at the beginning of the project concerning the perceived problems of the management control system and the interviewees' opinions about the need for a management accounting change. The longitudinal data for the third case study, Private Hospital, was gathered between November 4th, 1999 and July 7th, 2002, and covers a period of more than two years. The data for this case study is presented in Appendix 3.

A very important issue in acquiring the data is accessibility. Accessing the data in the first and the third case study would not have been possible without the consultative role of the present author. The role was not, however, unchanged during the entire course of data collection. In the first case study, Oulu University Hospital, the present author's role changed from being consultative to that of an academic researcher. In the third case study, the Private Hospital, the present author began as an academically oriented management trainer, and changed roles to that of business consultant. Gummesson (2000) uses the hen metaphor, originally by Paulsson Frenckner, to describe the difference between consultancy and academic research, and the iceberg metaphor to describe the issue of accessibility in qualitative research. According to the hen metaphor, the researcher pecks at practice (empirical data) and contributes to theory, while the consultant pecks at theory and contributes to practice. Here, it is of great importance to realise that the consultative

role of the present author should be limited to data collection only, while the researcher role is utilised for analysing the data.

The iceberg metaphor refers to accessing only data that is available through questionnaires and personal interviews (the tip of the iceberg) vs. creating an interactive relationship with the case organisation. One of the aims of action research is to generate theory, and this is often based on the relationship between the roles of researcher and the consultant in a series of individual projects. Having discussed accessibility, one has to consider the limitations imposed on the research by limited access to the organisational reality, especially in the second case study (Tampere University Hospital), where the present author was merely observing project meetings and not actively participating in cost accounting system creation. Here, limited access hinders the study of inter-professional relationships, especially the tensions between the physician profession and the accountants. However, in empirical management accounting research, such limitations seem to be quite common.

As such, this study is *interpretative* and founded on the *hermeneutic* paradigm. Instead of trying to explain causal relationships or uncover facts, the broad aim of the case studies is to develop an understanding of reality. According to Gummesson (2000), using the paradigm in management research involves both distance and involvement. Researchers are actors who also want to experience what they are studying from the inside, and may, to some extent, partially create what they study.

In Finland, it has been customary since the seminal paper by Neilimo and Näsi (1980) to categorise research as one of the following: conceptual, nomothetical, decision-oriented and action research. Later on, constructive research method was recognised as distinct from action research or decision-oriented research (see e.g. Kasanen, Lukka and Siitonen, 1993, for the constructive approach). Methodologically, this dissertation represents *action research* (see Pihlanto 1994), where the researcher has been actively involved in the design and construction of the cost accounting systems studied, with opportunities to influence the decisions taken and the outcomes achieved. Action research differs from constructive research in its hermeneutic orientation, and less attention given to practical contributions.

The research then “entails the analysis of direct interventions of the researcher” (Gill and Johnson, 1997, pp. 60). Action research is more than that, however, since one has to face research ethical questions of entering and contracting with the case organisation, cooperating with the actors, evaluating the results and finally, how to withdraw from the case organisation. Ethical and value dilemmas will often arise from the very nature of action research, for instance, separating academic research from business consulting.

In the first case study, cost accounting projects, both those carried out by myself and others, are examined ex-post. Entry was gained by consulting practice, and the research process came after the projects had been completed. In the second and third case studies actor involvement and data collection were concurrent and intertwined. In the third case study (Private, Non-profit Hospital) entry was initially gained as a management trainer, switched to the role of consultant, and finally, to that of researcher. Gummesson (2000) sees a difference between social and management action science – the demarcation is meaningful because of the action science’s origins in social sciences: “*The role of the management action scientist is, on the basis their paradigms and preunderstanding and given access to empirical, real-world data through their role as a change agent, to*

develop an understanding of the specific decision, implementation and change process in the cases with which they are involved'

The relationship between management and social action science becomes important as one considers the roles of actors in action science. After all, there can be no action research without the notion of actors, with a reality that is socially constructed. According to Arbnor and Bjerke (1997), this socially constructed reality entails four processes: subjectification, externalization, objectification and internalization. Basically, human beings working in organisations are a subjective reality, but in order to make this reality available to other actors (including the researcher) it must be *externalized* e.g. through a common language and conceptions. Of course, this communication is nearly always incomplete and we have difficulty externalizing our subjective reality to others. As the surrounding actors begin to treat the externalizations as meaningful, they become *objectivized*. This phase involves emerging patterns of typification, where institutions and routinized patterns of behaviour emerge, and are legitimized in order to justify the behaviour patterns. Finally, the social construction of reality becomes *internalized* as we accept each other's objectivized realities. Thus, the social construction of reality moves from the thoughts of single individuals to the level of socialization in a continuous and recurring process.

Now, the researcher has to decide on whether to include the actions of individual actors in the report – and how to report the phases of social construction. Clearly, for management research it may not be very useful to attempt to plot an individual's motivations for adopting a cost accounting system at a psychological or motivational level. This type of approach would probably fall into the domain of social psychology. Instead, following Gummesson (2000), the purpose of management action science is seen to be to develop understanding of "decisions, implementations and change processes" this will focus the action-oriented research more on the levels of objectivisation and internalisation, even though this does not mean the elimination of individual actors from the study when they are considered important. Arbnor and Bjerke (1997, pp. 434-435) criticise this approach to management research for having borrowed from what they call the systems approach, although they seem to admit it's practicality. It is often impractical to go down to the individual level. While it is true that the goals of the organisation are formulated by its members, it would often be erroneous to conclude that the goals of the organisation are identical to or can be clearly derived from the goals of the individuals.

Regarding the relationship between the action researcher and the actors as a subject of research, Arbnor and Bjerke (1997) discuss the *intentionality* of action research, which they see as constituting the foundation by which actors (with subjective constitutional meaning) and the finite provinces of meaning are postulated. It is the intentionality that gives purpose to the actor's experience and enables interpretation of the action researcher's findings. They give an example of a house: if intentionality has to do with buying and selling, the actor's experiences (and interaction with the environment) are fundamentally different than if the intentionality has to do with visiting friends. Likewise, since the intentionality of the research is connected with developing an understanding of a change process – in this case, ABC implementation and its motivations – it has influenced the present author's conceptions of the case hospital and the data collection process.

An important consideration in how action research is understood lies in the fact that the data in Chapter 3 includes projects in which the present author did not take part – therefore one does not find a researcher who actively influences things in all projects. This does not undermine the basic concepts of action research, but has instead to do with triangulation (Yin, 1984), and represents a practical measure taken to enhance the credibility of the findings. Although action research is inherently subjective (Arbnor and Bjerke, 1997), there is no reason why, given access to multiple data sources, these should not be used to triangulate the data (Yin, 1984, see also Gummesson, 2000).

According to Yin (1984), there are two possible strategies for case study research; 1) an analysis that focuses on a comparison of the case with existing theory, or 2) an analysis that emphasises the development of the theory from the case. Here, the case studies will be interpretative. While the constrained efficiency framework integrating both economic and institutional influences may appear pre-set, it is the result of a process of theoretisation, an emergent theory (Ahrens and Dent, 1998).

The essential element in this research is a theory, which is analysed in the cases. In interpretative case studies such as this dissertation, the emphasis is on the process of theorizing, the outcome of the study often being the emergence of the theory (see e.g. Ahrens-Dent, 1998). Keating (1995) classifies case study research by the nature of the case study's relationship with the theory formed. Case studies may focus on theory discovery, theory illustration, or theory refutation. Theory discovery and theory refutation are well-recorded phases of the research process. This study, however, is best characterised as theory refinement, where theoretical concepts are assessed and allowed to unfold gradually through interaction with the data. Provisional definitions and working hypotheses are assessed, redefined, and elaborated as the researcher modifies the theory in light of the empirical data.

Keating (1995) proposes two basic archetypes of theory refinement, namely the theory illustration case study and the theory specification case study. Theory specification case studies seek to refine a sparse and underspecified theory in order to make it amenable to broad scale statistical testing or a critical case test. Theory illustration case studies seek to establish the plausibility of a specific theoretical perspective by demonstrating its capacity to shed light on some previously unappreciated aspect of management accounting practice. This research falls into the category of theory illustration, as it illustrates the integration of economic and institutional concepts in management accounting and in a health care setting by using the framework provided by Roberts and Greenwood (1997). While institutional theory is by no means sparse and has been used both in health care accounting studies and ABC implementation studies, the interaction between the institutional influences (institutionalised practices and institutional isomorphism) and rationalistic, transaction cost economic oriented argumentation has not been extensively addressed in the literature.

2.3.2 Case selection and data collection

Regarding case selection, the decision was to present three case studies instead of just one. Three extensively reported cases were considered the maximum in terms of

resources and time available. Indeed, it is possible that the results would have been better if a larger number of cases had been available. In terms of research strategy, a more extensive corpus of material was hindered by difficulties of access and lack of resources needed for generating an adequate understanding. However, in the Oulu University Hospital case, interview data was collected ex-post to fill gaps in the documentary evidence. The theoretical framework and the research question involve the exploration of economic rationality and institutional influences in health care ABC projects. Since the present author's preliminary knowledge of the subject indicated that a wide range of such projects had taken place, it was decided that more than one case was needed. Furthermore, the cases needed to be longitudinal in order to examine how the relationship between the economic rationale and institutional influences has evolved over time.

The first two case hospitals (university hospitals) are similar in size, and are "full service university hospitals" with nearly identical functions. This very similar nature makes them an interesting matched pair, given that their approaches to introducing cost accounting systems were very different indeed. The original idea was to include the first two case studies as a matched pair, and to compare their approaches to the introduction of new cost accounting systems. The university hospitals do differ in their relationship with the municipal owner-customers, their institutional surroundings. Tampere University Hospital, being part of the hospital district, has introduced a formal managed care mechanism aimed at aligning municipal budgets with the hospital budget. This has had an impact on the reimbursement mechanism and the full cost pricing system. In the absence of such external pressures, the Oulu University Hospital has been free to adopt more tailored and circumstance-specific costing practices.

One important choice in case selection was to include the Private Hospital case. The private speciality health care sector Finland is not large, and its role is considered as to be ancillary to the public sector. In terms of organisation size, the first two cases are more than ten times larger than the third case hospital. There are several advantages to including the third case, however. *Firstly*, it focuses the study on the health care sector as a whole. The results will then be interpreted in terms of health service production, which are not entirely synonymous with the production of public goods. This averts the risk of being sidetracked with discussions on health care as a matter of concern to society as a whole, and makes it possible to concentrate on the research problem.

Secondly, and more importantly, this dissertation is about the degree of rationality and economic reasoning in the choice of management accounting techniques. Realising that, the existence of a private counterpart to the first two cases becomes essential. The institutional approaches to management accounting research have often concentrated on the public sector, implying that public sector organisations face more such pressures than organisations in the private sector. In fact, one often hears the argument that economically rational behaviour is not a relevant issue in the public sector, and should be confined to private sector studies.

Thirdly, the Private Hospital case offers a look inside a cost accounting implementation process that is quite different from the public sector hospitals. At least in principle, the private sector managerial accounting systems are more likely to be market-tested, implying that the long-run benefits of operating the system should exceed the costs, and that a private hospital facing competition is more likely to be hurt by inefficient cost allocating mechanisms than a public hospital. In addition to the profit-

maximising behaviour, another intuitive argument would be that private-sector cost accounting systems are more complex, and more refined than their public sector counterparts. But is this really the case?

Are the cases “typical representatives” of Finnish health care organisations? For the first two cases, the answer is almost certainly a “yes”, one argumentation for such certainty being the relatively small number of university hospitals in Finland. For the private sector, the answer is more problematic. Perhaps there is no such thing as an average private hospital in a country where there are only a handful. In terms of analysing the results of this study, the role of the Private Hospital case is to contrast and contradict the findings of the first two cases. Even if it could be argued that the case studies represent the Finnish health care sector, in this type of research setting generalisability in a classic (modernistic) sense is problematic, and perhaps not even a goal central to the success of the research (see Lukka and Kasanen 1993,1995). Also, in this dissertation the generalizing is the result is “generalisation back to the theory” i.e. contextual generalization that provides a profound, “deep” understanding of the case context that may be reflected to the theory and used to enrich, supplement (add) or refine it.

2.3.3 The research process

The present dissertation deals with the adoption of new cost accounting practices in health care. When actively used, these new systems provide input for the financial-oriented argumentation, which may eventually lead to increasing use of financial argumentation in decision-making. This is only natural when the new cost data becomes available, and can be viewed as evidence of the success of these systems. However, the focus of this study is not on the behaviour of health care personnel, or the language they choose to use, or for that matter, arguments they tend to evince, but on the cost accounting systems themselves.

Although the economic and institutional framework presented here may appear to be set in advance, it is the result of a *process of theoretisation* (see e.g. Ahrens and Dent, 1998). The process of theoretisation used in the forming of the key theoretical constructs of this study is presented in Figure 3.

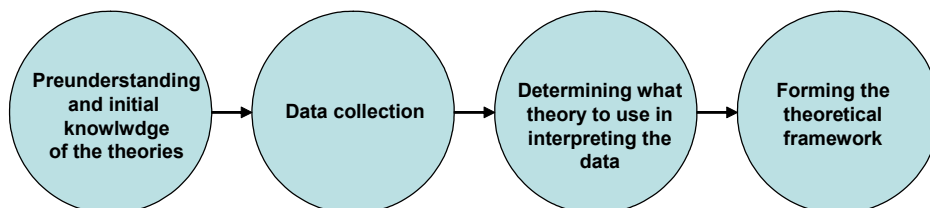


Fig. 3. Process of theoretisation of this study

In this study, the present author has a preconceived idea that economic and institutional theories will be used to interpret hospital-related case studies. After collecting the data, these theories were tested to determine if they “fit”, that is enable for the interpretation of the data. What has resulted are the key theoretical constructs concerning the economic and institutional rationale of ABC implementation. As indicated in Figure 3, the process of theoretisation concerns the relationship between theory and data. It is a process of perceiving patterns, where the researcher examines and re-examines existing data, and gathers more field material in order to ensure that the patterns adequately represent the observed world (Miles and Huberman, 1994). Therefore, it is important to keep data and theory separate, as well as data and its interpretation. After the theoretical framework has been formed, the main concepts of this framework (such as institutionalism and isomorphism) are defined with relation to the specific context. These concepts form the “lenses” through which the data is interpreted. Finally, the interpretation is reflected against the theoretical framework as the importance of results is assessed.

As the researcher withdraws from the case organisation and the results are reviewed, new problems often emerge, and the data analysis process is recycled (Gill-Johnson, 1997). The concepts derived from the theory as well as the data collection phase itself increase preunderstanding. Similarly, as data is interpreted, the need for new data may emerge.

2.4 Overview of the empirical part of the study

Three longitudinal case studies follow. The first, Oulu University Hospital, is a longitudinal case study in which the costing system development takes place in several stages. First, activity-based costing is tried out by fairly independent clinics without much support from the hospital district management. It is the work of interested individuals who have picked up the idea of using activity-based costing to set prices for the health care outputs invoiced from the municipalities on a per-case basis. As time progresses, the hospital district management picks up on this process, purchases accounting software and purchases consulting services from local software companies. The activity-based costing software purchase coincides with other accounting software purchases – accrual-based accounting is being implemented in the Finnish public sector. As this is also the aftermath of severe economic depression, much of the official rhetoric on activity-based costing seems to be centred on improving the efficiency of health care service production. A common activity model is defined, and pilot projects are started. Very soon, however, the enthusiasm fades and the profit centres and clinics are left to develop their own accounting systems with the tools provided by the hospital district administration.

The various clinics and profit centres of the university hospital use their activity-based costing systems to achieve different objectives. The three sub-cases demonstrate three different costing system objectives. The surgical clinic uses the system for pricing and responsibility accounting. The neurological ward develops activity-based costing because it sees cross-subsidisation between products and cost centres as a problem. In dentistry, the cost accounting model is used to allocate state subsidies for teaching. A series of ex-post follow-up interviews conducted in 2005 permits the conclusion that most of the

activity-based costing models have been either abandoned or used only sporadically. However, in surgery, the cost accounting process continues under another name.

In the second longitudinal case study, Tampere University Hospital, the activity-based costing system is initiated because of outside pressure from the financiers (municipalities), auditors and the media. A rather short but intensive cost accounting project follows, but the results, with a few exceptions, are not taken into use. Ultimately, hospital pricing proves quite inflexible. However, the hospital is able to claim that it uses modern, state-of-the-art cost accounting systems to calculate the costs of its outputs, and this may be a satisfactory result in itself.¹

The third longitudinal case study concerns a rather small non-profit but privately owned hospital that is on a slow but determined journey from being a charitable organisation to becoming a more business-like organisation resembling a private firm. When the activity-based costing system development begins, this process is well on its way, initiated by the managing director and the chief of administration, both with backgrounds and prior careers in private businesses. The managers first implement budgeting system reforms, which are followed by activity-based costing projects in all of the hospital's main profit centres. The profit centre managers (chief physicians), however, are reluctant to take on new administrative burdens but at the same time want to retain their decision-making powers over pricing issues. This situation is resolved by a simplification of cost accounting, namely by eliminating the activity emphasis in cost accounting. At the same time, the managing director establishes a pricing committee, where pricing strategies are routinely discussed.

¹ A synopsis of the first two case studies will be forthcoming in *Financial Accountability and Management*.

3 Oulu University Hospital. Analysing the Design, Implementation and Structure of Hospital Costing Systems

3.1 Introduction and brief history

The initial introduction of activity-based cost management systems to Finland at the beginning of the 1990's coincided with a severe economic recession, large cuts in public sector budgets, and a financial accounting reform, which abandoned the old cameral fund-based public sector tradition and introduced accrual-based financial accounting. The public sector had then adopted private sector financial accounting practices, and the logical sequel was the adoption of private sector management accounting practices. Not surprisingly, activity-based costing soon found its way to the health care sector. The first of the three case hospitals in this study, Oulu University Hospital, was one of the first hospitals to embark upon costing system development in the wake of the ABC movement in the Finnish manufacturing sector.

Northern Ostrobothnia Hospital District (PPSHP) is the northernmost of the five university hospital districts in Finland. The hospital district is in charge of organising specialised medical services in its own district. The most advanced specialised medical treatment is provided by the Oulu University Hospital, which has its own geographical remit.

Approximately 375 000 people live within the Northern Ostrobothnia Hospital District and more than 700 000 within the special health care region. There are three hospitals in the joint municipality hospital district: the Oulu University Hospital, Oulaskangas Hospital and Visala Hospital. In addition to the administration centre there are 13 accountable profit centres in the hospital district. The joint municipality health care district organises services for each hospital in accounting, personnel, data processing, maintenance and technical services.

The Oulu University Hospital (OYS) is in charge of the special health care in the district of Northern Ostrobothnia and entire specialized medical care in Northern Finland. The area covers half of Finland. In the region are four central hospitals practising in addition to the University Hospital. In 1972 the first beds were taken for use in the Oulu

University Hospital. Today there are about 900 beds in the hospital. Examinations and treatments are increasing in outpatient clinics. About 5 300 highly skilled professionals work in the clinics and support services in the hospital. Practically all medical specialities are represented at OYS.

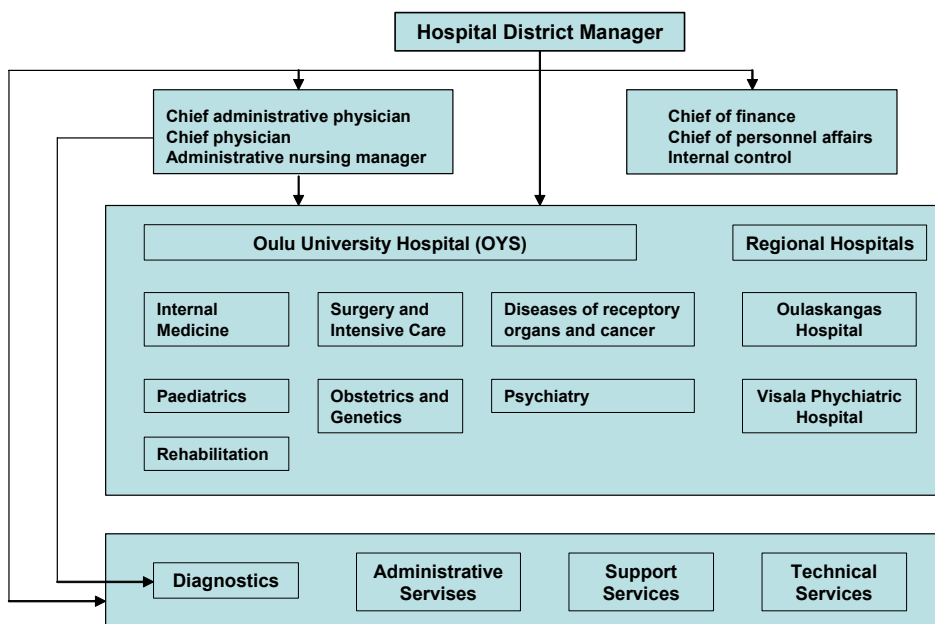


Fig. 4. Organisation structure at the profit centre level in 2001

The Oulu University Hospital is by Finnish standards fairly big (the hospital district, to which the case hospital contributed a major share had in 1996 a turnover of some 1.2 billion FIM (202 million euros) and some 4500 employees, and by 2001 had grown to an organisation of 5100 employees). During the 1980's, dissatisfaction with the internal allocation and profit centre system stirred, often with the common view that the cost-effectiveness of that accounting system was inadequate. This spirit was evident in the early items of the research data, especially the activity-based costing workshop of January 14th, 1997 and the hospital district internal newsletter of January 1997. Meanwhile, requirements for pricing were mounting up in the profit centres and individual clinics, where the budgets had become an increased responsibility. This eventually led to shifting the responsibility for pricing from the hospital administration to the profit centres and clinics, which also resulted in having the responsibility of costing calculations shifted from central administration to the profit centres.

The costing projects which the hospital embarked upon after the mid-1990's took place in several stages.

The first stage of activity-based costing implementation was a bottom-up initiative (1992-1995), with several hospital clinics independently experimenting with new costing systems. Costing system development had been going on in the hospital district as small independent projects (with respect to central authority) since 1992. At that time, the radiology clinic became interested in costing system development, mainly because of the recent attention received by the breakthrough of activity-based costing systems. In Figure 4, the radiology clinic is included under Diagnostics, although the organisation change came later. Originally, the project did not receive much support from the hospital management and was carried out as the work of a single interested physician.² Cost accounting software was also bought, but only put to use in 1998.

In the neurological surgery and ophthalmology clinics the new costing system projects were carried out between 1993 and 1995. In neurological surgery (which is Figure 4 located under Surgery and Intensive Care) the goal of the project was to aid pricing while the ophthalmology project (now located under diseases of receptor organs) emphasised activity management and operative control features. This exemplifies the difference in aims, strategic and operative, that a costing project could have, even though conducted in a neighbouring department.

Paediatrics, which started its activity-based costing project in 1995, was the first unit to use the help of outside consultants. The goal of the paediatrics activity-based costing project was to form an overall view of the clinic's activities and their resource consumption, and, for the purpose of pricing, calculate the costs of patient days. Also in 1995, activity-based costing in Oulaskangas Regional Hospital was initiated. The project lasted for approximately 1.5 years. In addition to these projects and those forming the empirical part of this study, separate cost system projects were carried out at least in physiatrics, food supply services and obstetrics.

The second stage of costing system development was the attempt in 1996 by the hospital district central administration to gain control of cost accounting by setting common standards and a framework for costing. At that time, the concept of activity-based costing had been "sold" to hospital management by consultants.³ What resulted was the framework project, which started out in autumn 1996 with the aim of providing a co-ordinated framework for costing practices. The emphasis was on attempting to harmonise the various aims of different organisational levels so that there would be "something for everyone". There had already been some experiences of conflicting aims, such as whether the costing systems should emphasise pricing or activity control. Furthermore, it was felt that there existed a great variation in processes in the various profit centres, which aroused suspicion if one type of costing system would suit them all. Obviously, the framework would indeed have to be broad, but still provide the information necessary for decision-making at the hospital district level. There were also needs for computer integration of various accounting and information systems.

The issue of conflicting aims was in part resolved by forming different levels of aggregation. The top management would basically use the highest aggregate level, while

² Costing systems used in radiology are usually standard cost systems, and are widely spread across Finnish hospitals, as evidenced by Lääperi (1996).

³ Use of the term "activity-based costing" soon escalated to the point where all management and cost accounting projects, almost regardless of their content, were called ABC.

profit centre and clinic managers, who were usually physicians, could drill down deeper into a more disaggregate level of financial information. Testing of the macro activities and the cost pool structure was carried out in three profit centres, the otolaryngology and urology clinics and the maintenance technology support unit. The maintenance technology cost model was never carried through entirely, partly because the local operative management did not regard the new costing as worthwhile. The reasons for this include an existing costing system tailored to the needs of maintenance services (which the senior management was more or less unaware of at the start of the project), political reasons, and the choice of costing methodology. Detailed activity-based costing was not needed in a situation where output consisted of projects, and the cost structure was “light” i.e. the majority of the costs were direct costs to the projects.

The third stage of activity-based costing implementation was the initiation by central management of three pilot projects in 1997, in which the design of the cost management system ideas were tested in practice. During this time, models were built in the otolaryngology and urology clinics, (now located respectively under diseases of the receptor organs and surgery and intensive care) according to the standards set by the hospital district management. Meanwhile, two independent models in internal medicine and medical supply services were also constructed. Unlike in many other ABC projects, in the pilot projects the motivation to adopt ABC may have been coerced. One interviewee involved in the projects commented

“The first activity-based costing project we had, we were supposed to be some sort of a pilot, anyway the project fell short because of the lack of resources. We should have had more time to contribute [...] It was a broader idea originating from the hospital district level, and they (the hospital district administration) sought clinics to volunteer as pilots, and we sort of volunteered, a little bit reluctantly”.

The *fourth stage* in ABC development occurred in 1998, when the responsibility for activity-based costing implementation was decentralised. During the re-decentralisation of the management accounting function the responsibility for cost management was transferred to profit centres, with recommendations to use certain methods and a specified framework. Costing models were developed that covered almost the entire surgical speciality, likewise radiology. The re-decentralisation offered new opportunities for cost accounting development, especially the development of computerised information systems, data transfer, and software integration. The reasons for this rather surprising development i.e. that the shift of responsibility for cost accounting from the upper management to mid-level management triggered the renewal of the accounting information systems related to the need to argue for the operational usefulness of cost accounting practices in order to gain acceptance for them. First, the profit centre had perhaps greater freedom to implement its own ideas than the central administration, since in the wake of health sector budget cuts it had become politically almost impossible to establish new posts in the hospital administration. A quick analysis of the archival documents indicates that most of the practical work was carried out by external consultants, aided by health care professionals who were not in any way excused from their daily duties for the sake of the cost accounting project, but instead, were supposed to carry out the new tasks when they had the time. It is easy to assume that in these circumstances the cost accounting project may not have been very popular. In addition,

this happened at a time when most clinic budgets were being cut, which may have led to various organisational players drawing the conclusion that activity-based costing and the budget cuts had something in common. In fact, this view was not discouraged, as evidenced by many project documents (e.g. guidelines for ABC future in January 1997, the follow-up of the ABC project group and the data on the ABC workshop) – clearly one justification for ABC implementation was increasing cost awareness, which would supposedly lead to conserving of resources.

Finally, *the fifth stage* of activity-based costing development included the expansion of the costing systems in surgery to cover the entire profit centre. These costing systems were now linked to other information systems. Likewise, a cost accounting project was initiated in the dentistry department for purposes of defining how the hospital district and the City of Oulu would finance their integrated teaching operations. The model was designed so as to have potential for expansion. The integrated system required that financial data be connected with medical data, the latter being often so complex and specialised that it required initiative and support from the medical practitioners to achieve this. Also, when accounting information was connected with information concerning treatments, health status etc. it lost its bureaucratic character and became an accepted function within the organisation.

Table 1. Stages and cost accounting models in the first case study

Stage of ABC development	Years	Cost accounting models constructed	Located in profit centre
1. Independent models	1995-1996	Radiology	Diagnostics
		Oulaskangas regional hospital	Oulaskangas regional hospital
		Ophthalmology	Diseases of receptors and cancer treatment
		Paediatric ward	Paediatrics
		Physiatrics	Rehabilitation
		Food supply services	Supply services
		Obstetric ward	Obstetrics and genetics
2. Standard-setting	1996	Hospital district activity hierarchy	-
3. Pilot standardised models	1997	Urology	Surgery and intensive care
		Otolaryngology	Diseases of receptors and cancer treatment
		Technical services	Technical services
4. Decentralization	1998-1999	Elective cardiac surgery process model	Surgery and intensive care
		Neurological ward	Paediatrics
5. Integration	2000-	Integrated dentistry	Diseases of receptors and cancer treatment
		Surgical speciality cost model	Surgery and intensive care

3.1.1 Data and Method

The data in this chapter consists of 50 selected documents and 6 cost accounting models, which are listed in *Appendix 1*. In addition, seven ex-post interviews with key actors in the cost accounting projects were conducted in 2005. The documents range between September 29th, 1996 and January 25th, 2002. The documents form several “clusters”, which correspond to the stages of cost accounting detailed in the previous section. The first 9 documents (up to January 14th, 1997) cover the attempts to standardise heterogeneous costing practices and set up a uniform activity-based costing model. This is the second stage of costing, standardisation. Before the second stage, there had been spontaneous cost accounting projects, which had been reported to the central administration (evidence of these is found in documents 9 and 13). The overall tone in the first documents can be considered as being optimistic, and ABC is seen as a potential solution to problems dealing with cost awareness, rising costs and general inefficiencies. For instance, the health care district internal newsletter generally viewed the cost accounting projects in a very optimistic light. Of the stage 1 activity-based cost accounting models the present author gained physical access (i.e. being able to access the software to browse and drill down the calculations) to two: Appendix 1 lists models 2 and 3, Oulaskangas Regional Hospital and ophthalmology clinic, which exist as CostControl databases.

The second cluster of documents deals with documents between January 27th and May 24th, 1997, the third stage of activity-based costing development, as well as the problems of general cost accounting model creation. These documents, while giving a view of the process by which the cost accounting models were created, also highlight some of the problems inherent in these models. In the documents that concern the third stage of activity-based costing development, the tone becomes less enthusiastic. These include documents between June 12th and September 22nd, 1997. By now, three cost accounting models using the uniform structure had been created (of these, the present author acquired physical access to the clinic of urology ABC model, which is included in the data as model 4, a CostControl-database). The report of September 22nd, authored by consultants and the activity-based costing project group, seems to emphasise the problems encountered, and future development needs should the cost accounting development continue.

The fourth stage of activity-based costing development concentrated on the expansion of the systems. There are ten documents between January 22nd, 1998 and August 17th, 1998, after which the present author was no longer affiliated with the consulting company, but working on his licentiate thesis instead. These documents describe the central developments of the cardiac surgery ABC model, which provided background for the present author’s licentiate thesis. In 2000, after the licentiate thesis, the present author was briefly employed in the neurological ward ABC project, of which two documents, with notes attached exist from November 6th, 2000 and December 7th, 2000 – March 29th, 2001. The neurological ward ABC model is included in the data as cost accounting model 5.

After the licentiate thesis, the new surgery ABC project continued on its own (project plan of May 31st, 2000). This was the fifth stage of activity-based costing development.

As part of the PhD work the present author was involved in the latter stages of that project in 2001 while actually working on this dissertation. Documents of December 3rd, December 5th, 2001 and December 10th, 2001 and January 25th, 2002 relate to this stage. Likewise in 2001 the author's employment with the health care district continued for the Integrated Teaching of Dentistry ABC project.

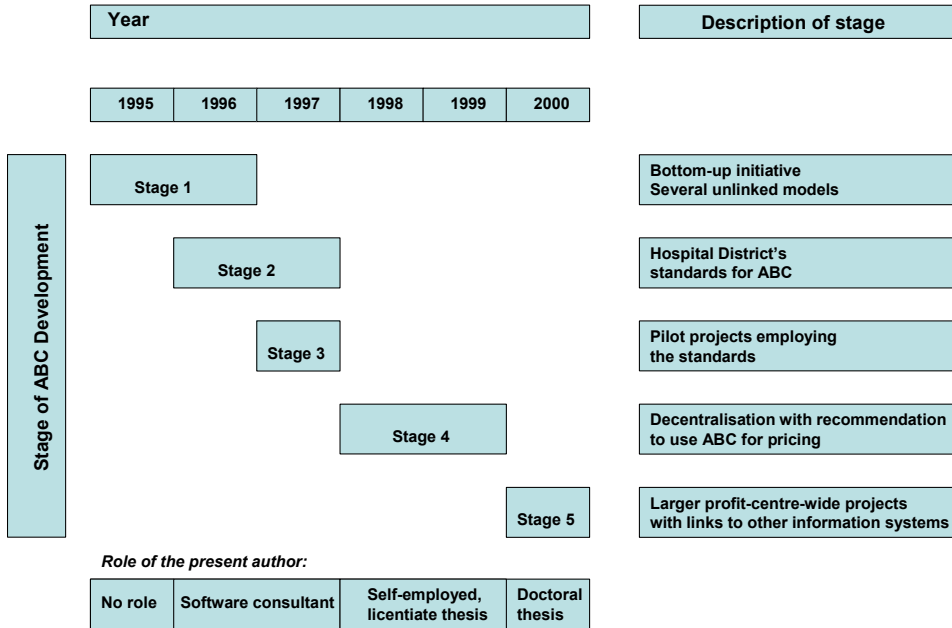


Fig. 5. Timeline and the research process

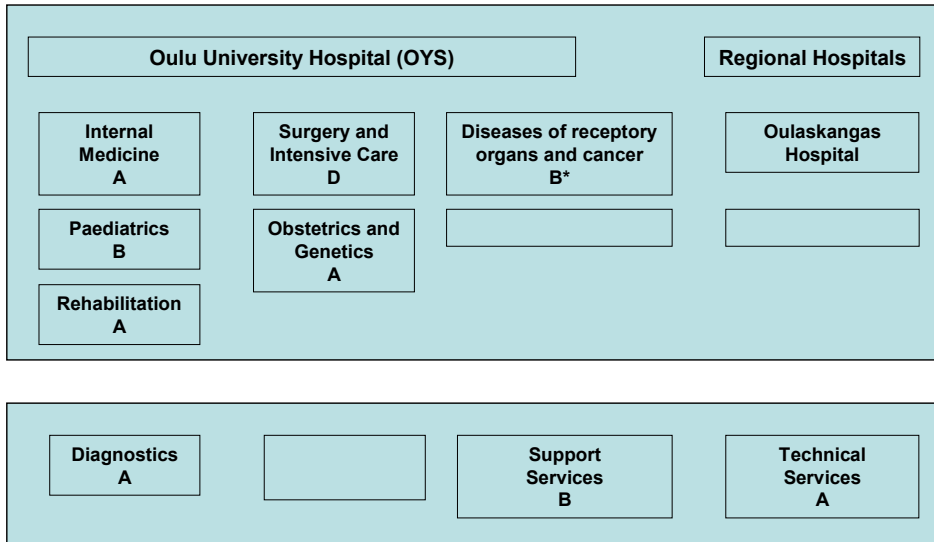
In 2005, seven ex-post interviews were conducted with the personnel responsible for the projects. The interviewees included three members of the administration and four chief physicians who had been involved in the projects between 1996 and 2002, and who were still working with the hospital district. The purpose of these interviews was to provide information on the external, pre- and postconscious institutional motivations in the project, which might have been missing from the documentary evidence.

Since actor involvement in this type of field research is quite intense, a critical issue here is distancing oneself from the research object – the fact that the present author was involved in the process. The main method for accomplishing this is that the findings of this study should be based on the documents listed in Appendix 1, - and those documents alone are analysed and interpreted. In those cases where the voice of the present author is found in the documents, the method applied requires that findings will not be based on these unless the findings are purely technical in nature. For instance, the present author is interviewed by a reporter in the health care district's internal newsletter. Seven years later, I find myself commenting "*Automated reporting will dramatically decrease the amount of calculation*". Obviously, this part of the document cannot be used as providing "evidence" of the expectations of the health care district at the time, and even less to

support any claim that the statement had any other function than a marketing speech. The fact that this comment was able to infiltrate the pages of the internal newsletter can, however, be used as an example of the institutional pressure created by the “management innovation industry” in hospitals. This, however, is one of the few indications in the data of such pressure.

Since this early phase of the project was heavily influenced by the consulting industry, it may be appropriate to deal with the issue. The present author’s consulting role lasted until November, 1998. This means that 29 out of the 50 documents are from the time period in which a consultancy relationship existed. It is natural that the consulting firms have vested interests of their own. The data contains one document concerning the private interests of the consultants. It is dated at the very beginning of the costing development, November 14th, 1996. It is a two-page memorandum of the meeting between two software consulting organisations, one representing the software vendor for the financial management system, and the other for the cost accounting system. The main content of the memorandum is that the parties should propose to the health care district that an integration of the two software packages should be made, because the automatic link thus created would have market opportunities elsewhere, and there was a chance of making the health care district to pay for the project. Later on the health care district document on June 12th, 1997 states that integration was not successful.

The vested interest issue also highlights the role of consultancy work in the process of data collection. Scientific research in accounting seems very rarely to deal with the issue of access to interesting data as a prerequisite for producing interesting research. It seems as if researchers would stumble on interesting data by accident, or as if all interesting data was automatically available to researchers. However, those involved in empirical management accounting research know that this is not the case, not even in public organisations such as Finnish hospitals. Availability of interesting data was greatly enhanced by the consultancy arrangement between 1996 and 1998. Here, the separation of data collection (obtaining documents in the course of consulting work) and data analysis (analysing the documents in the light of institutional theories) is again critically important. The extent of the activity-based costing models in various parts of the hospital district is clarified in Figure 6.

**Key:**

A = One-time cost study in a single clinic or cost centre

B = Several, unlinked cost studies in individual clinics

C = One-time profit centre-wide cost accounting model

D = Profit centre-wide cost accounting model continuously developed and updated

Fig. 6. Profit centres covered by ABC projects wholly or partially before 2002.

The rest of this chapter is as follows. The following sections will then proceed to analyse those ABC systems by introducing three sub-cases: surgical specialties, the neurological ward and dentistry.

Then, the structure of the various individual, often clinic-level costing systems is reviewed. From the structure it is possible to draw a picture of the development of cost accounting in the hospital district. The actual structure of the costing systems is important in analysing the institutionalization process, because many of the suppositions of institutional theory deal with convergence of organisational practices – accounting systems becoming similar due to institutional influences. Thus, the sections will shed light on the actual convergence process, which is also important from a methodological viewpoint – the study of the convergence of accounting systems is not limited to the views of organisational actors on the issue.

3.2 Selected cost accounting projects

The following sections describe selected activity-based costing system implementation projects in the Oulu University Hospital, and the efficiency-related arguments used to justify the implementation.

3.2.1 Accounting for surgical specialities

A project was initiated in 2000 by the chief surgeon to produce a profit and loss statement for the surgical specialities to be based on the surgical speciality cost model (Memorandum of May 31st). According to the chief surgeon, the aim was to produce an accounting report that would support the management of surgical specialities – management was becoming more speciality-oriented and there was a need to move away from the responsibility area structure. The days were gone when there were general surgeons – nowadays every surgeon had to specialise. There were already surgical specialities so broad, such as orthopaedics, in which a surgeon had to specialise within the speciality, and the wards were likewise becoming more specialised, although some were mixed.

In 2000 there was actually discussion on whether the specialities would ever replace the responsibility accounting structure. This discussion took place in the meeting where the responsibility centre structure reform was planned. Since no such actions took place, apparently no decision was taken to mix the concepts of surgical speciality and responsibility centre – each had their functions. Regarding the independent responsibility areas, it was deemed too early to merge them (and end the interdepartmental allocations inside the profit centre), but even then, additional cost and profit information based on surgical specialities was needed. However, the chief surgeon expressed one of the aims of the speciality profit and loss statement as an issue of responsibility accounting in his address to the clinic staff :

“In the future, when you come asking me whether we, the management, have money for this and that investment, I will reply with a question, whether you, the speciality, can afford it” (Chief physician, Field notes February 24th, 2000)

What was done in practice was that first an accounting report of the profit centre was produced, together with a breakdown of interdepartmental allocations. The profit centre of surgery and intensive care was divided into three responsibility centres, which produced their own income statements and hence, also took part in the interdepartmental allocation (transfer pricing) scheme inside the profit centre as well as outside. That is, the responsibility centre of anaesthesia and intensive care could transfer services for a price to surgery, and vice versa. It was decided that the two other responsibility areas (anaesthesia and intensive care, and research and development) would be connected to the surgery responsibility area via the interdepartmental allocation system. In surgery, the costs and revenues would be split up to surgical specialities, forming the profit and loss statement for the surgical specialities. The cost allocation to surgical specialities would be performed on the basis of the surgical speciality activity-based costing model.

Figure 7 shows the relation between the responsibility centres and the surgical specialities.

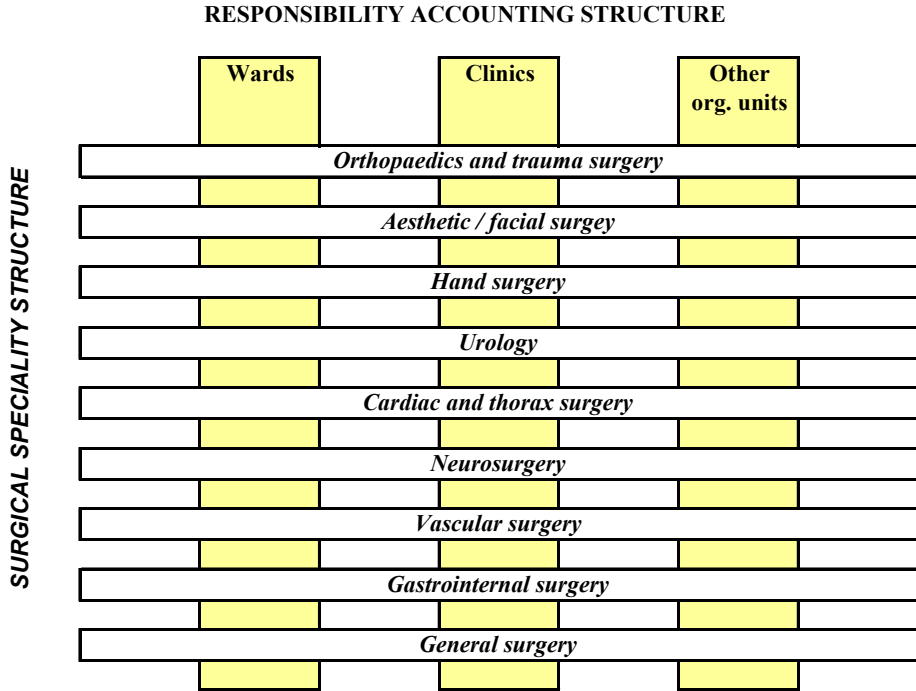


Fig. 7. Responsibility structure vs. surgical speciality structure

Traditionally, the responsibility accounting structure provided budgets and cost reports in organisational units shown as vertical columns. Thus one could produce a cost report for the wards and the surgery clinic, but for the specialities represented by the horizontal boxes e.g. orthopaedics and trauma surgery, facial and aesthetic surgery etc. The main problem with this responsibility accounting structure was that the majority of costs were reported under joint functions, which contained the doctors' salaries. The purpose of the cost accounting model was to produce an income statement for surgical specialities, and this was accomplished by allocating the costs of the responsibility centres to them on the basis of activity analysis. In terms of their monetary importance, the most important allocations were surgeons' salaries (allocated on the basis of estimated time spent), anaesthesia (allocated on the basis of weighed surgery hours) and intensive care (allocated on the basis of accumulated care intensity rating points).

The resulting surgical speciality profit and loss report is fairly simple. However, the accounting model that produced this report is quite complex. The situation illustrates how complex ABC-models may produce simple and aggregate reports with no activity-emphasis or any other indication that this is the result of a complex ABC system.

According to the speciality profit and loss statement, internal / general surgery, neurological surgery and orthopaedics were producing profit, and plastic surgery,

thoracic/cardiac surgery and urology were producing loss. Thus, the former were subsidising the latter. The fact that facial/aesthetic surgery was underpriced came as no surprise. The problem was known to be with the acute cases, especially the treatment of severe burns. For the year 2002, prices for many facial/aesthetic surgical procedures were raised so as to cover the loss in the future. Also, at the end of 2001, steps were taken to bring down the responsibility area structure so as to have the anaesthesia and intensive care lose its status as an independent responsibility area with its own profit and loss statement. This case illustrates how the change to output (product) oriented management increases pressure for the responsibility accounting structure to adapt to increasing product orientation i.e. the idea that revenues originate from the sales of goods or services, and that expenses should match revenue. In the end, however, anaesthesia got to keep its profit and loss statement.

As a continuation to the surgical specialty cost model, the patient-based costing project was started in December 2001 (see December 5th, 2001). At this point, after years of work and so many projects, only some of which are described above, we (i.e. the present author, chief surgeon and the system designer) decided that this project would be better organised than the previous one, with more information submitted to other personnel, and more personnel having to contribute their input to the project. A steering group was formed, whose purpose was to discuss the general aims of the patient based costing, and to ensure that information was provided to the personnel concerning the goals and the methods involved. In addition to myself (the present author), and the chief surgeon, the steering group included two anaesthesiologists, two other senior surgeons, the ward sisters of both the anaesthesia and surgery responsibility areas, and an accountant from the central administration.

The aim of the patient-based costing project was to integrate patient-based financial and non-financial data in order to produce a patient-based income statement i.e. that the revenues and costs of each patient could be accounted for. In practice the process would start out from the invoice of each patient, to which a number of cost drivers would be attached. The costs of treating the patient would then be automatically calculated on the basis of cost driver usage. The costs and revenues of the patients would then be grouped into different cost objects to produce income statements on price categories, surgical specialities and possibly even DRG's (see Lehtonen 2001 for motivations to adopt DRG costing).

In 2002, the costing was extended to patient-based calculations similar to those described by Lehtonen (2001). In order to apply proven innovative accounting solutions, the Profit Centre Manager and the hospital accountant visited Helsinki University Hospital in the late winter of 2002. In the final form of the costing system, patients were grouped into price categories and specialities, and the cost of the patient group was calculated by cost drivers registered in the Cognos PowerPlay report generator.

Table 2. Cost drivers for patient-based costing

Cost group	Allocation base / cost driver
Material costs	Standard costs
Physicians salaries	
on the main operating theatre	Operating time
on the wards	No. of bed-days
on the day-surgery operating theatre	Operating time
Nurse's salaries	
on the main operating theatre	Operating time
on the wards	Care intensity rating
in the day-surgery operating theatre	Operating time
in administrative functions	No. of bed-days
Other personnel costs	No. of bed-days
Anaesthesia (internal price)	Weighted operating time
Recovery room	Recovery room time
Intensive care	
materials and salaries	Intensity rating points
other costs	No. of intensive care days
Equipment maintenance	Standard cost
Laboratory (internal price)	Traced
Radiology (internal price)	Traced
Other expenses	No. of bed-days

Notwithstanding the technical issues, this new costing system differed from its counterpart in the Helsinki University Hospital in one important aspect: this costing system was not a pricing system. While in many hospital districts where pricing was based on diagnosis-related groups, the prices were totally determined by the costing system with minimum judgments or interference of strategic considerations. The actual prices for the treatments did not wholly correspond to the results obtained from the cost accounting system. Pricing was seen as a strategic function, where the hospital had freedom to over- and/or underprice some products if was in the strategic interests of the hospital. This was quite unlike some other Finnish hospitals, where the full cost principle was adopted more strictly (see Lehtonen, 2001). From another angle, the hospital management perceived the hospital district as an accounting entity distinct from the municipalities (see Kurunmäki, 1999b for the contrary approach). In 2005 the ex-post interviews revealed that the while activity-based costing had not been done any more in a textbook sense, the patient-based cost calculations had been further developed. It was now called “clinical management accounting”. As the chief surgeon commented

“One could say that the results of our adventures in activity-based costing are visible, that if we have learnt something you can see it in this (clinical management accounting).”

3.2.2 Neurological ward

In December of 2000 the author was contacted by the ward physician of the neurological ward, located under the paediatrics profit centre to perform product profitability calculations concerning the outputs of the ward, which was providing rehabilitation treatment for children's neurological disorders such as autism. In the ward, interaction between the staff and patient's parents was characterised as one the distinguishing features of the treatment provided.

In addition to the present author, the project group consisted of the ward physician, the ward sister, and a senior physiotherapist. Additional opinions were to be called for if needed. The ward physician expressed the need for the project in November 6th, 2000, as follows:

"We are getting complaints that our process is very costly, and our products are underpriced. We should really look into this".

According to the notes, both the hospital management and the profit centre management were mentioned as sources of the complaints. The first step in the project was to determine the entity: what costs were we supposed to think of as being consumed in the provision of care on the neurological ward? Naturally, the costs included as expenses in external accounting were such. Interdepartmental allocations we certainly would have to accept as being support functions. The problematic issue was the paediatric profit centre's common cost centre, to which most of the general overhead of the profit centre was allocated to. In addition to determining what part of the general overhead in the common cost centre should be allocated to neurological ward, salary costs of some personnel were assigned to the common cost centre. These included the salaries of the physicians as well as the psychologist and speech therapist. These people worked most, if not all, of their time on the neurological ward, but in the external accounting system their salaries were included in the overhead, not as a direct expense to the ward. The costs assigned to the ward are summarized in Table 3.

Table 3. Cost structure of the neurological ward ABC model

Cost item	Percentage of total cost
Responsibility centre: ward	25 %
Interdepartmental allocations to ward	38 %
Paediatrics common cost centre:	
Materials	0.8 %
Additional costs through sickleaves	1.1 %
Nursing personnel salaries	16.1 %
Communication centre (interdepartmental allocation)	1.6 %
Physiotherapist salaries	13.4 %
Laboratory and radiology services	0.4 %
Physicians' salaries	20.5 %
Other overhead expenses	0.4 %
Psychologists' salaries	15.8 %
Logopedist's salaries	17.0 %
Social work (interdepartmental allocation)	13.0 %
Total for the common cost centre	36 %
Total costs of the ward	100 %

A quick look through the accounts indicated that the neurological ward was operating at a deficit, which would be significantly smaller if we only include the direct costs of the ward plus the interdepartmental allocations in the analysis. The latter cost was essentially what was used in budgeting. Since the budget for the entire paediatrics profit centre was roughly balanced, the conclusion was that the ward was not bearing its fair share of the overheads, and furthermore, many of the direct costs of the ward were assigned, at least in budgeting, to other responsibility centres in the paediatrics profit centre. If the figures in Table 3 had been used in product costing and pricing calculations, the outcome would be certain – most of the products would appear to be priced below full cost. Table 4 holds cost and profitability information on selected products.

Table 4. Profitability of selected products in Euros (figures have been slightly altered)

Name of product	Total revenues	Total costs	Total surplus / deficit
Product 1	173 000	387 000	-214 000
Product 2	73 000	68 000	5 000
Product 3	16 000	14 000	2 000
Product 4	218 000	338 000	-120 000

The result, according to which some of the products were underpriced came as no surprise. This was confirmed at two meetings. The meeting with the clinic staff was held on 8th August 2001, where the author presented the results of the cost study. The discussion focused on the possibilities of price increases. In general nursing the price increases were thought to be possible, because the product was involved in two price categories (i.e. it had two possible prices). As the product definition was formed in the course of the costing project, reimbursement was not based on the patient groups the ward perceived as products, but on price categories. The problem, according to the physicians, was that price categories were not particularly helpful for cost management purposes. The hospital management insisted that ward management was to be based more on providing outputs, but the outputs were difficult to relate to health care activities.

Table 5 describes the relationship between the products used in activity-based costing and the products (price categories) used in invoicing. Clearly, the nursing personnel could not relate the rather abstract price categories with the outputs they perceived they were producing. It is also representative of a case where financial issues and operative action is decoupled – the price categories had little meaning to those performing the daily work. Thus, in order to achieve understanding about the costs of outputs, the outputs themselves were changed in cost accounting to better reflect daily tasks.

Table 5. Price categories and products

Price category	Unit price EUR (ward)	Unit price EUR (clinic)	Products in the price category
1	286	185	Clinical visits and MRI examinations
2	455	185	Clinical visits
3	673	185	Botox injection, MRI under anaesthesia, General nursing
4	842	185	Clinical visits, rehabilitation treatment
5	1 010	185	MRI under anaesthesia
6	404	185	All products
802	589	-	General nursing, ward
Other revenue			Outpatients

One result of the activity-based costing analysis was that the general bed-days (nursing) was unprofitable for the ward. One solution offered to remedy this was to phase out the lower price category in municipal reimbursements, and shift to using the upper price category. This way, the hospital would not be required to increase prices, which would probably invoke protests from the municipalities. The category in which the patient fell was decided by the physician in the end of the care episode – on the basis of whether the care episode was seen to be “complicated” or “resource-demanding”. The case of underpriced rehabilitation was seen to be more complex, as the underpricing was severe, and shifting categories would not remedy the situation. As the rehabilitation process was analysed, it became obvious that the high cost of rehabilitation was largely due to the activities of the psychologists, logopedists, social workers etc. The wages of these professional workers were included in the paediatrics common cost centre, and included in the analysis for costing and pricing purposes. For normal budgeting purposes, their salaries would not be included as costs of the neurological ward, and when included in the study, the result was an image of high deficit in the products the professionals were involved with.

The second meeting was held on August 29th 2001, and this time those present included, in addition to personnel from neurological ward, the clinic manager. Underpricing rehabilitation was explained by the ward physician as being largely a result of pricing pressures originating from the municipalities

“Rehabilitation is underestimated by the decision-makers. The municipalities complain that it is too expensive – it is not likely that in this situation we shall be able to increase our prices”

The comment exemplifies the lack of recognition of rehabilitation by the municipalities, as well as the fact that the municipalities were price-sensitive and pricing structure inflexible i.e. it was not easy to make radical changes in pricing and reimbursement strategies. The issue that can be raised is the following: if the products of the ward were so unprofitable, and yet the budget for the entire clinic is balanced, who is subsidising the ward and why? Why should other cost centres be paying for the costs of the ward? What is the rationale of cross-subsidisation, and is it rational to try to prevent it? The notes by the present author on March 29th, 2001 suggest that those products in which the municipalities’ willingness to pay was low, were subsidised.

Afterwards the project group speculated that the municipalities might be much more willing to accept price increases in some areas of paediatrics than in others. It might well be the case that the municipalities were much more willing to accept high prices in paediatric surgery than in rehabilitation. If this were the case, would it not be an efficient pricing strategy to gradually increase the costs of the treatments in which the municipalities' willingness to pay was high, and so subsidise the products where there was reluctance to pay. The common cost centre offers a way of accomplishing this: part of salaries of personnel employed in rehabilitation are included in common cost centre costs, which are supported by the surplus of operating (surgical) cost centres. The full cost pricing still holds at the profit centre level. After all, the idea of full costing included in the statutes governing the hospital district does not explicitly stipulate the level in which the full costing should take place; certainly it is not the product level.

3.2.3 Integrated clinical teaching of dentistry

In the last days of December 2000 the present author was contacted by the professor of dentistry (who also held a position at the university hospital) and asked about willingness to participate in a project concerning the integration of clinical dentistry teaching in the hospital. The integration of clinical dentistry teaching was part of a national joint project between the universities, hospitals and municipalities to integrate overlapping functions of clinical teaching. Whereas theoretical teaching was the domain of the university, clinical teaching i.e. dentistry students performing actual treatment procedures was taking place in both municipal health centres and hospital clinics.

Traditionally, dentistry has had a quite independent status and strong links to private sector. The pricing system embodied this

“For a long time, dentists have operated in such a way that they have collected their prices for a single procedure, and sent it to their national trade union, which has calculated the average price for a procedure. And when we have set up this public service, we have thought that it must be so that the costs here do not differ much from the private sector” (Chief dentist)

By 2000, the integration had already taken place and both the municipal and hospital staffs were involved together with clinical teaching. The problem that remained was how to divide the state subsidy between the hospital and the municipality now that their resources were consumed in the same process. The idea of activity-based costing came from the director of finance of the municipal welfare and social services office. The social services branch of the municipality in which the hospital was located had a tradition of activity-based costing experimentations dating from the beginning of the 1990's.

The activity-based costing project was organised so that two groups were formed: the project co-ordination group and the working group. The project co-ordination group, which consisted of head of the university hospital's dental clinic, the chief dentists of the municipality, the director of administration of the university's medical faculty, plus financial officers from the city and the hospital, met eight times during the first six

months of 2001. The working group, which consisted of the author (myself), one dentist and three accountants (one from the university, one from the city and one from the university hospital), held 20 meetings during the project. As for stages defined earlier, this was a fifth stage ABC project, characterised with larger scale and links to other information systems. The first meeting, in which the project plan was drafted, was held on January 10th 2001. At this meeting the author gave a presentation about the use of ABC methodology in the clinical teaching context, which underlined the problems inherent with the allocation of joint costs. In one of the overhead slides, the cost accounting structure was drafted as in Figure 8.

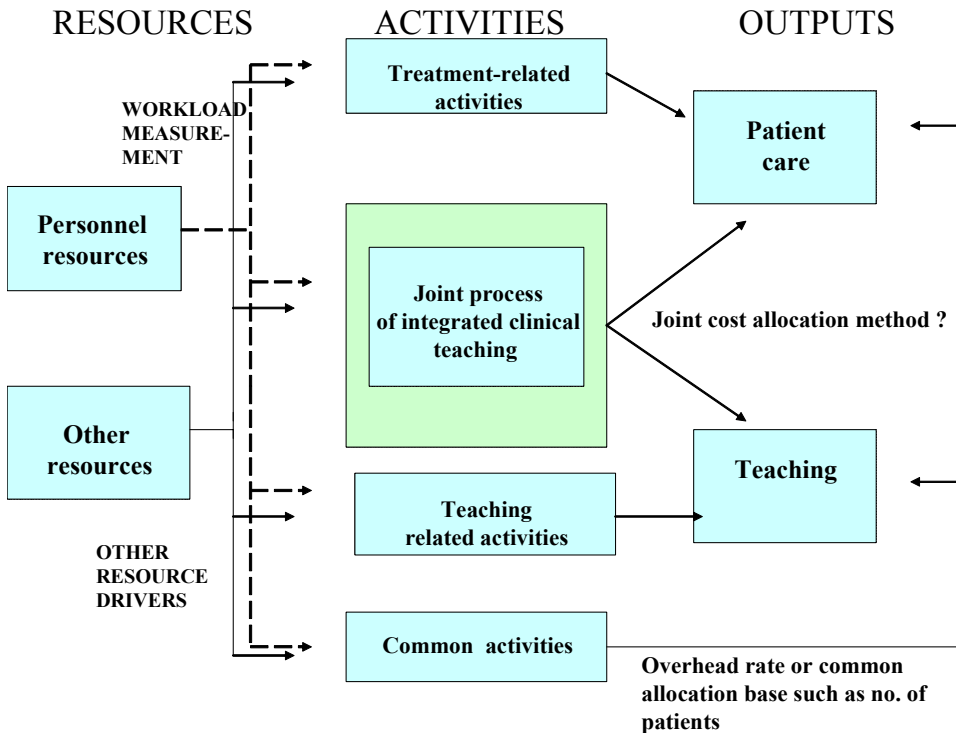


Fig. 8. Proposed structure of the integrated dentistry teaching costing model

The proposed costing system structure followed the principles of activity-based costing (resources, activities and cost objects). In the second-stage allocations the major issue was how to deal with the clinical teaching itself. The essence of that activity was that the dentistry students would be performing treatment procedures, and learning by doing. As a result of this treatment process there would be two outputs, the care received by patients, and the teaching received by the students. (see e.g. Butler 1995 for economic analysis of this particular joint process) These outputs would also be funded by different sources: treatment would be financed by municipality reimbursement and patient fees, while for

teaching a state subsidy was granted, the municipality and hospital was meeting the remainder of the costs and financing it through subsidisation from other activities.

Representatives of the municipality presented the argument that the care provided by the students would evidently consume more resources, since the students would require supervision, need more aid from the nursing staff, consume more materials etc. One option to analyse this would be by comparing the costs of non-teaching municipality dental clinics and the teaching clinic. But how much more did the treatment cost because of the integrated clinical teaching, and what allocation method to use?

An activity-based costing exercise, now almost a routine, followed. The costs of personnel resources were traced to activities using a workload study, which involved five different forms, one for each personnel group, to be answered concerning how the time at work was consumed between different activities. Two estimates were made, one based on two weeks of keeping track of one's activities, the other based on the person's estimate of yearly average time consumed. According to the views of the working group, the workload study did not cause problems and was deemed successful (the response rate amongst the staff was more than 90%). It is noteworthy here that while all the employees worked in the treatment and clinical teaching process, their official organisation, which was also the payer of the salary, might differ.

Table 6. Personnel count in terms of employer in the integrated unit

Name of personnel group	Municipality	Northern Ostrobothnia Hospital District	University	Total
Professor		5		5
Research assistant			11	11
Clinical teacher	11	9		20
Specialised dentist		2		2
Anaesthesiologist			1	1
Nursing staff	13	22	5	40
Dentist trainees in specialist training	4	9		13
Administrative staff	2	2	3	7
Total	30	49	20	99

In other resources than personnel, resource drivers were used, the most common being labour hours and number of equipment trays, and the costs of resources were thus allocated to the activities. After the workload study was carried out in March 2001, the project group focused its attention on two issues which were seen as being the purpose of the project

1. How did various organisations contribute to the costs of clinical teaching?
2. What allocation method should be used when assessing the cost of the clinical teaching process?

Joint cost allocation methods were discussed, but none seemed to gain any support. The dentists especially were reluctant to define how much more resource-consuming the care

was because of the process. Nor were they willing define any type of split-off point necessary in basic textbook methods. As the discussion proved to be fruitless, attention and eventually the focus of the project was shifted to the first question, which organisation provided the resources for clinical teaching. The shift of focus was so intense that a memo (April 26th, 2001) written to the project group by the chief administrative physician of the university hospital, where the issue of costs of providing teaching (part of which should have been calculated by joint cost allocation) was largely ignored by the project group, although the working group decided to look into the issue should there be sufficient time. Finally, the problem of joint costs was circumvented by defining the objective of the cost study solely as the division of the state subsidy for teaching between the university hospital and the city. In order to arrive at “fair shares” for costs between the hospital district and the city, much of the overhead costs were left unallocated. Only those costs that could be reasonably allocated were included in the calculation. There may have been fear that if ambiguous and difficult and obscure joint cost allocation methods were used the situation would provide incentives to select a profit-maximising allocation scheme. Since it could not be shown that one allocation scheme was better than another, the entire joint cost problem was ignored. The activity-based costing model would concentrate on the consumption of resources by the city and the hospital district.

3.2.3.1 Structure of the costing system

Structurally the costing system reflected the aim of government fund division between the hospital district and the municipality. Mainly this is seen in the fact that internal allocations, while included in the model, were not taken into account when calculating the product cost. The internal allocations were *asymmetrical*, that is, the cost accounting systems of the hospital district and the city were not similar. Firstly, the hospital district had a disaggregate and detailed internal allocation system based on the reciprocal allocation technique while the municipality had a simpler and more aggregate model. Secondly, the internal allocations of the hospital district were calculated on a monthly basis, while the city did its calculations on a yearly basis. Finally, the cost centre structure between the organisations differed so that some of the administrative expenses, which the hospital district allocated to the clinic, were included in the respective cost centre expenses in the city organisation. Since the internal allocations were asymmetrical, they would confuse the division of government funding, and were therefore omitted. Much of the joint cost problem was eliminated in the process of excluding internal allocations from the actual cost study.

Cost accounting as a process relied heavily upon division of labour hours between activities as reported by the personnel. Interestingly, the results concerning activities performed did not often correspond to the functions of the organisations paying the salary. City personnel would assist in speciality health care, and hospital personnel would assist in primary care. The project group did come to the conclusion that integrated teaching was indeed truly integrated.

The model had four cost objects, namely speciality health care related clinical teaching, primary health care related clinical teaching plus the purely care-related products speciality and primary health care. Technically, the resources were split into to three categories: personnel, support functions and other resources. Personnel resources were allocated to the activities using labour hours while the support functions were mainly allocated to the purely care-related products, eliminating the need for joint cost allocation methods. Other resources were mainly material and machine-related, and allocated primarily using the materials cost driver (no. of equipment trays) or labour hours.

Table 7. Costing system structure of the integrated teaching costing model

Implementation year	2001
Number of activities	20
Number of activities comprising 80 % of activity costs	3
Number of activity cost drivers	3
Cost driver allocating the highest cost	Labour hours
Product type	Teaching and treatment activity pools
Number of products	4
Number of products comprising 80% of product costs	3

The joint cost allocation methods were ignored by a series of allocation decisions. If the workload study indicated that time had been spent on speciality health care, there would be no allocation for teaching. The same was applied to primary health care. If a dentist-in-training reported that labour hours were spent on either speciality or primary health care, either 20% or 40% would be allocated to clinical teaching, depending on the trainee's experience.

Eventually, the activity-based costing model was to be used mainly for the purpose of dividing government funding between the hospital district and the city. The task of the project group was then to examine the costs, resources used, and outputs of the two organisations that were related to integrated teaching. This information was to be used by the hospital district management and the municipal board of social and health issues in order to draft a proposal concerning the division of the government money. The project plan did state that joint cost allocation issues should have been considered, but no clear answer was provided to the questions pertaining to the extra cost of teaching outputs in the integrated teaching process. When interviewed ex-post in 2005, the chief dentist stated

“The hospital district was going to have this state subsidy, part of which it would pass on to the municipal health centre, and we had to agree on the basis...that was the reason we did the first activity-based costing project, so we could find out what part of our activities were related to teaching [...] Now it is 2005 and we have operated for four years on the basis of the rather experimental calculation we made back then” (Chief dentist)

3.3 Heterogeneity of costing system structures

Institutional theory leads us to believe that managerial accounting systems may be converging due to the pressures from the institutions (i.e. institutional isomorphism). This section will show that cost accounting systems designed for the same purpose - full cost pricing of hospital outputs - may be quite heterogeneous even within the same organisation.

Activity-based costing literature often states diversity (in products or production) as one of the main determinants for the need of a new costing system (see e.g. Cooper, 1988). Product diversity is also a driver for overall complexity and general overheads. Therefore, we may expect to encounter high sophistication cost systems in environments where product diversity is great, although this may not always be so (see e.g. Abernathy et al. 2001). In fact, cost system aggregation seems to be influenced by many other factors such as investment in automated manufacturing technology (Abernathy et al. 2001), availability of cost drivers (Babad and Balachandran, 1993) operating cost (Zimmerman, 1997), and measurement issues (Datar and Gupta 1994, Merchant and Shields 1993).

Hospital output measures, however, sometimes have little influence on production diversity, they merely represent a choice of grouping (aggregation) in the concept of what is considered a hospital product – a quantifiable output that is exchanged in the (quasi) market and has a price. Hospital products include bed-days, treatments, treatment packages and lately, diagnosis-related groups (DRG's). As the Oulu University Hospital was reimbursing a total of some 1000 treatment packages, the product definition could be considered somewhat disaggregate. Since the main goal of cost accounting in this case is full cost pricing, the number of cost objects in cost accounting would most likely reflect the level of aggregation desired for reimbursement purposes. As for the actual production complexity, the number of activities is probably a better indicator, but that, too, is subject to the decisions concerning cost pool formation.

One important factor influencing the level of detail in a hospital costing system is the level of organization using the costing system, whether it is the individual clinic level, profit centre level or the entire hospital / hospital district. In this case, the product costing systems were first implemented in individual clinics. Generally speaking, as time in this case study progressed, a shift of budgetary responsibility from individual clinics to larger profit centres took place. Basically, a profit centre can include more than one speciality, and this is the level where costs must equal revenues, i.e. where the zero profit is budgeted. It is not that zero profit is budgeted at the profit centre level - this is done in the smaller organisational units. However, the zero profit target is expected to hold at the profit centre level. This fact has significant implications for cost accounting practices, as it introduces the possibility of one clinic producing surplus (accounting profit) and other a deficit, these cancelling each other out at the profit centre level. In practice, this introduces the possibility of cross subsidisation, an example of which is presented in the neurological ward subcase. Often this cross subsidisation is a result of practical requirements, especially in the case of wards, the transfer of nursing staff from one ward to another for optimal utilisation of capacity. During the study period, entire wards were closed especially in surgery and their staff moved to other wards. This easily becomes

cross-subsidisation as the accounting expenses do not always readily follow the changes in processes.

The interdepartmental allocation system in Northern Ostrobothia Hospital District is based on reciprocal allocation with predetermined (budgeted) overhead rates. The overhead rates are set on the basis of the responsibility area's annual budget. Note that the responsibility area is a lower organisational level than the profit centre - therefore intra-profit centre allocations also exist. Allocation rates are set on the budgeted costs and allocation bases. The budget must hold - a review is held every autumn in September. If the supporting department is estimated to show profit at the end of the year, it must lower its allocation rate so as to reach zero annual profit. Even then, the death spiral is not unheard of - the situation may provide advantage to a supporting responsibility centre that has decreasing output.

The document "Activity-based costing in the health care district", prepared by the Director of Marketing stated that the first priority of the new cost accounting should be "*an aid to the profit centre's internal cost accounting, and a tool for promoting cost awareness*". The document also stated that the decision to acquire software tools and consultancy had been taken by the health care district's Director in June 1996. But as costing systems were implemented during the bottom-up initiative for costing system development through the pilot projects guided by the central administration, the hospital district would have several activity-based costing systems operating at a single time. But in the absence of administrative co-ordination, the models ended up evolving in different directions. Some were absorption cost models, where actual total costs were distributed to activities and products via cost drivers. Some were standard cost models, where the costs of a single product were expressed as consisting of process-like activities, and then the result was multiplied by number of products to check the calculations (no analysis of variances was performed, however). Table 8 compares the structure and design of three concurrent models in the Northern Ostrobothia Hospital District, each model labelled as ABC.

Table 8. An ex-post analysis of the structure and design of three concurrent activity-based costing models

	Oulaskangas Regional Hospital ABC model	Urology clinic ABC model	Ophthalmic clinic ABC model
Implementation year	1995-1996	1996-1997	1996-1997
Number of resource accounts	224	226	163
Number of activities	264	217	114
Number of activities comprising 80 % of activity costs	72 (out of 264)	30 (out of 217)	36 (out of 114)
Number of activity cost drivers	7	8	11
Cost driver allocating the highest cost	Bed-days (47 %)	No. of patients (17%)	Nursing hours (14%)
Product type	Treatment package (surgical procedure + bed-days)	Clinical treatment package or individual treatment	Treatment package (surgical procedure + bed-days)
Number of products	98	56	50
Number of products comprising 80% of product costs	NA (standard cost model)	12	NA (standard cost model)

Initially, the hospital district administration was thrilled by the fact that their profit centres were adopting the same costing methodology, and pushing for the administration to supply funding and tools go on with the implementation (letter September 29th, 1996). Some examples follow: according to a chief physician interviewed in the hospital district internal newsletter

“It is feasible to implement, it is useful and it provides us with cost information that is on a totally different level compared to our existing pricing system” (chief physician)

Concerning responsibility for the costs the chief of finance issued a statement

“traditionally, the treating personnel has been responsible for quality in treatment, and the financial matters have been left to the administration. Activity-based costing will bring more financial accountability to the profit centres”.(chief of finance)

Concerning efficiency, the chief of administration of a regional hospital commented that

“if our goal is, as it should be, the reduction of costs, now we have accurate information on what resources are spent in particular care processes, and what those resources cost. The treating personnel can then analyse how can they influence the costs of the treatment processes, and what part of the process can be made more efficient” (chief of administration)

Soon the heterogeneity and incomparability of costing systems operating in the hospital district was revealed by Table 8 was noticed. This seemed to bother especially the hospital district's marketing director, who persuaded the hospital district manager and the chief of finance to take action (see documents 1, 2, 4 and 5 of Appendix 1). The reaction was to buy the same ABC software for all profit centres and to employ consultants to come up with a method to harmonise costing. The harmonisation was justified by efficient management - the overall theme was still very positive. For instance, according to the notes of January 14th, the hospital care district director stressed the "needs of the consolidated group", by which he meant the health care district.

The model proposed was intended to group activities into general categories appropriate for all activities (see documents of November 16th and 28th, 1996). The group involved in creating the activity categories included the director of marketing, accountants and consultants, with comments from hospital district manager and two chief physicians. These activity categories or macro cost pools were formed as follows

1. Elective care
2. Acute care
3. Patient administration and pre-care work
4. Medical support functions
5. Non-medical support functions
6. Teaching and research
7. Clinic administration
8. Hospital and health authority level administration

These categories were quite broad, and not totally suitable for any single part of the organisation, which initially caused quite a lot of dissatisfaction. A conceptual difficulty was the distinction between elective and acute (emergency) care – a distinction which is not always easy to make even for a skilled practitioner. Increased separation of basically non-separable cost pools will often introduce a problem of common costs, for which there are only arbitrary allocation solutions. This categorisation was done mainly for pricing reasons (emergency care has a higher charge than elective care), but also for strategic reasons, as the hospital district and the municipalities were planning rearranging the emergency care.

However, the document of January 27th, 1997 (first planning session of the urology clinic ABC model) indicates that the centralised system of activity definition was under pressure immediately after it was created, as the urology project group took liberties in adjusting it to the local needs. The debate apparently continued in May 7th, as the urology project group seemed to be somewhat uncertain as to what the appropriate level of aggregation in the model would be, and would it be possible to produce labour hour measurements for the activities defined. Concerning integration, in May 24th the project group stated that the existing information systems do not support cost accounting.

This way, the defined activity categories, however, were never fully put to use in reporting, and the guidelines they set were only used by some parts of the organisation. The central administration's managerial interest was soon lost, and replaced with a project group letter to profit centres (officially signed by the chief of finance) that activity-based costing was the recommended method of cost accounting (January 14th, 1997). Furthermore, the common activity categorisation should be used as a guideline for

designing models. In some profit centres, however, the development of cost accounting was carried on at a rapid pace; new ideas were experimented with and new information systems adopted. For instance, in the profit centre of surgery and intensive care, the costing model was rapidly expanded, a new larger model replacing the old one virtually every year for some time. This was development achieved totally by the profit centre (mid-level) management, with no interest or control coming from the hospital district administration.

Table 8 summarised the structural choices made in constructing three activity-based costing systems that were developed at roughly the same time. Note that two of the models – Oulaskangas Regional Hospital and the ophthalmic clinic, are stage 1 models while the urology clinic model is a stage 3 model. The number of resource accounts is a measure of the model *aggregation* – in how detailed fashion are individual expense accounts analysed. Many of these measures (number of activities, the 80/20 rule, number of cost drivers) are adopted from Babad and Balachandran (1993) as measures of aggregation in a cost accounting system. Aggregation is, of course, influenced by the product type. If the product type is aggregate, there will be fewer allocations. In Table 10, the basic design features of three consecutive cost accounting models in the profit centre for surgery and intensive care are detailed. These three models represent stages 3, 4 and 5. Table 9 is meant to be read in comparison with Table 8, which contains three models from the same time period. Table 9 then goes on to provide an example of how different stage models evolved over time.

Table 9. An ex-post analysis of the structure and design of three activity-based costing models over a period of three years

	Urology Clinic model	Elective cardiac surgery model	Surgical speciality cost model
Implementation year	1997	1998	1999
Costs allocated (year)	1.6 million euros	11.6 million euros	18.9 million euros
Number of resource accounts	226	1129	596
Number of activities	217	215	167
Number of activities comprising 80 % of activity costs	30 (out of 217)	72 (out of 215)	25 (out of 167)
Number of activity cost drivers	8	10	12
Cost driver allocating the highest cost	Number of bed days (27%)	Number of patient bed days (33%)	Anaesthesia hours (17%)
Product type	Clinical treatment package, teaching and research treated as products	Treatment packages + elective cardiac bypass surgery process	Surgical speciality (allocation to individual discharges possible)
Number of products	56	94	6
Number of products comprising 80% of product costs	12 (21%)	22 (23%)	5 (83%)

Since the ABC-models in Table 9 were in the same profit centre and designed by the same individuals, they were much more homogeneous than if compared to the costing systems detailed in Table 8. Even then, the project report of September 22nd, 1997 commented that the models do not always produce comparable reports and proposed that

“efforts should concentrate on three areas: more extensive product pricing calculations, better workload measurements and getting non-volume cost drivers from the hospital information systems”.

Table 9 also indicates that in surgery and intensive care, the amount allocated by the costing model has increased, the number of activities decreased (as insignificant activities have been omitted of the calculation), the number of cost drivers has increased (as new information technology has been introduced). A great shift in conceptual design occurred when the costing was concentrated mainly on the six surgical specialities (cardiac/thoracic-, internal/general surgery, neurological surgery, plastic/aesthetic surgery, orthopaedics, urology) as cost objects. The treatment packages remain for reimbursement purposes, but the revenues are matched against costs only at the speciality level. This is seen to support the management of the profit centre, which is becoming more and more speciality-oriented.

At first, the costing system in the profit centre of surgery and intensive care was a rather stand-alone system, with items imported from the financial accounting systems: general ledger, interdepartmental allocations and fixed asset register containing the depreciation expenses. In most other profit centres, even these were manually entered in the software. Gradually, exchange of information between cost accounting and other clinic-level information systems developed. The elective cardiac surgery model was a process representation of the activities required to achieve bypass surgery, considered one of the main products of the hospital. Since intensive care was such an integral part (and cause of cost) in open heart surgery, the care intensity rating used by the intensive care unit was used as a cost driver to allocate costs of intensive care to patients. These were readily available in the intensive care control information system. The costs thus calculated were exported to the process modelling software for visualisation. When cost accounting developed, new cost drivers were imported into the models. Access to surgery control system software produced extremely accurate measurements on time spent on surgery (even at the level of a single surgeon), which could be imported into the costing model and serve as a cost driver. The same could be done with those support services which had software of their own, namely laboratory and radiology. A significant step in management accounting development was when the profit centre acquired a Cognos PowerPlay report generator. Using the reporting system, the databases on which most of the profit centre's software were built on, could be put together and analysed. Now cost data was connected with other, medical variables for analysis.

Table 10. Integration of cost accounting models to other information systems

	Urology clinic model	Elective cardiac surgery model	Surgical speciality cost model
Items imported from other information systems	Costs	Costs, cost drivers for intensive care	Costs, revenues, most cost drivers
Source information systems	General ledger, internal allocation, fixed asset register	General ledger, internal allocation, fixed asset register, intensive care control system	General ledger, internal allocation, fixed asset register, surgery control system, invoicing, radiology and laboratory information systems
Information systems importing cost accounting information	-	Process plotting/ analysis software	Profit centre reporting system

Tables 9 and 10 describe the same stage 3, stage 4 and stage 5 ABC-models. One conclusion that could be drawn here is that with the elapse of time in this longitudinal case study, the demand for integration of managerial accounting systems has increased. The growing size of profit centres, along with the large number of products (more than 1000 at hospital level) has led to more complex internal pricing decisions, while the demands for cost-based pricing and the demands avoidance of cross-subsidisation have directly increased the demand for costing systems.

In Surgery and Intensive care, the costing systems were first developed in individual clinics (urology, neurological surgery) and then disseminated to other parts of the organisation until the accounting system finally covers the entire profit centre. The danger here is that first, such managerial information systems are designed that are tailored to a specific purpose, and then integrating these into other systems can make the whole less efficient (see e.g. Perrow 1986).

3.4 Discussion

This section will discuss the economic efficiency-based and institutional interpretations for the rationale of adopting activity-based costing systems with relation to the framework provided by Roberts and Greenwood (1997). First, efficiency-based argumentations are discussed. These arguments are strong, but constrained by individual actors limited ability to make use of accounting systems. The hybridisation of accounting and the limited ability of medical professionals to allocate their time to managerial accounting tasks are interpreted as signs of constrained economic efficiency. Then, institutional interpretations of activity-based costing implementation are discussed. Much of this discussion will be centred on the very heterogeneous structure of the costing systems. The costing systems, while differing in their structure and use, all bear the same name – ABC.

3.4.1 *Efficiency-based rationale*

This section will make use of the economics-oriented concepts - the classical notion of efficiency, where cost accounting is used to find the “right” price of a good. If that price is found, efficiency will result as prices are seen as the main carrier of economic information. The efficiency-based rationale seeks to explain the implementation of (activity-based) full costing as a means of promoting market-based economic efficiency. The ex-post interviews revealed some competitive pressures, imagined or real, influencing the decision to develop product costing techniques. As one of the early adopters of ABC put it

“Originally, we had the idea that we were going to have competition originating from the outside of the public sector. That’s why we started our product definitions the way we did, starting from the products which could face competition” (Chief physician, ex-post interviews)

Setting prices based on a strict full cost pricing method can be problematic. The problems in ensuring economic efficiency, e.g. full cost pricing, cross-subsidisation and allocation of common resources have been dealt with by different methods and solutions. The following sections will address these three aspects of the full cost pricing which can be argued to promote economic efficiency.

3.4.1.1 *Full cost pricing*

In terms of management accounting, the hospital has become, in effect, a multi-product firm. The product-line management requires an information management and accountability structure which assigns responsibility to product lines and calculates the costs of products. The responsibility accounting structure and the product costing / pricing structure have existed side by side. In addition, the clinical management information systems such as the surgery planning system, the care intensity database, and the register of surgical procedures have been developed in isolation. This has reflected the largely separate management structures of physicians, nurses and the administrative personnel. The shift to prospective payment schemes has speeded up the integration of the management structures. Similar results have also been obtained in an Australian setting by Comerford and Abernathy (1999). Hospitals have recognised the importance of this integration and there has been some evidence of the increasing specialisation of managerial tasks in the case hospital.

The responsibility management structure in surgery, however, does not entirely reflect the surgical specialities, the new product lines. This is due to several features of the treatment process. In the clinic of surgery patients are largely mixed and their speciality may shift from one to another as diagnoses are made. Some patients may have more than one diagnosis. While the neurological surgery and urology clinics are highly specialised, others are not. Surgical training circulates the junior doctors from one speciality to another, so the resources consumed are difficult to account for. The same goes for wards - while some wards are specialised, others are not, and patients may be moved from one

ward to another. Finally, the information about the patients' surgical speciality may be lost in intensive care and many of the support functions, such as the knowledge about the speciality under which the patient is classified, which is not always deemed relevant or important in all care situations.

Output-based, product-oriented prospective payment schemes and the slow change towards professionalised management have had an impact on the management information systems, an integral part of which are the cost accounting systems. As the hospital reimbursement schemes have gained importance, the role of product costing and cost-based pricing system has increased. Meanwhile, the accounting system has retained its traditional role of external reporting, budgeting, and providing incentives through the interdepartmental cost allocation scheme. One might even argue that the traditional role has also gained in importance, as politicians have shown more interest in hospital management, and in budgets and cost allocations as hospital funding has decreased. Product-oriented management has increased the marketisation of resource allocation, which is reflected in budgeting. The information on costs is also used to allocate resources to entire hospitals and their clinical units.

At the system level, the costing systems in the Oulu University Hospital became more integrated over time. The product costing system at the profit centre level integrates financial information from the existing accounting systems (general ledger, interdepartmental allocations) and the clinical management information systems, which are integrated in the PowerPlay management information software. The costing systems introduced by product-oriented management are based on principles, namely activity-based costing originating in the manufacturing sector. Profitability of treatment packages, including bed-days and surgical procedures, have become essential information in clinical management. This follows an international trend, already reported at the beginning of the 1990's by Chua and Degeling (1993) and Preston (1992). During the 2001, the first steps aimed at assessing the profitability of product lines (surgical specialities) instead of responsibility centres were taken. This was a move towards reconciling the needs of responsibility structure in accounting and increasing product-orientation. The financial performance of surgical specialities can now be assessed. In 2005, the idea was still alive, as the chief surgeon commented concerning the purpose of cost accounting

“...but if a clinical manager notices that in my clinic the numbers are different from what they are supposed to be....the manager should be able to rely on the numbers and go to the relevant people, who are responsible, and ask them in what way are things going the wrong way”

The basic motivation of this is to influence pricing and limit the cross-subsidisation of surgical specialities. As a side-effect on the managerial aspects, as the cross-subsidisation in pricing decreases, the price of a health service will increasingly reflect the costs of its production. This should also benefit many external parties, municipalities, politicians, health administrators and health economists with the ability to influence health-care related decisions. A direct outside pressure to develop costing systems in the Oulu University Hospital has not been the driving force behind costing system development – the external pressure is applied through the product based prospective payment mechanism. Instead, the process of costing system development has reflected the needs of responsibility accounting in an increasingly product-oriented management environment.

The responsibility centres remain, but product lines are becoming a new dimension of profit calculation.

3.4.1.2 Cost allocation

Much of the foregoing has dealt the institutionalised belief that an improved system for allocating costs is needed for promoting efficiency. But what is cost allocation? According to Thomas (1977), three types of allocations exist. *One-to-one* allocations assign a single subject to a single object, as when an accounting system assigns the cost of a single resource item to a micro cost pool or activity, with no cost driver required. This is frequently called cost *tracing* in the ABC literature. *Many-to-one* allocations are merely aggregations of one-to-one allocations having the same object, as when several resources are allocated to a single micro cost pool or activity, or other kinds of cost tracing (physical identification) are performed. These types of allocations are often (but not always) unproblematic in a costing context. In the presence of well-established accounting records and first stage drivers (allocation bases) they entail relatively few theoretical problems, and can be fairly neatly handled with various costing techniques.

In contrast, *one-to-many* allocations assign a single subject to two or more objects. In multi-product firms these are mostly performed at the second stage of allocation. In what follows, the word “allocation” refers to one-to-many allocations unless specifically otherwise stated. Normally, cost allocation requires the following steps:

1. Defining cost objects i.e. the organisation must decide what departments, products or processes to cost. If a sub-unit of the organisation is delegated decision rights and responsibility for its profit accumulation, then an accounting system is used to evaluate that unit’s performance. In many organisations, including hospitals, this is resolved in such a way that the clinics producing final outputs are also the profit centres which form the objects of the allocations.
2. Accumulating common costs to be assigned to the cost objects.
3. Choosing an allocation base and a method of allocation. Allocation bases as measures, physical or otherwise, that are used to distribute the common costs accumulated in step 2 to the objects defined in step 1. Allocation method refers to the mathematical procedure of allocation.

Hospitals in Finland rely on third-party reimbursement of revenues by the municipalities, or in the case of private hospitals, the Social Insurance Institution (S.I.I.) and sometimes private insurance companies. These payments are based on the costs reported by the hospital. With cost-based reimbursement, cost allocation becomes an important determinant of revenue. The issue of how cost-based contracts affect managers’ incentives to allocate costs have been studied especially in American defence contracts. The issue of cost allocation incentives in cost-based government contracts, especially the defence industry, has been discussed in the Accounting Review by Rogerson (1992), Thomas & Tung (1992), Reichelstein (1992), Demski & Magee (1992), and Lichtenberg (1992). One conclusion of their debate is that firms which do business with cost-based contracts are likely to engage in profit maximizing cost allocation practices where a

number of allocation bases is tried out, and the one which maximizes the firm's profit is selected. In Belkaoui's classification this is a special case of the ability-to-bear criterion – an allocation base is chosen which allocates the maximum amount of costs to the cost-based contract (Belkaoui 1991). In a case where a firm has both cost-based contracts and other contracts, an allocation base which results in the maximum amount of costs falling to the cost based contract is selected, as it is assumed that the reimbursing party (government etc) has a better ability to bear, and low costs in the other contract give the firm a competitive advantage in the “normal” markets.

The situation in cost-based health care reimbursement may be similar (see e.g. Zimmerman 1997, pp. 310). Suppose that a hospital district serves two patient populations, cardiac surgery and rehabilitation for the disabled. Suppose also, that amongst the hospital administrators it is widely believed that it is far easier to get the municipalities pay for surgery than for rehabilitation. Given the patient populations and full-cost reimbursement rules, the hospital administrators and accountants, as well as the consultant / researcher, have to choose a cost allocation method that loads as much cost as possible onto the surgical procedures and in order to give the hospital freedom to move (university hospitals in Finland are not profit-maximizing organisations, but attempt to avoid budget cuts instead – therefore it is more appropriate to use the term “optimising allocation” instead of “profit-maximizing allocation”). There may be a similar case with two municipalities (e.g. the city and the surrounding rural area). It will be known which of the municipalities is most likely to increase health care spending – if the patient profiles of the municipalities differ from one another, this may give incentives for optimising the cost allocations.

The costing model for the integrated teaching of dentistry ended up allocating the cost, which was considered as a joint process, either by using a proportion of labour hours or by leaving part of the cost unallocated (internal allocations). That is, much of the joint costs were omitted from the cost study. Accounting textbooks offer a number of available methods such as NRV, the Moriarty approach and its various modifications, or the Shapley value approach, but they were ignored⁴.

A fundamental problem with the use of joint cost allocation methods seems to be that they assume the existence of information which is not readily available in health care settings. For instance, the NRV assumes the existence of a split-off point, a point where the joint process becomes separable. The costs of joint process are then allocated to the separable processes according to some criterion. The theory derives from industrial processes, a disassembly process. The problem here is that most health care processes, the clinical teaching of dentistry included, have no clearly definable split-off point. Health care is an abstract output, subject to various definitions. Teaching is even more abstract, and the point where these two could be considered separate is purely speculative.

All in all, the joint cost allocation problems in the integrated clinical teaching of dentistry was rejected on the basis of information availability, part of which is related to the costs of obtaining information and maintaining parallel allocation schemes. Instead, the criterion used in allocations could be characterised as Belkaoui's (1981) fairness criterion, the hospital district and the municipality carrying the costs which the parties

⁴ See Moriarty (1975), Moriarty (1976) and Thomas (1977) for details of joint cost allocation methods.

agreed upon that was fair. If what was considered fair by both parties was exceeded, the government funding would be used to compensate for the other party's loss.

3.4.1.3 Cross-subsidisation

In the first sub-case, the cross-subsidisation of product-lines, which obscures pricing, is seen to promote inefficiency through market prices that are not based on costs, as well as through the internal pricing system. The costing system is implemented to provide fair and accurate costs for both the internal and external prices. In the second sub-case, however, cross-subsidisation has become necessary for the profit centre to balance its budget. The situation is reminiscent of the defence contract debate described before. One part of the organisation can maintain higher prices due to its market power, and must subsidise others. Although it can be argued that the profit centre exhibits profit maximizing behaviour, the rationality is bounded, and the cross-subsidisation is not calculated or planned, but results from a long process of price negotiations over time. In the third case, a joint cost problem and a simplistic allocation scheme are presented. In a joint cost setting, accurate or true product costs cannot by definition exist, but all allocation schemes are more or less arbitrary. Yet the organisation, faced with a resource allocation decision, found it necessary to implement activity-based costing. A chief physician revealed in an interview that the cross-subsidization issue had not decreased in importance.

“In the past, the only thing we had to worry about was that the hospital district's member municipalities would not be made to subsidise non-members, but now we have the outsourcing issues and others...things have gotten complicated...I mean astronomically more complicated” (Chief physician, ex-post interviews)

Often it is argued that profit maximization cannot be easily applied to public organisations, even if financial arguments and business-like rhetoric have become commonplace in Finnish hospitals with concepts such as products, profit centres and cost accounting. (see e.g. Kurunmäki 1999 on the pervasiveness of economic argumentation). However, most organisations, including hospitals, will find it necessary to avoid negative cash flows in the long term. Furthermore, even if profit cannot be distributed as such, results from agency research, for instance, may lead us to believe that positive cash flows may yield benefits to the decision-makers in the organisation. The additional cash flows of the hospital can be spent on growth, new equipment, congress trips for physicians etc. to have zero accrual-based profit, but increasing the welfare of the decision-makers. Although it is recognised that the social and economic phenomena exist side by side and are influenced by each other, writers such as Williamson (1975) point out that the self-interested nature of exchange is the ground for analysing economic phenomena, and writers such as Perrow (1986) admit that it cannot be ignored, and that economic concepts help us to see it.

With respect to profit-maximizing behaviour, public hospitals are not supposed to show profit as expressed in accrual-based accounting terminology. This does not necessarily mean that there is no self-interested behaviour, or for that matter economic profit. Profit maximising behaviour is enabled by ensuring positive cash flows, which

allow the clinic financial freedom. Positive cash flows can be maintained by increasing discretionary costs, which are allocated so as take into account the elasticity of demand for the product – allocation methodology is chosen so that products with low elasticity of demand receive a major share of the allocated costs, and vice versa. The profit margin can then be interpreted as being the allocated discretionary costs.

In fact, cross-subsidisation of costs can be used for similar purposes in a situation where profit margins are controlled. In a hospital setting this has been studied by e.g. Blanchard, Chow and Noreen (1986), who found incentives to bias predicted costs in order to increase budgets. In fact, a study by Eldenburg and Kallapur (1997) implied that U.S. hospitals were acting strategically by increasing the volume of outpatient treatment as well as allocating more cost to it in order to increase potential revenues. Further evidence of U.S. hospitals reacting to rate regulation in their accounting reports has been produced by Mensah et al. (1994a, 1994b). The cross-subsidisation phenomenon is discussed in the debate concerning the cost allocation practices of government defence contractors (see e.g. Rogerson, 1992, Thomas and Tung, 1992, Demski and Magee 1992, Lichtenberg 1992). A conclusion based on that literature is that we should look for profit-maximizing behaviour (optimising cost allocations) in those situations where there are purchaser parties with different willingness to pay for health care services, or the elasticity of demand differs for different health care outputs.

Both the sub-cases neurological ward and integrated dentistry display these circumstances. On the neurological ward, the personnel complained about the relatively low status and willingness to pay for rehabilitation –related outputs. In dentistry, the hospital district and the municipality had to agree on how to create a fair division of costs between the parties. This division of costs also influenced the allocation of state subsidies and the fairness criterion formed an objective function which may have influenced the decisions concerning how to allocate costs.

3.4.2 Bounded rationality and satisficing search behaviour

The way economic efficiency seeking behaviour can be viewed with relation to stages of cost accounting development discussed in Section 3.1. In the first stage of cost accounting development, independent profit centers reacted to fiscal situation by initiating independent activity-based costing projects. Reactions for such outside efficiency pressures can relate to increasing efficiency, or external legitimacy (see Oliver, 1991).

However, an important issue raised in the follow-up interviews was the *availability* of an activity-based costing solution. A local software company was actively marketing its ABC solution to the hospitals. Regardless of the demand for ABC relating to efficiency or legitimacy motivations, the supply was there, at reasonable cost. Activity-based costing was at the time also promoted at various courses in which the hospital administrators took part.

Another aspect of bounded rationality relate to hybridization of management accounting in hospitals, the “hybrid profession” of administrative physicians (see Kurunmäki 2004, Kurunmäki et al 2003). Therefore, in discussing the bounded

rationality aspect with relation to management accounting does not only deal the study of accounting practice, but also accounting practitioners. Many of the management accounting functions were supposed to be performed by physicians, who generally felt that they had not enough time to allocate to these activities. As chief physicians felt burdened by the administrative tasks, they were motivated to purchase outside consultancy help. First, the consultants were able to sell the idea that financial problems were at least partly a result of inaccurate pricing. The same consultants, then, suggested ABC as a solution to pricing problems. Thus, a combination of hybridization of management accounting and acquiring outside consultancy on financial issues may have contributed to the initial acceptance of ABC in the hospital district.

Once activity-based costing had been implemented the first profit centers, the idea was taken up by the central administration, which recommended the development of ABC for others. At this stage, it was no longer economically efficient for the remaining profit centres to look for other solutions. This way, although the later stages of activity-based costing development also display signs of isomorphic pressures, the adoption can also be understood from the viewpoint of bounded rationality and satisficing search behaviour.

Bounded rationality also exhibits itself in the problem of how detailed a costing system should be. What is the appropriate number of activities, and how many cost drivers should the model have? The analysis of the cost accounting models in Section 3.3 has shown a great heterogeneity in dealing with this issue.

A basic argument put forward by ABC researchers is that production diversity is one of the determinants that drives costing system change (see e.g. Cooper, 1988). Often the contrast is made between a single-overhead-rate system and a sophisticated ABC system. Therefore, it is fair to say that we will find more complex systems (or these complex systems will be more useful) in production environments where complexity is increasing. In their study of various manufacturing firms, however, Abernathy et al. (2001) did not find support for this argument, but suggest other, underlying factors instead.

In profit centres consisting of a single speciality we should be finding less diverse costing models. Looking back at Table 9, at the beginning phase of the projects, this seemed to be true as the regional hospital model (which consists of several different specialities) was indeed the most disaggregate. However, as time progressed, transaction-cost based, cost-benefit argumentation may have contributed to the simplification of the costing systems. In Table 10, which plots the structure of the surgical costing systems over time, the simplification is obvious. The increasing integration (Table 11) enables further reductions in the costs of calculation. The number of cost drivers, however, increased, but among these cost drivers the insignificant ones had been dropped (q.v. Babad and Balachandran, 1993). Much of the argumentation concerning the level of detail in a costing system is founded on (transaction cost) economics-based thinking. Datar and Gupta (1994) demonstrate the untenability of the argument according to which disaggregate systems are always more accurate than aggregate systems. As the level of detail in a costing system increases, the number of measurements is bound to increase, which may introduce more errors into the system than there were prior to the disaggregation. Babad and Balachandran (1993) argue that cost-benefit considerations should be applied to the measurement of overhead cost drivers and produce what is essentially an elaboration of the 80/20 rule – that one should concentrate on measuring the cost drivers that carry the majority of costs. In the end, it seems that one must often

rely on rules of thumb such as the 80/20 –rule in order to apply economically rational thinking in practical situations.

3.4.3 Postconscious institutionalization and isomorphic pressures

According to postconscious institutionalisation (Roberts and Greenwood, 1997) institutional forces in an organisation's environment directly or indirectly direct the design adoption of various organisational constructs (such as a cost accounting system) away from the optimal solutions proposed by transaction cost economics and toward the dynamic of legitimacy. Drawing on DiMaggio and Powell (1991) these external institutional forces are divided into three categories: coercive, mimetic and normative isomorphism. While the evidence of isomorphic pressures in this case is somewhat limited (most evidence relates to preconscious institutional constraints rather than overt institutional pressures), the fact that the costing systems were found to be quite heterogeneous has interpretations relating both to economic efficiency and to institutional pressures.

At the hospital district level, no evidence was found for *coercive* isomorphic pressures. In fact, stage 1 of the costing development included a series of independent models and bottom-up initiatives, after which the hospital district administration was asked by the profit centres to provide support for advanced costing calculations. For instance, the Oulaskangas Regional Hospital ABC model predated any interest by the hospital district central administration on the issue. Likewise, neither the Finnish central government or the Finnish Union of Municipalities had significantly proposed or pushed cost accounting reforms.

The time in which cost accounting systems were developed with enthusiasm did, however, coincide with the accrual-based accounting reform of the municipal sector. The Municipal Act, which came into force regarding municipal accounts in 1997 made reference to the Accounting Act currently in force. In practice this meant that all municipal organisations, including hospital districts, had to adopt accruals-based business accounting. The resulting increased talk about profit and economic concepts (see Kurunmäki, 1999a) may have influenced the development of management accounting systems, but evidence to support this on the basis of case material is limited. However, institutional environments are dynamic and interconnected. Thus the continuing financial rhetoric may in the long run also shape taken-for granted beliefs about the need for financial control systems (preconscious institutionalisation). In stage 3 of cost accounting development, namely the pilot projects, the hospital district management may have used coercion for making some of the profit centres to experiment with ABC. Likewise, in the neurological ward as well as in dentistry, the initiative seemed to have come at least partly from the central administration. However, characteristic of these top-down initiated projects was their one-off status – the cost calculations were not updated (either on a regular basis or at all).

“Well, lets say that these projects were not motivated by the clinics' own needs. I would rather say the needs came from elsewhere in the organisation” (accountant, ex-post interviews 2005)

Some of the pressures for ABC adoption may have been mimetic. At the time the hospital district ABC development took place, industrial organisations in Finland were also adopting activity-based costing systems (Malmi, 1997). Also, the city of Oulu in which the university hospital was located had its own projects in the social and welfare administration.

Active selling of ABC concepts by management consultants also took place. Incidentally, the top supplier of public sector activity-based costing software solutions was at the time based in Oulu. *Normative* isomorphic pressures involve the fact that some of the hospital district administrative physicians took part in professional development or MBA-courses at the local university. Other normative isomorphic pressures may include attending seminars and reading books on ABC, both of which were discussed by the interviewees in the follow-up interviews.

3.4.4 Institutional constraints and costing system design

Major points of interest in interpreting the results using the constrained efficiency framework is how does the institutional environment influence a) the decision to adopt ABC and b) the development and structure of ABC systems. Regarding the former, the previous section concluded that various institutional isomorphic pressures, coercive, mimetic and normative, played a role in the decision to adopt ABC. So far, the case evidence seems to support the notion common in institutional theory that organisational structures are converging due to isomorphic pressures.

However, the pressures relating to convergence have not remained constant, but instead have seemed to have a greater influence in the early adoption phases of ABC systems than in the later developments. The heterogeneity in the structures – not the names - of the resulting costing systems shows that various profit centres have had considerable freedom to implement their own systems. Two possible interpretations exist. Firstly, we may conclude that the power of the external institutional influence relating to the adoption of cost accounting systems gradually faded, either as a passing managerial fad or an emergence of a transaction cost economic logic with the weighting of costs and benefits related to these systems. Secondly, the institutional pressure may have varied from one profit centre to another as different consultants were used. In the retrospective interviews, one interviewee, a chief physician, put this as follows:

“Our organization...has the problem that in all issues we have agreed-on policy at all, and this must be one of the reasons why we have been so independent (with relation to management accounting) [...]...and the reason why our policies have been so different is that we have employed different management consultants, and different consultants have different methods” (chief physician, ex-post interviews, 2005)

In retrospect, it also seems that many of the costing systems were not updated, at least on a regular basis. This development supports the notion that institutional pressures may have decreased over time. On the other, Meyer and Rowan's (1977) notion of sagacious conformity suggests that organizations may, due to legitimizing reasons, attempt to

portray a purposely false image on the adoption of fashionable management techniques. Following this line of thinking, a clinic may adopt a haphazardly constructed ABC model and use it to calculate part of its full cost prices, and then claim (for several years) that its prices are based on “true costs”.

The foregoing developments have mostly been related to the concept of postconscious institutionalism. However, the analysis of *preconscious institutionalization* will more limited due to the method involved (archival data and retrospective interviews). The managed care mechanism and the notion of full cost pricing mainly relate to the issues that the various actors have viewed as taken-for-granted issues in their operating environment. The cross-subsidisation example shows that a clinic might be financially better off if cross-subsidisation prevailed. Yet the notion that hospital budgets should be balanced and that all services should be reimbursed at full cost prevailed over (short-term) economic considerations. In that sub-case, little reference was made to the overall benevolence of accurate pricing system, which could be interpreted as economically rational argumentation. Instead, the organisation could see no other alternative for financial management than the rules imposed by the municipal fiscal management where budgeted accruals-based costs are set equal to revenues, and where the hospitals sell their products to the municipalities on a full-cost basis.

3.5 Conclusions

Over the years covered by this case study, the ABC implementation process in Northern Ostrobothnia Hospital District has displayed both strong economic efficiency argumentation and various institutional influences. The case study identified five stages of ABC development have been identified, ranging from the early independent experimental models to profit-centre – level systems with links to other information systems. Description of the origins of the hospital district’s ABC indicates that while stage 1 models were mostly intended for pricing outputs, stage 2 development, uniform activities was largely motivated by the thought that inefficiencies could be reduced by implementing firm-like controls in the hospital, which is especially evident in the statements by the director of marketing and the hospital district manager. The uniform activity model was tried out (stage 3), and then abandoned. After that stage 4 followed, where calculations were re-decentralised, and ABC development continued in the profit centres. Finally, in stage 5, the ABC models were being expanded and integrated. The retrospective interviews indicate that while some ABC models have been abandoned, others have been developed and replaced more sophisticated patient-based costing systems.

In stages 3, 4 and 5 of the hospital district’s ABC development, three specific themes relating to the pursuit of efficient organizational designs: *full cost pricing*, *elimination of cross-subsidisation*, and *cost allocation*. One sub-case has been presented of each. The activity-based cost report for surgical specialities was developed mainly for the purposes of full cost pricing. The end result was a surprising simplistic cost report, from which activity costs had been hidden. Main developments in the costing systems were the new cost drivers, most of which were now stored in a database and not calculated manually.

The full cost pricing, and the resulting elimination of inter-speciality cross-subsidisation was seen by the chief surgeon to promote the independence and responsibility of surgical specialities. The sub-case neurological ward described a situation where cross-subsidisation had become an economic necessity, and could not be eliminated without risking economic losses. The sub-case integrated teaching of dentistry described a situation where cost allocation had a direct link to revenues, which may have tempted to play allocation games (especially so since the process involved a joint production process). The sub-cases exemplify that profit-maximising (optimising) behaviour is not necessarily limited to profit-making firms, but a relevant factor in the design of hospital cost management systems.

While much of the foregoing is in line with the economic rational argumentation of ABC adoption, applying the rationalism in practical situations has been somewhat constrained. The number and the heterogeneity of the costing systems within the same organization point at a decentralised development where both the practical implementations influenced by bounded rationality, and the motivations to adopt ABC, influenced by institutional pressures, have varied over time. It is probable that the bounded rationality manifested itself especially in the design choices made in the costing system development (e.g. the numbers of activities and cost drivers), and also in the views concerning the costs and the benefits of the systems. Thus, some models may not have been actually used, some were used as a one-off or a sporadically updated accounting exercise, while other ABC models were developed, integrated and eventually transformed to better suit the health care environment. These reflect contrasting views concerning the value attached to the models.

While part of the institutional constraining factors may be contributed to preconscious institutionalism (especially self-evident nature of full cost pricing), most of the institutional influence seemed to have a pressuring and legitimizing nature. Much of the encountered institutional pressure has been mimetic, which is evidenced by the references to private sector organisations and the intermediating role of consultants. Interestingly, using different consultants may have played a role in the heterogeneity of the costing systems. Evidence of coercive pressure appeared at later stages of the accounting development, originating either from the central administration (stage 3) or from the municipal and/or governmental authorities (integrated dentistry costing system). The role of normative pressure was found to be weak, probably best explained by the weakness of the accounting profession in the organisational power structure.

4 Tampere University Hospital: Institutional aspects of cost accounting system implementation

4.1 Introduction

Pirkanmaa Hospital District is an organisation owned by 35 surrounding municipalities, which purchase the vast majority of its services. The district is providing a population of more than 1 000 000 inhabitants with speciality health care. The hospital district consists of the Tampere University Hospital, Mänttä health care district (primary health), two regional hospitals and a profit-making centre for laboratory medicine. In the organisation chart, the regional hospitals are profit centres just as there are profit centres inside the university hospital, the main difference being that the regional hospitals cover a wider range of medical specialities than the university hospital profit centres. In 2001, the health district had 1 713 beds, more than 4 700 employees and annual budget of c. 380 million euros.

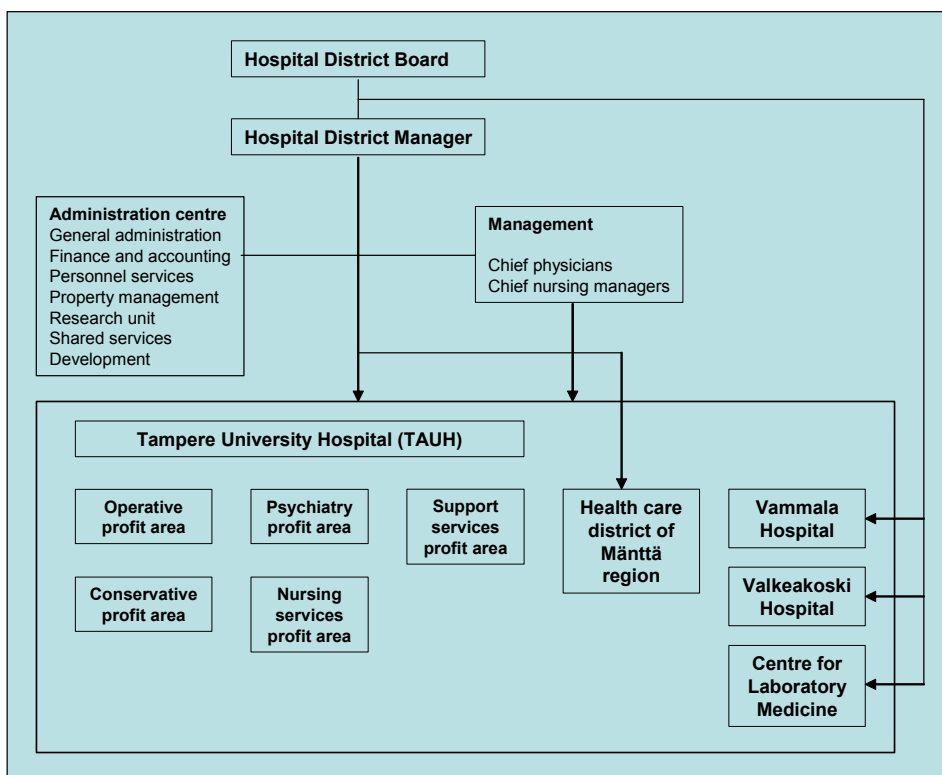


Fig. 9. Simplified organisation chart of the Pirkanmaa Hospital District

There are five profit areas in Tampere University Hospital, with several clinics located under each. Mänttä health care district is responsible for the primary health care for that region, and is under the authority of hospital district manager. Two regional hospitals, Vammala psychiatric hospital and Valkeakoski regional hospital are equivalent of profit areas, but with their own regional board of governors. In addition, the centre for laboratory medicine acts as a profit-making organisation, competing with private organisations and other hospital districts in the clinical chemistry, microbiology and pathology areas.

4.1.1 Data collection process

The method used in this case study is *participant observation*, i.e. the present author attended project group meetings as a recognised member of academia. Data thus gathered consist mainly of a research diary (31 pages) and field notes (12 pages). The present author has not influenced (or been able to influence) the turn of events in any significant way. In addition to the notes collected through participant observation, there are ten

archival documents relating to the project. The timeline and the research process is roughly described in Figure 10.

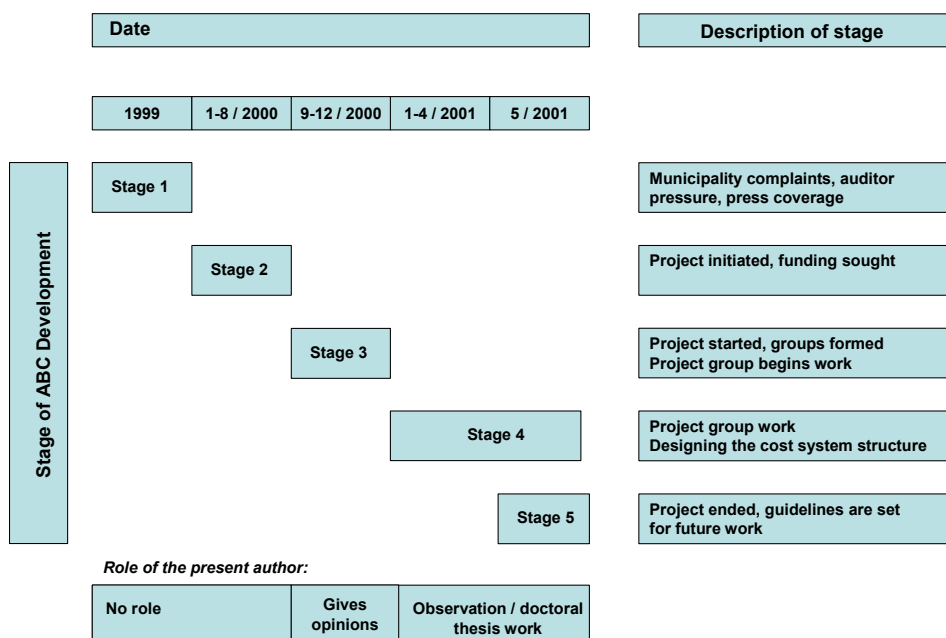


Fig. 10. Timeline and the research process

Documents 1, 2 and 3 of *Appendix 2* (newspaper items, auditors memorandum and the financial statement) relate to the first stage, where external pressure had been applied to the hospital district. In the first stage, the present author had no personal role. Documents 4, 5 and 6 relate to the second and third stage, where the activity-based costing and pricing project were initiated. These are memorandums comprising of various opinions on how to go on with the project, and also include some opinions by the present author. Documents 7 and 8 relate to the fourth stage and are memorandums from the project group meetings, in which the present author was also active and collecting data for this dissertation. Documents 9, 10 and 11 are official reports that summarize the results of the activity-based costing and pricing project.

4.2 Activity-Based Costing and Pricing project in the Tampere University Hospital

4.2.1 Project background

On September 26th, 1999, the citizens of the surrounding area, as well as the staff of Tampere University Hospital, could open their Sunday morning newspaper and read the main headlines, which stated that the hospital district and the Tampere University Hospital had failed to set the prices of outputs correctly, that the budget had been spent, and that the hospital costing system was obsolete and unable to provide information to remedy this situation in any way.⁵ In the course of the past few years it has not been uncommon for the hospital staff to leak various stories to newspapers, or even to discuss personnel problems and the effects of budget cuts on national television. The newspaper articles, too, were based on interviews with the representatives of hospital management, some named, some remaining anonymous. This press coverage continued in the course of the activity-based costing project; on October 24th, 2001, the local daily morning newspaper published a headline according to which “*health services in our city should be entirely restructured*”. The actions of administrators were claimed to be “*inefficient and indifferent*”.

Behind these reports were a series of discussions inside the hospital district, where the newly-implemented managed care system, and its implications for financial management had been reviewed. The content of these internal reviews soon became public knowledge. Public interest in the issue was further increased by the fact that the municipalities - especially the of Tampere- were predicted to show speciality health care spending a great deal higher than the original budget, so the media started to look for the parties responsible – either municipal administration and politicians, who had underestimated the need for health care, or the hospital district, which was spending much more money than it had originally estimated. The media soon saw fit to claim that the latter was the case – hospitals were spending too much money. Such publicity for a hospital internal development discussion also illustrates the public nature of health care services, that indeed hospital cost accounting systems were not seen as an internal issue, but as an issue which is in the interests of society as a whole. And since the managed care system links hospital and the entire hospital district budgets to the municipal budgets, the hospital district budget was certainly not seen as a management issue, or a part of managerial accounting system, but as an issue of municipal policy. Later in 1999, an internal memo from the auditors mentioned that the hospital district clearly had a need to improve its cost accounting and pricing systems, and the auditing memorandum dated April 4th, 2000 included a similar statement.⁶ The official, public auditors report for the year stated that “*management control in the joint municipal organisation is not entirely satisfactory*”. Generally, non-uniform auditors’ reports are considered quite rare in Finland. Therefore,

⁵ The rather aggressive-sounding headlines of September 26th, 1999 could be translated as “*White-coats flunk finance class*” and “*Ill, more ill, Tampere University Hospital*”.

⁶ Hospital district internal announcement concerning the annual accounts for the year 1999.

issuing a non-uniform auditor's report put considerable pressure on the hospital district administration and accountants.

The purpose of this is to demonstrate the force of the external pressure put on the hospital district administration. Some of the pressure built up through the managed care system, with its sanctions on exceeding the budget. Much of the pressure came from the local politicians, who are also represented on the hospital board of directors, and who are sensitive to public opinion formed through the media. And, finally, there may have existed a bandwagon-type of external pressure voiced through the auditors and supported by hospital management, that everyone else is developing new costing systems, and that supposedly superior activity-based costing techniques should replace the old, "traditional" costing techniques.

The objective to price hospital outputs on a full-cost basis was included in the strategic plan of the Pirkanmaa Hospital District, and it is also based on the legislation. This pricing was to be carried out by using a uniform cost accounting system. The full cost basis was also included in the municipal contracts constituting the managed care system. In the contracts it was stated that there should be transparency in costing practices, and that the cost accounting principles as well as the full cost calculations should be made available to the purchaser, i.e. the municipalities.

The accounting function in the Pirkanmaa Hospital District, and especially in its largest hospital, Tampere University Hospital, was organised in quite a different fashion than in Oulu University Hospital. The person responsible for managerial accounting was the chief of financial control. This was a part-time position under the chief of finance, who was also the head of the finance department. The chief of finance was mainly responsible for external accounts (book-keeping) and financial matters, and did not participate in or provide input for the cost accounting project. In addition, the profit centres had their own clinical accountants (whose responsibility would be one profit centre area, i.e. surgical/operative, internal medicine, psychiatry, paediatrics etc. These were fairly new positions, introduced in the wake of the move to adopt managed care when it was recognised that the managed care practices would eventually entail more financial calculations and reporting, and also impose requirements on pricing. Officially, the clinical accountants were not part of the central administration. This was very important, because in this age of budget cuts and laying off of nursing staff, it had become politically extremely difficult to add positions to the central administration, a fact which also partly explains the fate of the project worker intended to be employed in the cost accounting project. In the organisation chart the clinical accountants were part of the profit centre (middle) management. In reality, however, the clinical accountants formed a closely-knit team headed by the chief of financial control, forming a type of financial controlling organisation. Guidelines concerning reporting would be set by the chief of financial control, and carried out by the clinical accountants. Information would be gathered from the profit centres and reports made, to be summarised by the chief of financial control and be reported to top management. Therefore one might argue that the Tampere University Hospital activity-based costing and pricing project had perhaps better than average human resources to manage a sizeable cost accounting project.

According to the chief of financial control, these requirements imposed on the hospital costing and pricing system were quite demanding. Traditionally, it had been difficult to set prices at full cost due to the fluctuations in demand and the changes in capacity

consumption which followed. A majority of hospital costs were seen as fixed in the short run. The under- or overrecovery of overheads was seen to be problematic under the managed care, as the predetermined overhead rates were set at the beginning of the contract period, after which changes in volume would still occur.

Activity-based costing was not a totally new idea in the hospital district. Two doctoral dissertations by physicians had been published several years before on the university hospital concerning cost accounting models in a single clinic (see Sillanaukee 1996 and Lääperi 1996). A nursing science study on emergency room activity-based costing was ongoing (see Vilmi, 2000). In the latter study, a main characteristic had been process orientation, the analysis of the care process and the resources consumed in that process, with pricing as a secondary goal. This concept of process orientation, a horizontal chain of activities that flow across the organisation, had emerged in the debate over the project goals. In addition, an activity-based costing model was fully operational in the radiology department, which had also purchased commercial activity-based costing software. There had also been some ABC experiments in the otolaryngology clinic and the laboratory services. Interestingly enough, these earlier, physician-initiated cost studies would have almost no influence on the new, accountant-run ABC project whatsoever. One physician did participate in the discussion concerning the project goals (see document 7 of *Appendix 2*), but otherwise this new project was to be run by the administrative and accounting personnel.

4.2.2 Project decision

The activity-based costing project group was formed in August, 2000. The project organisation had two levels: the coordination group and the project working group. The coordination group consisted of top management – members of the three personnel groups i.e. the physicians, the nurses and the administration were represented, and was chaired by the manager of the hospital district. In addition, representatives from the surrounding municipalities were also included, likewise the present author and two other academic researchers. The municipality representatives were needed to gain acceptance from the municipal decision-makers, and to exchange information. According to one of the researchers involved, their role was to provide legitimacy for the project, so there would be few questions about the various decisions made and design options selected. In other words, the aims of the project could also be described through the development of the costing system, which would provide legitimate, reasonable-sounding cost based prices for prospective pricing and reimbursement purposes. Officially, the broad purpose of the costing project was declared to be *“increasing the cost awareness in order to implement the strategic plan”* and specifically *“to create a uniform activity-based costing model that forms a basis for service pricing. The model will specify the basis according to which costs are allocated to cost centres, activities, products, and possibly some other cost objects. Cost accounting according to the specified model will be implemented throughout all specialities”*.

Despite the somewhat ambitious objectives, funding for the costing project was scarce. Originally, the chief of financial control had intended to employ a project worker for the

costing project. As the beginning of the actual project was postponed, the project worker left and was no longer available. Due to lack of funds, no extra project worker was employed, and the cost calculations were to be made by the clinic accountants. The project group was formed, and included the chief of financial control and the clinic accountants. About twice a month the project group gathered to hear the opinions of its outside members: the present author, the chief administrative surgeon, or other personnel who were thought to have experience of cost accounting. The university hospital personnel included a physician whose doctorate (in medicine) concerned hospital costing practices, and also a nurse whose licentiate (in health care administration) concerned the benefits of activity-based costing for nursing practices in the emergency room. My research diary and notes originate from these larger project group meetings held in the winter of 2000-2001 (see Appendix 2).

In the project coordination group, chaired by the hospital manager, the present author was asked to give a presentation on August 25th, 2000 on the broad options concerning how a cost accounting project, and specifically an activity-based costing project should be conducted. These two options had been discussed before between the present author and the chief of financial control. It was hoped that the present author's presentation and the opinions of the other academics present would give the situation an air of objectivity, and thus also limit the number of choices available to the decision-makers (in practice the relevant decision-makers being the hospital manager and the chief surgeon). In advance, it was planned that one of these two options presented by the researchers would be chosen, the other option being presented because options should exist, at least in theory. In a sense it could be argued that the decision had been taken in advance by the chief of financial control and in part also the present author, there being a sort of script or "screenplay", although not actually a pre-written one, for the meeting. In the following discussions, the large-scale options presented were

A cost accounting system which would rely on the existing profit and responsibility centre structure, and the internal allocations (transfer prices) linking the responsibility centres to one another. The activity-based costing would be carried through in only those responsibility centres which send invoices to the municipalities (i.e. the clinics, the wards and some of the surgical units). In the support functions (i.e. laboratory, radiology, physiotherapy etc.) the existing costing systems would be relied upon. There would be one all-encompassing general activity model, which would be replicated across units. The activities would be macro activities, the exact contents and definitions of which would differ from one responsibility area to another. For example, there would be an activity called "surgery", the exact definition of which would depend on whether it was performed in a cardiology unit or an ophthalmology unit.

A process-oriented costing system based on medical specialities and care processes. This would be a process model, which would flow across the organisation, and in all parts of the process one would have to allocate costs to the defined specialities and processes. Then the costs of each speciality would be allocated to the defined products.

The main arguments brought forward in the August 25th meeting were the following:

- The aim of the project was seen as the pricing of existing hospital products
- However, the project results should support the DRG-based products should the DRG system ever be adopted.

- There would be no pilot project, but the project will cover the entire hospital district
- The project would be very large and the timetable would be strict, but funding for the project would be low
- Therefore, the costing systems should be rough, aggregate and rely on the existing information
- The result of the project would be a rough cost analysis providing rough estimates of product costs. Refinements to the model would be possible in the future

The anticipated advantages of the process-oriented system (option 2) were that it would more easily gain acceptance from the physicians. This became evident immediately when the physician member of the project group gave her presentation on the future need for financial information. In this presentation, the process orientation was heavily supported. Furthermore, the physician stressed the need to focus on future products and future strategy, while the accounting personnel were more prone to rely on something tangible, the existing products. In her presentation, the process-based thinking across health care organisations was seen as the future course of action, and cost accounting should be implemented to further this end. To accomplish this, costs should be allocated to care processes, not organisational units such as clinics or profit centres (although the latter would also be needed for responsibility accounting purposes).

One way to analyse the situation would be that the physician's views on costing were in fact support for an activity-based management system, where cost information could be used for both operational process control and organisational control purposes. In an operational control system, future orientation, usability for short-term decision-making would be more important than a retrospective pricing function. Later, the official product documents stated that

“linking the cost accounting to the care processes in the hospital district is not possible, because the hospital district has not defined its process accurately enough” (memorandum of August 25th, 2000).

This debate is reminiscent of the ABC-ABM concepts, where activity-based management systems are seen as process oriented tools for operational control - e.g. Cooper and Kaplan (1998) make this distinction clearly, see also Bjørnenak and Mitchell (2002) for an evaluation of the academic debate. Clearly, using the Cooper-Kaplan terminology, the accountants were advocates of strategically oriented activity-based costing, while the physicians advocated an operational activity-based management system. Furthermore, this may be interpreted as an early warning of decoupling the financial performance measures and service processes as predicted by Brignall and Modell (2000).

Generally, the view of the physicians was that the product types and profiles between different clinics varied in fact quite a lot, although they did not do so in the hospital's product price list. This meant that it would make sense to distinguish between those clinics in which detailed cost categorisation would be needed, and those clinics where an aggregate system would serve the purpose. The organisation was viewed as being large and very diverse - in fact, much more diverse than a typical private sector industrial conglomerate. Furthermore, the physicians had reminded the administration of the fact that cost accounting concepts were alien to most, that a single cost accounting system would be a virtual impossibility – and not serve the purpose of accurate cost allocation,

which was the foundation of an accurate and transparent pricing system. Some sort of general guidelines for cost categorisation would be needed, such as how one should aggregate the personnel expenses. The physicians made clear that their representative should be included in the group. The chief of financial control stated:

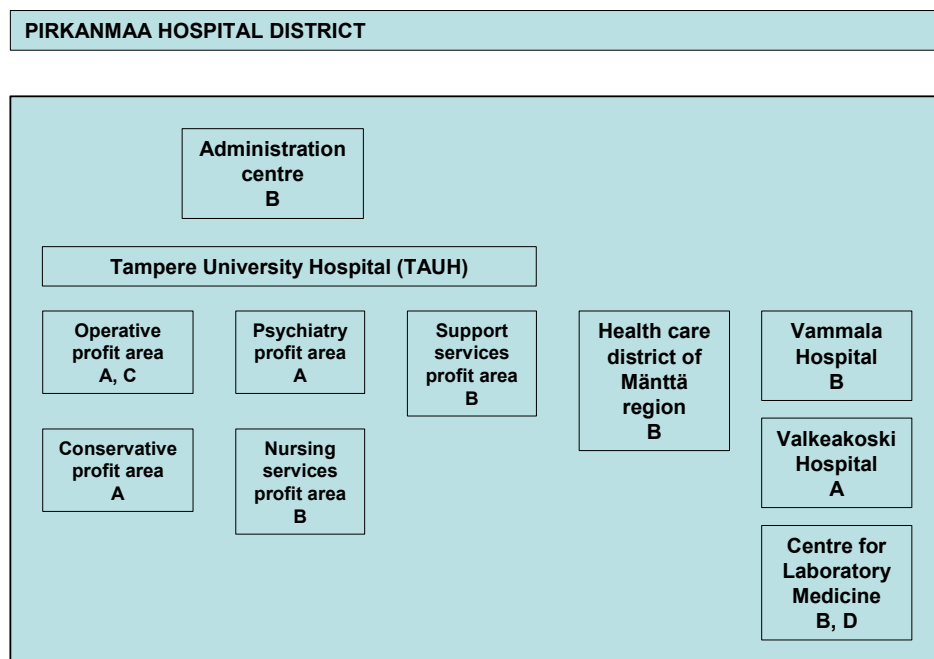
“ If the medical profession thinks that this is a credibility issue, so be it ...but I hope we can just give them a polite answer to their questions and go about our business” (Field notes, November 16th, 2000).

Later on, he expressed joy over the fact that the physicians, although given the chance, were not attending the project group meetings

“we do not need overly theoretical discussions, nor do we need arguments from people who do not understand accounting” (Field notes, November 28th, 2000).

In addition, the nursing staff had been experimenting with *care intensity ratings*, which measured the amount of work needed for a certain type of patient, and the view was that this should be incorporated into the costing model. A strong belief in the emergence, or even externally forced adoption of a DRG-based pricing and reimbursement system was also apparent especially in the statements of the physicians. The accountants privately disagreed with this statement, and considered the DRG as *“not an option for the hospital district pricing”*. The physicians, however, considered the DRG almost too accurate for actual cost accounting purposes, since it seemed to include the idea of patient-based costing. Instead, the physicians called for a separation of the management accounting system for decision-making purposes, and the DRG-costing system for reimbursement and future pricing purposes. On the one hand, this situation is familiar from Modell (2001), who predicted that institutional constraints contribute to the lack of coherence in performance measurement. On the other hand, the physicians seemed to be aware of the problems associated with DRG-based reimbursement schemes (see Chua and Preston, 1994 and Preston, Chua and Neu 1997).

The chief of financial control, on the other hand, supported the view that since the project had an extremely tight timetable, all possible shortcuts would have to be used, and everything that could be excluded from the project should be excluded. The physician member's view was the only opposing or dissenting view – according to the project documents, the coordination group decided unanimously that the first option should be carried forward and that all following actions should be based on the plan that used the existing profit centre structure, internal allocations and products as a basis. It was then decided (in practice by the chief of financial control, with approval from the hospital district manager) that the activity-based costing and pricing project would take place in the main profit areas. The extent of the activity-based costing and pricing project is described in Figure 11.

**Key:**

A = Covered by the activity-based costing and pricing project

B = Not covered by the activity-based costing and pricing project

C = Earlier experiments with ABC

D = Existing and functioning ABC system

Fig. 11. Profit areas covered by the activity-based costing and pricing project

After the first project coordinating committee meeting (August 25th, 2000), there may have been some uncertainty in the air, as it was not yet known whether the views of the physician member of the project group reflected in any way the general sentiment among the physicians and the medical profession. The hospital is, after all, run by the medical profession, and many projects were known to risk failure if not supported by the physicians. The memorandum (authored by the chief of financial control, approved by the hospital district manager) of the project steering group meeting stated:

“Linking the cost accounting model to the hospital district’s processes is not possible, because the processes have not been defined and modelled accurately enough in order to be usable for activity-based costing...[...]...However, at a later date the present author did not feel that the decision to ignore the physician’s viewpoint would have been at all surprising” (Field notes December 1st, 2000).

All in all, while the outside pressure and the desire to please the municipalities, local politicians, the press and the auditors seemed to play a major role in starting the project, the managers had presented two competing ideals of the activity-based costing system.

The view proposed by the accountants stressed arguments originating from transaction cost economic thinking, according to which the costs of implementing and running the system should be low, and the information should be just adequate enough for basic managerial decision-making (i.e. pricing) purposes (see e.g. Walker 1998, Williamson, 1975 and Zimmerman, 1997). The arguments put forward by the physicians stressed the process approach, and that the cost system structure should somehow reflect the production processes of the organisation, a view also found in the classical economic literature (see e.g. Bromwich 1997, Bromwich and Hong 1999 and Noreen 1991).

4.2.3 Designing the costing system structure

The first logical step was the definition of the common activity structure, and organising information gathering from the profit centres. It had been decided from the start that the costing system would follow the principles of activity-based costing, and that it would be necessary to keep to model as simple as possible. This was confirmed in the follow-up meeting of the project's steering group

“Hospital district manager chaired the meeting. This time, no physicians were present (the chief administrative physician had not yet participated in the project meetings one single time). Chief of financial control commented on the absence of the physicians, but stated that he had collected opinions of a chosen group that was familiar with cost accounting issues – therefore, health care personnel had been given the chance to state their opinion on the project. He, and the rest of the management emphasised that the starting point of activity-based costing in the hospital district was to keep the model as simple as possible”. (Field notes December 1st, 2000)

Defining the activities was seen to be the concern of the medical personnel. The activity model was a general one, and the activities could be given a different interpretation in different clinics. Therefore, the macro activity “surgery and anaesthetics” could include various, and often highly differentiated activities in different clinics. The purpose was to form macro-level activities amenable to different interpretations in different clinics

“The administrative chief physician disagreed – according to him, analysing anaesthesia costs as a separate activity cost pool is of vital importance, as it represents 6-7% of the hospital district's total costs” (Field notes, January 8th, 2001)

This also encountered quite a lot of criticism and many comments were received on the irrelevance of the activities.

“The project group discussed the outright resistance to the project from the clinic of obstetrics / gynaecology” (Field notes, January 8th, 2001)

At the start of the project it was thought that ten (10) macro activities were sufficient for pricing purposes. This number increased to 14 during the course of the project (while the meeting took places on September 25th, 2000, the list of 14 macro activities was published in the memorandum of October 10th). The memorandum stated:

“Chief of financial control presented the comments acquired from the steering group and the hospital district manager:

- the model should not be overly detailed – the central idea of this project is economic production of information
- the costing model will use normal capacity in calculations
- the costing model will use straight-line depreciations acquired from the financial accounts
- there will be no other items, such as interest on capital, that are not included in the financial accounts
- the project group will be prepared to meet resistance to this project from the profit areas”

It was recognised that if the purpose of the project had been related to activity management, or the improvement of clinical process etc, the number of activities should have been increased. However, the project group very firmly stuck to the original mission, which was to provide a transparent pricing mechanism for the managed care and municipality reimbursement purposes. The cost was also an issue. Since resources for managerial accounting were seen to be quite low, the project group wanted as simple an activity model as possible. If the macro activities shared the same cost driver, their aggregation was considered if this did not impair the understanding of cost behaviour in any way. This technique kept the number of activities low. In this respect, the arguments of transaction cost economics (TCE) were evoked. The activity structure of the costing system is represented in the following table.

Table 11. Activities and activity cost drivers in the Tampere University Hospital ABC model

Activity	Activity cost driver
Patient accommodation, incl. overcapacity	No. of bed-days or clinical visits
Patient administration	No. of bed-days or clinical visits
Medicine supply functions	No. of bed-days or clinical visits
Examinations and planning of treatments	Direct labour hours, estimated
Administrative activities	Overhead rate
Direct patient care	Patient care intensity rating
Research and development activities	Overhead rate
Laboratory, radiological etc. examinations	Traced to cost objects
Medical training	Not allocated (covered by state subsidy)
Surgery and anaesthesia	Surgery hours
Scientific research	Not allocated (covered by state subsidy)
Intensive care	Surgery hours
Services to other parties	Not allocated (covered by separate agreements)
Other activities, direct	Direct allocation
Other activities, indirect	No. of bed-days / clinical visits

Some of the activities were not allocated to products, and therefore not included in product costs (full cost prices). These included mainly teaching and research, for which

government funding was received. In advance, some concern was raised over the fact that should the activity analysis reveal that government funding exceeded the costs of teaching and research, what would happen to the level of funding. However, this was not found to be the case.

The costing model used financial statement information as a basis, and was therefore a historical costing model. However, the purpose of this historical costing model was to set predetermined full cost rates, which would be used for reimbursement purposes. The historical cost calculation started out from the total cost of a profit centre (profit centre being the smallest unit in which financial statements were prepared), in which the operating expenses, depreciation (historical, straight-line) and administrative overheads were included. The profit centre overheads and common resources were allocated to the wards and the clinics.⁷ The allocation base used here was time-based, but if labour hours were not readily available or their reporting not relied upon, the proportion between the operating expenses of the wards and the clinics would be used. Some of the smaller wards and clinics were combined for calculation purposes, especially if they used common resources and had the same outputs (or product price list).

After this, the costs of the ward or the clinic were allocated to the activities. Allocation bases used included labour hours, care intensity ratings (on the wards), and direct allocation based on the type of the expense item (e.g. the internal allocation expense of the laboratory was further allocated to the activity “laboratory, radiology and other patient tests”).

On the average, about two thirds of the hospital costs were personnel related. The proportion varied from one speciality to another, but in all specialities the personnel costs amount to more than half of the total costs. In activity-based costing, this has the implication that measurement of time spent in activities has a central role in the accuracy and success of the costing exercise. However, there were just over 4 000 people employed in the Pirkanmaa Hospital District. How to allocate personnel costs based on labour hours as a cost driver, since labour hours by activity were not registered in any data system?

“Chief of financial control and I discussed the following: How are we going to measure time spent per activity, when the hospital district has 4000 employees? Assume that we create a questionnaire, which takes half an hour to complete and process. How many man-years of work is that?” (Field notes, November 28th, 2000)

In practice, the allocation of personnel costs to activity was based on the opinions, or educated guesses, of the managers in each unit. According to the discussions held in the project group, some managers spent hours discussing the issue with their subordinates. Others estimated it roughly, and a few were reluctant to give their opinion. The timetable for the project being strict, there was rarely any time at all to check the information.

Calculation proceeded so that first the costs in common cost centres (of which there usually were 1-2 in a profit centre) were allocated to wards and the clinics. Not all common costs, however, were allocated to them, but some were allocated directly to

⁷ Profit centre common resources can constitute quite a large sum, as in Finland the usual practice is to include physicians’ salaries as common resources for the profit centre and not to assign them to the wards and clinics.

activities instead. For instance, the item “services purchased” in a common cost centre was allocated directly to the activities. Usually, this was something like physiotherapy, which was considered direct care. Likewise, if the purchased activities or items were related to surgery, administrative issues (such as software for patient administration and records) these could be tracked directly to the activities in the activity model. Financing costs (including the non-cash item of interest on capital) were considered to be administrative cost. The specialities hardly had any linen or food purchases of their own, since these were included in the costs of the respective supporting cost centres, and included in the internal cost allocations.

According to the activity-based costing model, the costs of activities were then allocated to the products. Second-stage allocation bases (cost drivers) were labour hours, care intensity ratings (on the wards) and surgery time. In those wards in which care intensity analysis and ratings had become routine, that information was found to be quite useful. Care intensity points were allocated (or in some cases, estimated or guessed rather than allocated) to each product. On some wards, the product-level care intensity information already existed, while in others it had to be generated. In addition, direct materials were accounted for in a standard costing with physicians and ward sisters attempting to come out with a bill of materials for each product. No analysis of variances was performed for the materials, but the negative material variance was allocated in proportion to total costs.

Since unit costs were accounted for, a number of units by which to divide the costs was needed. The number of products used was based on the statistical information of the hospital district, as it appeared in the price list for the year 2000. In treatment packages, the number of bed days might differ, and the number used in the calculations was the actual figure for 2000. After the first unit cost was calculated, an overhead rate was added. The overhead rate included costs from such activities which were partially, but not entirely, funded from other sources than municipality invoicing (namely teaching, research and services to outsiders). At the same time, additional income, if any, was subtracted from the costs of the activities. Income from the patient fees was subtracted from the price billed by the hospital district from the municipalities based on average visit or average fee for a bed-day. Thus the calculation resulted in the full unit cost that was to be set as the price of the treatment in the managed care system.

The calculation proceeded through all specialities, although in some profit centres the allocation of costs was based on rough estimates rather than analysis. Uniformity was more important than the specific features of each speciality and profit centre. The project group tried, at least to some extent, to take into consideration the specific features of each speciality. In practice, this meant that in each profit centres a group of employees was responsible for reporting the time spent on activities in the profit centre, as well as checking the calculations. In some profit centres this was done meticulously while in others, the physicians and nurses complained of lack of time.

4.2.4 *Project outcomes*

The tight project schedule and timetable started to cause trouble in January 2001, as the accountants were involved in closing the books and preparing the balances for the financial statement for the year 2000. The project staff felt overburdened by the workload. The accountants complained about the quality of the direct labour hours estimates, and the difficulties of getting good answers from the physicians. Something reminiscent of direct resistance and refusal had also been encountered. The project group discussed the possibility of having the administrative chief physician issue an explicit order to fill in the labour hours estimates. On the other hand, some clinical managers had been enthusiastic about getting the first results on the new product costs. According to one of the accountants

“the chief physician looked as excited as a little girl expecting Christmas presents when we were about to show the preliminary product costs” (Field notes, February 12th, 2001).

At the turn of the year, the regional hospitals had also encountered resource problems. In February 2001, the chief of administration for a regional hospital commented:

“we at the regional hospital have a problem in accomplishing this. We are doing the calculation throughout the entire hospital – a big workload. Our problem is a resource problem, not an attitude problem” (Field notes, February 12th, 2001).

In the entire course of the project, criticism was encountered due to the “lack of clinical and care perspective in cost accounting”. This criticism was even admitted in the official project report, although the report written by the accountants stated that

“the criticism did not indicate how the medical / care aspect should have been included in the accounting”. (Field notes, February 12th, 2001)

Would it be overly strong to interpret this as a struggle over ‘the management agenda between the physician and the accounting profession? What is seen here is an argument aimed at achieving *professional dominance* over accounting, or expression of a fear by physicians of losing professional autonomy. Cost accounting and product pricing are an integral part of managed care (or contractual management) and therefore devices of the drive to implement market controls in hospitals (see e.g. Ferlie et al. 1996, McKinley 1988, and Ferlie 1994).

All in all, the activity-based full costs did differ significantly from many of the prices on the hospital district price list. Generally the activity-based unit costs of outpatients seemed to exceed the price list prices. The same was true for many of the very expensive treatments, major surgery, cancer treatments etc. All of these were low-volume products, although the number of outpatients had been increasing for several years. The first reaction was rejection and severe criticism. One explanation, which was originally suspected and later confirmed, was that the products i.e. the treatment packages were not always too well defined for pricing purposes. This was especially the case if the product classification was such that the patient days had to be classified into categories of different resource consumption (and prices). If bed-days classified into different groups

were used as a basis of product classification, then one product could involve different treatments of a heterogeneous group of patients.⁸ This, too, may be characterised as an example of a situation where disaggregation may involve difficulties in measurement, and reliable results would be as likely obtained by increasing the level of aggregation in the costing system (see e.g. Datar and Gupta 1994).

The profit centre / clinical personnel complained that they often found it impossible to allocate the cost of expensive medication, supplies or examinations to the products. The accountants used this criticism as an argument for DRG's: it would be easier to allocate direct materials and services to DRG-based products. Another major accounting-related criticism arising from the profit centres was that the allocation of time spent on activities was considered to be a lot of work, or else, too rough to be relied upon. This one point of criticism may have been enough to cast a shadow of doubt over the majority of the results.

A main concern seemed to be that the changing prices would be reflected in demand in the areas where the health care sector did not have monopoly power. This would probably be the case in outpatients, whose activity-based cost deviated most from the existing prices, and where competition was sometimes severe. In the official project report, fears were expressed that the municipalities might purchase the services from the private sector, or increase their own production. If the demand fell, the outpatient units would have to resort to lay-offs, or other units would have to subsidise them by increasing their own prices.

In the light of the results from the activity-based costing project, on April 23rd, 2001 the chief of financial control proposed to the hospital board that the following steps should be taken

1. All calculations were to be checked by each speciality by the end of the year 2001.
2. A project was to be started in the autumn of 2001 with the aim of defining hospital outputs as product packages. The project group would then make recommendations on the new product definitions by the end of 2003. If possible, the new products would be priced using the activity-based information.
3. The activity-based costing model was to be updated on a yearly basis using the financial statement information. It would be predominantly a historical costing model. Pricing would then be carried out on a historical cost basis, making adjustments for estimated cost increases. Technically, the costing exercise will continue to be a spreadsheet application.

Officially, the project was declared complete on 24th of May, 2001, and this was marked by a lunch party. Afterwards, the accountants were asked whether the result of the project – only minor changes in pricing - was a surprise to them. The two accountants answered that this was no surprise, that this was a project which would set guidelines for future work – but they expected no great results yet. The official project report, written by the chief of financial control (May 10th, 2001) stated

⁸ The problematic classification of patient days into price categories had its roots in the original pricing and standard cost accounting exercise several years earlier. Then, different treatments would have been grouped on the basis of resource consumption, and the groups had been given cost weights. In fact, the grouping had been a form of (equivalent) process costing.

“Results of the pricing project could not be fully utilised in Pirkanmaa Hospital District’s price list for the year 2002. The calculations involved so many uncertainties that it was decided that pricing be based on existing prices, which were increased according to the overall rise in costs. Only in cases where existing prices were clearly erroneous were they changed.” (Field notes, May 10th, 2001)

4.3 Discussion and conclusions

4.3.1 Managed care, contract-based budgeting, and cost accounting

Pirkanmaa Hospital district had adopted a rather sophisticated form of managed care - a governance system for market-oriented, managed care. Managed care can be characterised as a logical extension of increasing market orientation in the health care sector. During the last decade, the health care sector in most European countries has undergone great changes, Finland being no exception to this international trend. An important part of this trend has been the administrative separation of service providers and purchasers, a practice which has been implemented before Finland e.g. in the UK; New Zealand and Sweden. The market-oriented reforms have had a particularly strong impact on the health care in the public sector of those countries where the provision of health care is predominantly tax-financed (see e.g. Robinson, 1998).

Therefore, the issues that are traditionally linked to public sector accounting research, namely the purpose, function, and governability of tax-funded public organisations, become a focus of interest. In Finland, the market orientation of the health care sector has been increasing since the financing reform, which came to effect in 1993, and has been firmly established since the Municipal Act of 1995 came into force in 1997 regarding the adoption of accruals-based accounting in the municipal sector. Perhaps the main visible sign of the increasingly market-based approach has been the forming of municipality-owned hospital districts selling health care outputs to the municipalities. This means that hospitals are run by an organisation called the hospital district, and these organisations are owned and controlled by municipalities (local municipalities). While the sales of health care services take place as patients are treated, the mechanism controlling the finances between the purchaser and the provider of health care outputs is called managed care, or the contractual management system.

4.3.1.1 Managed care and financial reforms

Hospitals are run by an organisation called the hospital district. These organisations are owned and controlled by municipalities (local government). A managed care system imposed upon the hospital district implies a provider-purchaser model, where the hospital districts and the hospitals provide health care services, and the municipalities purchase them according to a municipality contract. This contract may be either a block contract,

where a contract roughly specifies the nature and volume of services provided for a specified lump sum of money for a certain time period. In the block contract, the service provider gets a lump-sum reimbursement regardless of the actual volume of patients treated. In other words, the service provider also carries much of the financial risk, in case that service demand is above the original estimate. Should this be the case, the provider, i.e. the hospital has options of either showing deficit or not admitting part of the patients (Raftery et al. 1996). Of course, restricting the admission of acute patients outright is not possible in a modern welfare state. Instead, patient waiting lists grow longer.

One finding in various international comparative studies is that the block contract system has been developed in various directions in both private and public health care organisations. In the UK, for instance, block contracts have been common in the early stages of managed care systems. As the systems develop over time, a need arises for more detailed contracts, or sophisticated block contracts, in which prices are set according to medical speciality or by grouping treatments into price categories. (Levitt et al. 1995:39; Raftery et al. 1996; WHO, 1996; Perrot et al. 1997)

In cost and volume contracts the total price for the health care services provided is defined in terms of the volume of services provided, bed-days, surgical procedures and outpatient days (and combinations of these, the treatment packages) being used as indicators of volume. Each treatment package is then assigned an average price, which is usually assumed to be cost-based. Thus the purchasing municipalities can pay for the health care services roughly according to their consumption of the service. If the actual demand differs from the estimate specified and budgeted in the contract, the financial risk is shared between the purchasing municipalities and the providing hospital district. (Pasanen, 1999: 21; Punkari, 1996: 18-19)⁹

A central issue in managed care is that it is claimed to introduce market-based resource allocation into health care, as demand becomes specified ex-ante. In order to specify demand, set prices, and plan future actions various information systems and accounting control systems should be developed. Specifically, the introduction of cost and volume based managed care systems such as in the Pirkanmaa Hospital District, has been followed by developments in cost accounting and budgeting. Aidemark (2001) has studied a similar managed care mechanism and a purchaser-provider split in Sweden. He concludes that budgetary control and responsibility accounting have been efficient financial control tools in the Swedish context, but contests the idea that the internal quasi-market of health care services has had significant effects on achieving budgetary balance. In another Swedish study, however, Siverbo (2004) does not find enough evidence to justify the abolition of the purchaser-provider split and the managed care system.

One driving force behind the financial reforms leading to changes in budgeting, pricing and cost accounting practices is the notion that while the budget-holding managers in health care settings may be nominally responsible for the budget, they do not actually control spending (see e.g. Ezzamel & Willmott 1993 Lapsley 1992). One of the basic difficulties affecting the acceptance of managed care based budgeting in hospitals is

⁹ In addition to block contracts and cost and volume contracts, there is also a third possible form of contractual management, the cost per case contract, but this is not in use in the public sector (see e.g. Pasanen, 1999: 21-22; Punkari, 1996: 19)

reconciling the conflicting requirements of clinical freedom, i.e. that clinicians should be free to treat patients according to their professional judgement and not be bound by budgetary constraints.

Obviously, most of the public sector accounting literature does not seem to support the idea that the so-called new public management reforms such as the contract-based budgeting are actually fully market oriented, or for that matter, in any way decentralised or supportive of clinical freedom. On the other hand, reports by professional power structure in hospitals by Kurunmäki (1999a) show that physicians have not lost their power to influence decisions. On the contrary, as hospital finances have become more dependent on outputs and revenues, the influence of those who have the power to provide the hospital output is certainly not decreasing. This, however, has led to increasing hybridisation of the clinical management profession, with clinicians assuming wider roles, even in accounting. It is not unusual for physicians to perform tasks related to management accounting. Similar progress has been reported in the UK and Canada (Fitzgerald & Dufour, 1997). Therefore it is justifiable to argue that cost and volume based managed care, with its resource allocation mechanisms, namely budgeting and pricing of “products” through full costing, is not about market economy as such, but rather an institutional process which imitates the external features related to a market economy – products, prices and demand.

In conclusion, the managed care system is meant to introduce a highly formalised and rational approach to annual decision-making and planning, and yet the approach often seems to ignore the political realities of complex municipal organisations, in which rather loosely defined social objectives and political processes form an important part of decision-making. A market-oriented approach may actually imply decentralisation of power, as power is transferred to the parties who can influence production and market transactions, namely the municipal general practitioners who refer their respective municipality’s patients to receive speciality health care in a hospital, or the hospital clinicians who control the admissions. In fact, the essential requirement of the control aspect of budgetary control, whether under managed care or a more traditional budgeting system, is that budget-holders can be held responsible for their performance to date. This has some implications with regard to cost accounting and cost allocations.

4.3.1.2 Cost accounting and contract-based budgeting

Budgetary control in health care organisations has been widely discussed in the public sector accounting literature. Issues such as state / local government ownership, adoption of explicitly not-for-profit objectives, and the concern over reduction of quality and quantity in health services due to increased cost awareness are among issues which most concern public sector accounting research. Relating to the latter, arguments that government policy has been increasingly been driven by the need to challenge medical power through more sophisticated planning systems have been put forth by researchers such as Bourn and Ezzamel (1987), Lapsley (1991) and Rea (1994). Hyvönen and Järvinen (forthcoming) have defined contract-based (or contract controlled) budgeting as *a system where an individual or grouped municipalities control the hospital production in*

their hospital district using detailed agreements on costs and anticipated utilisation of hospital care.

Contract-based budgeting forms a link between the municipal budget process and the hospital district budget process, a central part of which is the estimation of volume purchased by the municipalities from the hospital district, full-cost prices set for a budgeted volume of services, which, multiplied by the volume, result in the total spending for the municipalities and total revenue (excluding government grants) for the hospital district. Thus, if a municipality agrees to order a certain quantity of ophthalmic surgical operations from the hospital district, the respective monetary sum (number of operations multiplied by price) should be found in both the municipal budget and the sales budget of the ophthalmology clinic.

An important consideration in accounting in health care is raised by Preston, Coombs and Cooper (1992), who concentrate their analysis on the creation of particular technologies of accounting and the manner in which accounting and budgeting systems are designed as tools for managing the organisation. They argue that research should not only concentrate on the changing techniques of accounting as such, but also on the changing conceptions of nature and purposes of budgets in an organisation. Following this institutional view, the contract-based budget and full cost pricing system, of which cost accounting is a part, are not viewed as a part of the natural order which is there for the scientist to discover or as a result of economic imperatives. Rather, they are the result of a process of technology fabrication, a result of which is the emergence of the possibility of budgeting. Practices such as managed care and output-oriented management structures must first be thought of as feasible, then allocated adequate resources. If the result is a success, the new accounting practice will be gradually *institutionalised*, i.e. it becomes an “economic necessity”.

Cost accounting forms a central part of the hospital district’s budgeting mechanism under managed care, since cost accounting is used to set the prices of health services reimbursed by the municipalities. In a cost and volume based managed care system it is assumed that the prices of outputs are set on a full cost basis. The budgeted volume is an essential element of the cost accounting calculations used for pricing purposes.

In the activity-based costing project the greatest problems were encountered when the cost information was to be used for pricing. For that purpose one needs unit costs, and since pricing the health care products under managed care is future-oriented, one needs to forecast the volume of units that should be used as a denominator in the unit cost (price) formula. The costing project of 2000-2001 was based on historical cost, and the volume used was the actual figure for the year 2000. In full cost pricing, the use of too great volume results in low unit costs and vice versa. The resulting under/over use of capacity introduces sanctions specified under the municipal contract.

At the level of the hospital district, the traditional problem had so far been too small municipal purchase contracts, which the municipalities then had corrected, introducing additional purchase orders. The accounting personnel thought that this had the effect of hindering long-term planning. The accrual-based income statements of the Pirkanmaa Hospital District had shown losses for several years – the chief of financial control attributed this to prices being set at a larger volume than actually took place.

“In pricing, the greatest problem is anticipating the service consumption...In full cost pricing, too large a volume leads to too low unit prices” (Project report, May 10th, 2001)

The costing system, of course, did nothing to improve the distorted estimation of volumes, but it did highlight the situation where capacity is fixed, demand unknown, and prices set in advance. This is a decision problem that is familiar from business simulations, and has been modelled by e.g. Banker and Hughes (1994). While in their modelling the prices could be freely set, here, however, the prices are constrained by the full cost principle (at least in the profit centre if not individual product level), and prices may be sticky i.e. resist change. Managed care in hospitals involves two interlinked sets of negotiations: the hospital district negotiating with the municipalities over the purchase orders and the internal budget negotiations. At the end of the process, the municipal purchase orders become the official revenue budget of the hospital (excluding government funds for teaching hospitals)

The following Figure 12 demonstrates the budgeted level of the hospital district in the various phases of the managed care process.

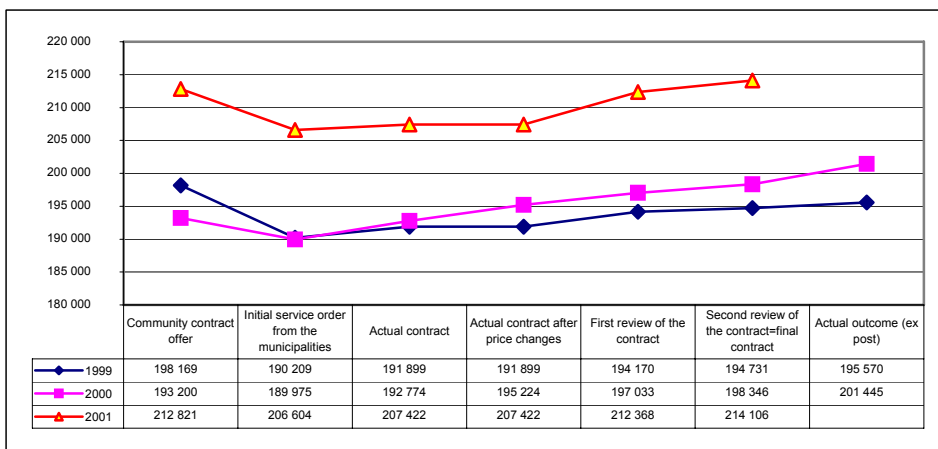


Fig. 12. Budgeted and actual levels of speciality health care spending under the managed care system 1999-2001

(See Hyvönen & Järvinen, forthcoming)

Figure 12 demonstrates a pattern evident in the managed care –based budgeting process. First, an initial budget proposal is drafted on the basis of clinics budgeting their revenues (budgeted volume multiplied by the price of the products) and expenses, revenues being set at the level of expenses. This is the phase where cost calculations and price setting take place. After the initial draft budget, the hospital district management negotiates with the municipalities in order to set budgeted volume. The municipalities operate basically under a set budget constraint (which is public information and hence generally known to the hospital district management - without even considering the fact that hospital district personnel may be elected municipal representatives). In the light of the information

concerning the overall level of speciality health care spending in Finland, it is not unlikely that the negotiators feel the budget constraint to be quite tightly set.

During the (short) history of managed care in the Pirkanmaa Hospital District, a pattern (quite the usual, in fact) had evolved in which the management, after negotiating with municipality purchasers, regularly introduced budget cuts to the initial draft budget. In order to cut the budget game which would follow after the clinical managers learned the pattern, the budgeted volume for the clinics would have to be based on a three-year average. Deviations from the three-year average had to be explained by the clinical managers. The municipalities which negotiated with the hospital district management were also, according to the managed care system, basing their views on a three-year average, but in practice were not bound by it. The municipality could also deviate from the average estimated demand for health care services – this was often the case and the explanations would vary.

Therefore, the volume specified in the municipal contract automatically becomes the volume in the hospital district budget, and the clinical budgets. This is the volume that is to be used in official pricing calculations. This means that when a clinic is setting prices for the year 2002 the first thing to do is to see that prices are increased by a general percentage allowed by the hospital district management. Following this, calculated prices are multiplied by budgeted volume (=contract volume) in order to obtain the clinic's revenue budget.

What will happen if the budgeted volume is underestimated? The unit prices will rise often more than is allowed by the hospital district management. If the unit prices (budgeted costs / budgeted output) were used, the result would be an end-of-the-year surplus. Part of the surplus is eliminated because additional purchases above a certain level were reimbursed at the marginal cost – the agreement stated that excess production would have to be sold at a cost lower than full unit cost.

All this made it quite difficult to reach the zero accrual-based profit required for the profit centres. Some profit centres, however, reacted to this situation by underestimating their budgeted expenses (see Hyvönen-Järvinen, forthcoming). An example of an end-of-the-year surplus caused by the pricing formula was the psychiatry clinic, which in October 2001 had made an announcement, widely reported in local newspapers, according to which the municipal contract agreed upon would lead to loss of jobs in the clinic. As the budgeted output had gone down, the profit centre had cut costs. But when the actual output was higher than budgeted, the profit centre showed a surplus (accounting profit).

The pattern of underestimating hospital outputs in budgeting had quickly led to the anticipation of the additional purchase orders (budget increases). This is so because sometimes the middle-of-the-budget-year increases in volume could be quite significant for a single clinic. If the beginning-of-the-year official budgets (contracts) were seen to be as intended and constraining, then one would surely expect to see increases in costs, especially personnel costs, once the increases in volume took place. However, in most of the cases, the increase in the volume of health care services purchased by the municipalities did not lead to hiring new staff, or overtime, or any other indication of increase in production capacity. Instead, the changes (increases) in municipal purchase contracts seemed only to affect the revenue side of the clinic's budget.

The anticipation of budget increases has implications for product pricing. In a normal situation, one would expect that clinics having received substantial, unbudgeted increases in their revenues would then show a surplus, while clinics which did not would usually end up showing a loss. If the prices were based on low expected anticipated volumes, then unit prices would be high, and clinics would be producing profit if the volumes turned out to be higher. Since this was not the case, and many of the clinics were producing end-of-the-year deficits, the expense side of the budgets were commonly simultaneously underestimated to the revenue side. In these circumstances, credible full cost pricing becomes very difficult.

4.3.2 Economic and institutional rationale of implementation

Sections 4.2.2-4.2.4 described the adoption process of activity-based costing in Tampere University Hospital, while section 4.3.1 has described some aspects of the institutional environment that influences the design of a management accounting system; namely the purchaser-provider split and the managed care mechanism. The current output pricing system was declared inadequate, although much due to outside pressure. Here, institutional environment had a definite impact on the evaluation of current system. In fact, the evaluation of public media was quite condemning. Although two alternative designs for an activity-based costing system were presented, the cognitive and preconscious constraints limited the choice to just one and the decision was made to resort to the existing profit centre structure and keep the interdepartmental allocations. Thus, the activity-based costing project was only carried out in the main profit centres which reimbursed the municipalities directly: the only alternative that the accounting personnel were profoundly familiar with and understood.

Taken-for-granted aspects (preconscious constraints) of system design included the managed care mechanism, the contract-based budget and product-level full cost pricing. Drawing on Carruthers (1995), the idea has been to provide focus of external macro institutions on the accounting practice of the organisation, the managed care mechanism representing the macro institution, and the activity-based costing and pricing project shaping the organisational accounting practice. During cost accounting development, some comments were expressed about the economic rationality of the new organisational design. For instance:

”Regional hospital’s chief of administration said: We have a problem in accomplishing this. We are modelling the entire hospital at once...I read about a hospital ABC project that lasted for four years ...This is a resource problem, not an attitude problem. Other project group members: laughter, jokes about the four-year project ” (Field notes, February 12th, 2001)

These considerations, along with the problems related in measuring labour hours spent in patient examination, resulted in choices to keep the system aggregate. According to the chief of financial control

“In the ophthalmology clinic they have had such reactions that they are not going to measure any product’s time consumption, because then they would risk budget cuts” (Field notes, November 28th, 2000)

The perceptions over the cost-benefit trade-off of the new costing systems were an expression of the economic rationality aspect of the search for an alternative organisational design. Of course, economic rationality is bounded, and the organisational actors were driven to search for a satisficing solution which fulfilled two major criteria: low costs and legitimation in the eyes of external parties. Concerning the cost of running the system, the chief of financial control commented:

“All parties, especially the chief of financial control, emphasised that utmost simplicity in cost accounting would be the goal” (Field notes, December 12th, 2000).

In addition to low cost, another desired feature of the costing system was to legitimate the hospital district’s pricing systems to the municipalities and other parties. Following Roberts and Greenwood, (1997), the legitimating actions exhibit the presence of *postconscious* constraints, while the argumentation concerning the costs embodies (bounded) economic rationality.

“Physician: The relevant question is, will the municipalities have a feeling that the prices for the year 2002 will be more accurate than before?” (Field notes, December 12th, 2000)

Preconscious institutional constraints involve the managed care system, the contract based budget, and especially the full cost pricing system designed to serve these. According to the principles of the managed care mechanism, the hospital district pricing should have followed the full cost principle. In fact, the full cost principle was based on the founding statutes of the hospital district, and hence, on the Municipal Act and the Speciality Health Care Act. At an aggregate level, this does happen if a specific clinic produces end-of-the-year accruals based profit of zero at the level of output as stipulated in the contract. Now, Figure 12 would suggest that hospital (full cost) prices, production volume, or both, seemed to exceed the contract-based budget year by year. Concerning product-level full costing, it seems obvious that the full costs obtained were not used in pricing, and the previous prices were not a result of full cost accounting. Technically, the cost accounting in the hospital district is motivated by the prospective pricing system, which requires the use of budgeted volumes in determining unit costs. Therefore, the costing is linked to the managed care system, which sets the prices at volumes determined in advance. Basing activity-based product cost calculations on normal volume of activity (in this case, the three-year-average volume) prevents unit costs from falling when the volume increases and prevents unit costs from rising when the volume falls.

Since according to Figure 12, the actual volume typically exceeds budgeted volume, the marginal pricing mechanism would imply that most clinics are showing deficit due to revenues not keeping up with expenses. This is because the excess production over the budgeted volume is treated as a cost of providing additional services over the normal capacity. The fact that product cost calculations are based on a volume lower than the actual one compensates for the reductions in revenues due to the marginal pricing, but

may give misleading signals about the surplus or deficit of certain services produced. This is because capacity in many specialities is not adjusted to the level required by the budget - the accounting figures may well be, but the physical capacity is not.

The specialities where the capacity and resources were actually adjusted to the budget, such as psychiatry, seemed to be particularly labour-intensive. In this case, the psychiatry clinic had ended up producing a surplus at the end of the year, as the fact that product costs were calculated at a volume lower than the actual one has more than compensated the cuts in revenues due to marginal pricing. Depending on the year, the actual volume may be larger or smaller than the normal three-year-average volume (there is no such account as “over-or underabsorbed overhead”, nor is there variance analysis of any sort concerning the deviation of actual costs from the standard costs). With normal volume, unit costs would not vary because of undersized budgets for health care spending. When the decisions were made about acquiring physical capacity, such beds and personnel, implicit assumptions would have been made regarding normal volume. The reasons adhering to the full cost principle after all may, however, vary. At product level, the new full costs were not put to practice because of the concern over municipality reactions to price increases especially in outpatient care. The project report stated

“If the prices calculated in the pricing project are put to use at a later date, this could result in the changing consumption of health services by the municipalities. If the prices of outpatient care increase, the municipalities might begin to use private sector services, or increase the volume of their own production” (Project report, May 10th, 2001)

A quick glance through the annual reports of the hospital district for the years 1999 and 2000 indicates that the hospital district was operating at a deficit – hence the pricing is, on the average, below full cost. The individual clinics are not required to budget a zero accrual-based profit – this is only done at the profit centre level. Some clinics are operating on a deficit from year to year – these are in effect subsidised by others. Who was actually being subsidised was sometimes a subject of a heated debate - one such debate took place on January 8th, 2000 between an accountant and a chief physician.

Chief physician: “Psychiatry is producing deficit, and may be subsidising others because the internal prices aren’t high enough”

Accountant: “No, the psychiatry clinic is the one being subsidised...” (Field notes, January 8th, 2000)

The deficit, however, was one of the main reasons to initiate activity-based costing, and the whole process would probably not have started without the deficits and the publicity about inaccurate pricing. ABC was seen as a promising solution to the health care sector’s full cost pricing problems. It is therefore a source of institutional pressure, a postconscious institutional constraint to economically rational behaviour. In order to secure its future resources, the hospital had to somehow legitimate its actions despite a budget deficit. However, the Tampere University Hospital also adopted ABC to try to address the issues of budgeted balance, cost efficiency and transparency. According to the accountants

“without the deficit we would not have this project” (Field notes, January 8th, 2000)

While the foregoing has addressed the significance of the economically rationalistic aspects of management accounting and found it significant, the *institutional realm* includes factors such as the Municipal Act, which requires the municipalities to budget a zero accruals-based profit, combined with the dismal financial situation that compels unrealistically low budgets for health care spending. Unrealistically low budgets, combined with the managed care mechanism, cause difficulties in determining the unit prices of health care services. Auditors have expressed concern at the lack of a proper budgeting and pricing system. As municipalities complain about the budget-exceeding health care spending, the hospitals gain benefits by jumping on the ABC bandwagon in order to legitimate their prices. Activity-based costing is defined as the modern solution to the pricing problem, guaranteed to work by the management-knowledge entrepreneurs – in this case, the academics (see Abrahamson, 1996). The activity-based costing project is seen to help the hospital to justify its future price increases, and to argue about the fairness and accuracy of product pricing. Since the decision to adopt ABC was imposed from outside, the amount of resources that should have been granted to the project should be low; hence the cost-benefit (transaction cost) argumentation. The costs of the project were sacrificed in order to gain the institutional benefits, but these costs are kept at a minimum. The ABC product costs were not actually used in pricing, however, except when gross inaccuracies or actual pricing errors were encountered.

In this case the institutional and economic rationality related aspects of cost accounting system development are not contradictory. The case evidence points to the fact that the institutional pressures seem to be particularly strong in the public health care setting, but must still take the requirements of efficient pricing into consideration. The pressure from the municipalities took a different form for different actors and different stages of the project. This institutional pressure affected attitudes to activity-based costing and the use of information concerning costs and prices. The project decision resembles a situation described by Arnaboldi and Lapsley (2004), where none of the interviewees were able to justify the choice of a particular costing technology, whose selection seems to be more related to the presence of a champion of ABC in the organization (in this case, the Director of Financial Control) and management's desire to use “modern” techniques than to a real evaluation of its benefits and its costs.

In sum, the process started out with institutional pressure, the outside parties, financiers acting through media and auditors, being profoundly dissatisfied with the functioning of the managed care mechanism and hospital district pricing. It was their ability to exert pressure that caused the hospital district to act. At the centre of the problem were economic problems, the budget deficits – deep down the cost accounting reform was driven by economic motivations and rationale. This economic rationality was, however, very much bounded rationality, and much influenced by institutional constraints. The bounded rationality aspect becomes evident in the search for a satisficing solution i.e. activity-based costing model based on existing profit centre and interdepartmental allocation structures, and the determined drive for a cost-efficient (that is, aggregate) model. Suitability for serving managed care, budgeting and possibly also DRG's were strong preconscious constraints. The professional struggle to keep the project in the hands of accountants is also obvious.

However, the single most characteristic feature of the Tampere University Hospital activity-based costing project was its focus on legitimating the hospital reimbursement system – the idea that future resources would be best secured if the pricing system was modern, fashionable and proved by academics.

4.3.3 Conclusions

The case results show that while activity-based costing projects are initiated to improve economically rational pricing and budgeting practices, they are subject to both bounded rationality and powerful institutional constraints. These institutional constraints may involve significant external pressure to adopt new, fashionable accounting methods to serve existing structures of managed care (preconscious institutionalism), and to legitimate the financing mechanism in the eyes of the municipalities in order to secure future resources (postconscious institutionalism). The future resources are secured by the hospital being able to argue that pricing is visible, cost allocation is fair, costing systems are modern and approved by academics. These are ways of relieving the pressure imposed by the financiers, and also of gaining acceptability for possible future price increases.

Following Oliver (1991), the Tampere University Hospital activity-based costing and pricing project can be seen as an acquiescing response to the pressures for efficiency (lower costs), but also a response of routine practice of budget balancing. In a situation of efficiency pressures and under-balanced budgets, the need for social legitimacy, being able to say that “we have done something” - something which also happens to be recommended by academics and the consulting literature alike, plays a major role.

Despite the fact that the Tampere University Hospital faced institutional pressures, which created the need for new, more accurate pricing (with the potential to become undisputed facts), there exists an economically rational realm of management accounting, the structure of the costing system, and the costs of designing and operating the system in which the rationale for the ABC project was strongly founded. The decision was made to implement an aggregate, strategically oriented ABC, while rejecting detailed, process-oriented ABC. Much of the argumentation used by accountants to promote the strategically-oriented ABC made use of transaction cost economics views, with the emphasis on the project timetable and resources, contrasted against the aims, with the intention of designing the simplest and cheapest possible costing system to satisfy the stated objectives of legitimate pricing. Thus, the design process also portrays the characteristics of bounded rationality and satisficing search behaviour.

In the Tampere University Hospital- case the pressure for accurate pricing originated from the municipalities, which were applying financial pressure through the managed care mechanisms, and the auditors. Adopting ABC was seen as a signal of accurate pricing, regardless of the structure and the allocation mechanisms of the costing system. This signal was reinforced by the presence of the academia in the project coordination group. The actual product costs obtained as a result of the activity-based costing project were not put to use in pricing. The case evidence points to *decoupled organisation* (see e.g. Brignall & Modell, 2000, Modell, 2002 and Arnaboldi & Lapsely, 2003) and

sagacious conformity (Meyer and Rowan, 1987) In this respect, the results also resemble those of the 1987 longitudinal study by Ansari and Euske, which reported that a public sector management accounting system, officially created for decision-support purposes, was not used for that purpose, but the accounting system was more likely motivated by institutional and social factors.

All in all, in the Tampere University Hospital case, both efficiency-related and legitimacy-related interpretations for the non-use of ABC product costs in pricing were found. The efficiency-related interpretation is that there was a fear of an adverse market reaction and a resulting shift in demand for certain outpatient services – which would have prevented the use of strategic considerations, the use of monopoly power where that power was strong, and subsidisation of more competitive markets by the pricing system. This way, the conventional economic considerations partly overrode the immediate institutional benefits of ABC implementation, although the hospital district could still exploit of the image of modernity by claiming it used the ABC system. In fact, the eventual (non)use of ABC may be interpreted as what Meyer and Rowan (1987) called *sagacious conformity* – using the project to make it appear that a new, modern and legitimating technology is in use. Similar findings have been reported by Arnaboldi and Lapsley (2003), who conclude that a decoupled organisation and *sagacious conformity* were powerful descriptors of ABC adoption in UK local governments.

5 Private Hospital: perceptions on economic rationality and non-adoption of ABC

5.1 Case background

The case hospital referred to here as the Private Hospital, in order to protect confidential business information, was originally a non-profit organisation founded in the post-war era, which now maintains a hospital somewhere in Finland. Here, the terms private and public refer to the ownership of the organisation. This means that the Private Hospital is privately owned, while the public hospitals in the two previous cases are municipality-owned. Following this reasoning, private organisations may be profit-making (firms) or non-profit (third sector). Essentially, the Private Hospital is a third-sector institution owned by a non-profit foundation. Inpatients are sent to the hospital from all over Finland, especially in the case of paediatric patients, while the outpatients are examined and treated in clinics. The hospital has some 200 beds, 300 employees and an annual turnover of 22 million Euros. Historically, annual turnover has not always been a good measure of the size of the hospital, as investment subsidies have been available for many investments. In the late 1990's, however, many of the hospital's assets were totally depreciated, their book value approaching zero. According to the document *Setting budgeting guidelines for the year 2000 – draft* (see Appendix 3) this alerted the hospital management to the fact that the current profit levels could not sustain the renovation of the hospital's premises and the replacement of equipment in the future. Thus, in order to finance its future investments, the hospital would need to start making more profit than before.

Organisationally, the hospital was, at the time, divided into six profit centres, of which four were profit centres in the sense that they were responsible for their revenues. These four *main profit centres* are here called *Alpha*, which covers the core treatments and medical areas provided by the Private Hospital, *Beta*, which provides treatments similar to Alpha, but the patients are generally under 18, *Gamma*, where the care provided is long-term and less treatment-oriented and *Delta*, the surgical unit, which consists of an operating theatre, anaesthesia and the surgical ward. The two remaining profit centres -

called the *supporting profit centres* - were administration and clinical services, of which the latter included functions such as cleaning, kitchen, laundry, archives etc. Except for laboratory and radiology, these did not provide significant revenues for the hospital, however, and were treated as support functions.

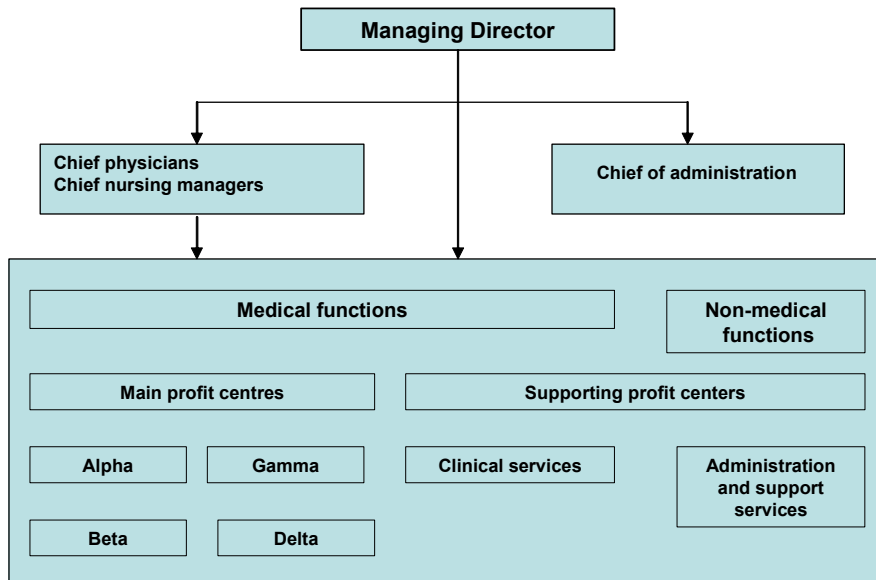


Fig. 13. Private Hospital's organisation chart

Each profit centre was headed by a chief physician, except for the administration, which was headed by the chief of administration. In managing the profit centre, the chief physician was assisted by a nursing manager (ward sister), who was the superior of the nursing staff. The head of each ward or clinic inside the profit centre would be a physician, who was assisted by a nursing manager. On the top of the pyramid organisation was the managing director, assisted by the hospital chief physician and nursing manager. The hospital's management team consisted of the three top managers and the profit centre managers (in the clinical profit centres, both the chief physician and the nursing manager).

5.1.1 Data and method

Data in this case study consists of field notes (containing interviews and present author's own thoughts) and supplementary archival material. The field notes range from December 11th, 2000 to May 4th, 2002. Those interviewed include a chief physician, three nursing managers, the chief of administration, the chief of accounting and two members of the IT staff. The supplementary archival material consists of memoranda, project plans and budgetary documents. All the data was gathered during the present

author’s training and consultancy activities in the Private Hospital. Here, it is important to distinguish between the roles of a consultant and an academic researcher, and equally important to distinguish between the method of data collection (consultancy) from data analysis (academic research). The reasoning follows that of Gummesson (2000), who proposes that the distinguishing characteristics between research and consultancy be laid bare, and that researchers / consultants are frequently unable to gain sufficient access to the processes of change they wish to examine or influence (Gummesson 2000, p.30). As the method of knowledge creation is hermeneutic, the researcher participated in the creation of the phenomenon that is under scrutiny.

The present author’s role in the Private Hospital started in 1999 as a management trainer with an academic background. At this time, the present author was finishing his licentiate thesis, and there were several other management trainers, many of whom were involved in the academia. Stage 1, management training, lasted until the end of 2000. The end of the year 2000 also marked the start of this doctoral dissertation. In stage 2 the present author assumed a consulting role in the development of the Private Hospital’s budgeting. In this stage, the present author’s academic aspirations were not public information in the Private Hospital. In stage 3 through, however, when activity-based costing was developed, the Private Hospital’s staff (mainly the administration, chief physicians and the nursing managers) were informed of the doctoral dissertation project, which went parallel with the actual costing system development. The timeline and the stages of the research process are summarised in Figure 14.

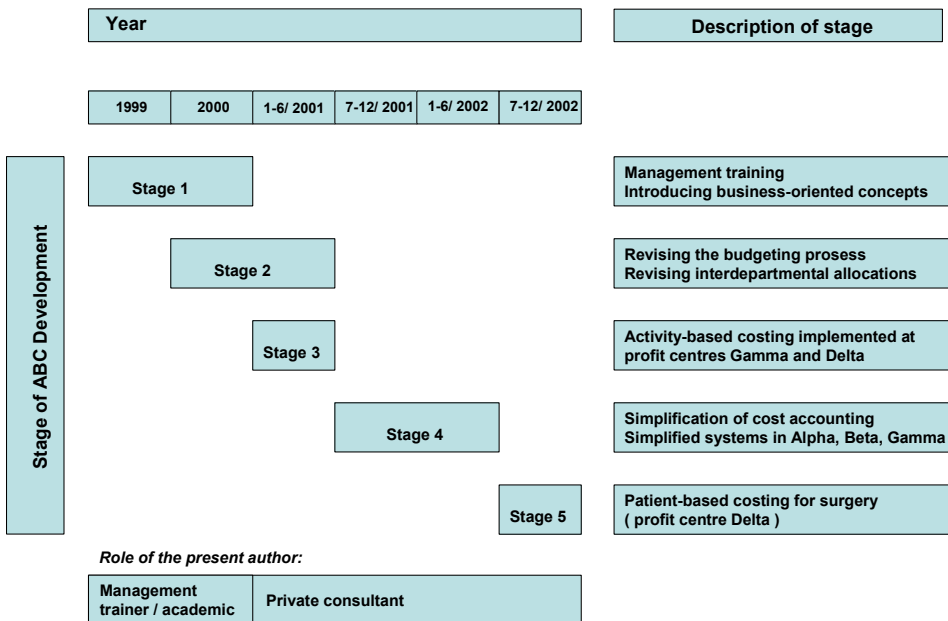


Fig. 14. Timeline and the research process in the Private Hospital case

During this study, the present author held an academic position as a research assistant until spring 2002, after which a research grant enabled unpaid leave of absence from academia. Thus, at the end of stage 5, the development of patient-based costing for surgery, the present author was on leave for purposes of working on a doctoral dissertation. Nevertheless, the cost accounting projects were consulting work, with aims related to the successful running of the private health care business. Thus, the present author has adopted a role similar to what Gummesson calls the *combined researcher/consultant*, of which there are several distinguishable archetypes; the expert consultant and the process consultant. More exact roles may be difficult to identify, and may have changed over time. The present author started out in the role of analyst, providing training and expert advice on cost accounting systems. This consulting role became more process-like and independent when the second chief of administration assigned the present author the responsibility for the cost accounting projects. Starting from 2001, the consulting process was no longer merely employment, but also the present author's commitment to the development of accounting and furthering the Private Hospital's organisational development.

The consulting role provided the present author with *access* to informal interviews, observation and documents that would otherwise have been restricted. As the object of study is not a public institution, it tends to be much less open to academic researchers. Furthermore, accessibility in this case study is particularly important as the case focuses on micro-institutional issues: institutionalisation of management accounting in an organisation comprised of individual persons, and various constraints of decision-making, cognitive and institutional, are analysed at more individual level than in the two previous case studies.

5.2 Management accounting developments

In 1999, the hospital's newly appointed managing director and chief of administration initiated a process of training and consulting aimed at transforming the non-profit institution into more flexible, market-oriented organisation, which could face the increasing market pressures of the future. A strategic choice had been made to increase profit-awareness in what had previously been a strictly not-for-profit, socially oriented organisation. New business opportunities, perhaps also those not closely related to the current care provided by the Private Hospital, would be sought. To further these ends, a training and consultancy agreement was made with the management training centre of a local university. The training, which aimed at introducing process orientation and new management tools into the organisation, was first aimed at top management and later at the middle management. The present author was called in at the end of 1999 to be the trainer for the management accounting module of the project.

In 1999, a weekend management training camp took place away from the Private Hospital's premises, and covered topics such as activity-based costing and management and balanced scorecard. Those present were the top management, including the nursing managers and the newly recruited financial manager. In addition, a representative of the university was present, likewise a private management consultant. The topics proved

inspiring, as the present author was asked by the university representative also to arrange a three-day training session to middle management later in the autumn, which would cover topics related to operative management. While the top management training camp for management accounting topics had been deemed (by the managing director and the chief of administration) a success, the middle management training encountered difficulties. First of all, it was difficult to define who actually was part of the middle management. In the Private Hospital's administrative culture, most, if not all, physicians assumed that they held a managerial position, even if they had no subordinates or budgetary responsibility.

“In the budget information meeting, there were about 10% of the hospital staff present. All physicians think of themselves as middle management. Well, the middle management sure is big, but in the future, the middle management cannot be the same group as those who are responsible for the budget” (Chief physician of the clinical services, February 4th, 2000)

Most of the middle managers (physicians and ward sisters) in their daily jobs had not in any way taken part in management accounting functions, including budgeting, pricing decisions or cost accounting. Traditionally, the budget had been solely the domain of chief of administration, who would gather the information from the clinical chief physicians, while the pricing decisions had been taken by the heads of the clinics (chief physicians) and the chief of administration. The demands for increasing participation in budgeting met with mixed reactions. On the one hand, people were excited about the prospect of increased participation, while on the other hand, organisational resistance stirred as fears were expressed about increasing the administrative workload.

As it became clear that the budgeting process could not be reformed instantly or by training alone, a decision was taken by the managing director of the hospital in February, 2000 to start a project aimed at the revision of the budgetary processes (memorandum of February 10th, 2000). The project would be headed by the chief of administration and be incorporated into the process-oriented management model designed by the external management consultant.

Central to the new budgeting process would be the refinement of the internal allocation system, which in the past had caused conflicts between the profit centres and middle managers. When the internal allocation system and budgetary processes were in place, the time would be ripe for an activity-based costing system – the debate on ABC applications to speciality health care, documented by King et al. (1994) in the UK, had already arrived in Finland. When the project was about to start, the chief of administration resigned, having just dismantled the old profit centre reporting system but not yet put a new one in its place. As a result, the present author was called upon to take charge of the management accounting development until a new chief of administration could be recruited. Thus, this point marked that the change in present author's role from that of an academic trainer to a researcher/consultant.

While the new budgeting system could be described as participative and transparent (at least when compared to previous practice), this was not the case with cost accounting, even though the development of cost accounting was justified by the increasing requirements of budgeting. In the course of the implementation of the new budgeting system, interdepartmental cost allocations were revised, but the middle managers did not

have access to the figures. The official explanation was that this was to promote focusing attention on external revenues instead of internal revenues (allocations).

Finally, after the renewed budgeting and interdepartmental allocation system, an ABC implementation project was initiated. The decision was taken at a hospital management team planning workshop held on May 5th, 2000, although the project actually started seven months later. The new chief of administration had just started work, and was involved right from the start.

“The chief physician of the clinical services profit centre argued that after the budgeting process was revised, pricing and profitability calculations would have to be raised as a major issue. The management consultant agreed, and stated that this should be added to the hospital strategic worksheet under points one and three: improving product and process management and management support system development.” (Field notes, May 5th, 2000)

A strategic worksheet would consist of a strategic goal, means and resources to reach that goal, and a timetable. The strategic worksheet for the end of the year 2000 (May 5th, 2000) listed the major topics for strategic development, in order of priority, as

1. Improving product and process management
2. Improving customer relations and finance of investments
3. Management support system development
4. Core competencies and competence development

Improving product and process management was interpreted as developing new service concepts based on latest medical advances and readily marketable to health care funding parties. The rather unexpected link between improving customer relations and the financing issues was justified by the consultants and the managing director wishing to forge a link between future needs of certain customer groups, and future investments. The development of the budgeting system was included in the strategic worksheet under section three, and the pricing issues were under section one i.e. ranked top priority.

The idea might have originated with the management consultant, but was picked up by the managing director and the new chief of administration as a major development project. The developments in cost accounting were seen as subservient to product management and budgeting. On the one hand, in order to develop new products, pricing strategies were needed, and cost accounting was seen as a tool for pricing. On the other hand, knowledge of product costs were needed in order to estimate the increase in budgeted costs when budgeted sales revenue increased. In addition, interdepartmental allocations were needed for budgeting purposes, since the sales revenue should cover not only the costs of the respective main profit centre, but also a share of the costs of the two supporting profit centres, clinical services and administration.

After the improvements in budgeting had been completed in late 2000, the new chief of administration took charge of the management accounting development and began to transfer the new budgeting to routine practice. The budgeting process required information about how much revenues a profit centre should be gaining in excess of costs in order for the margin to be big enough to support the clinical services and administration, and to gain profit. This was previously achieved by marginal costing, i.e. setting target margins for profit centres. For pricing purposes, margin requirements had

been calculated. For example, a profit centre would add an overhead rate of 41% to its total costs in order to cover the costs of the administration and various support functions.

The problem, according to the chief of administration, was that some profit centre managers had expressed concern over not being informed over what the margin requirement was based on, or what the differences in support function resource consumption between profit centres were, and how were these accounted for. There seemed to be a feeling that each profit centre should support itself, but the managers of those profit centres that were producing profit were using this argument to raise objections to subsidising other profit centres. One way to accomplish this subsidising was to use the internal allocations.

The problems, which would have to be solved by cost accounting, were identified as broadly being related to cost-consciousness, and narrowly as the problem of not including all overhead costs in product pricing. Here, a major decision was taken to implement the new activity-based costing first as a pilot project in one profit centre, and then as separate costing models in the other profit centres, instead of constructing one ABC-model.

By the time the costing project started, the originally non-profit organisation was well on its way to adopting market-oriented concepts as a strategy for improving managerial efficiency. According to Schwarz (1996) market orientation as a strategy for a non-profit organisation typically involves aspects of market controls (pricing of products in a marketplace), adoption of firm-like philosophies and managerial concepts (such as customer vs. municipality or product development vs. new treatment development), and the building of a corporate identity through accounting. These types of market-oriented concepts were embodied in the “strategic worksheets” prepared by the managers with the aid of the consultants.

As the cost accounting projects continued in 2001, the project team realised that some of the major allocation bases reported by the profit centres were inaccurate – including the headcount of personnel. Much of the problem was due to the chief physicians calculating the numbers just as they had done before, and the administration had to sort out the numbers that were calculated on different bases. However, part of the problem was due to the negotiating culture of the profit centre managers, who were accustomed to transferring resources between clinics and wards without the knowledge or consent of the administration.

This practice of subsidizing each other also had the potential of blurring individual profit centre performance. In its own way, as the new budgeting system emphasised individual budget-holder responsibility, it also caused the traditional culture of profit centre managers negotiating with each other about the resources used to be abandoned. Now, if the personnel working in one profit centre did work for another profit centre, this was to be included in the allocation base. The administration would decide about the allocation bases, and it was the task of the profit centre managers to ensure that the bases were accurate.

“It is important that there are no deviations from the selected allocation bases...these allocation bases must be final...we can only discuss their quantities, but not the bases themselves” (Field notes, November 26th, 2000)

The step-down allocation model was introduced for costing and budgeting purposes by the beginning of 2001. The activity-based costing project for rehabilitation was started at

the beginning of 2001. The costing model was subsequently simplified in order to allow the same accuracy in product pricing, but without any activity or process analysis. Cost accounting for profit centre Gamma, which undertook surgical procedures, was based on multiple overhead rates and was completed by the end of 2001, but the first round was considered unsuccessful. A second attempt at costing surgical procedures was made in 2002, which introduced patient as the output instead of the surgical procedure. In profit centres Alpha and Beta, simplified, multiple cost driver costing studies were carried out in 2002.

5.2.1 Activity-based costing for Profit Centre Gamma

Despite the efforts to the contrary, which included attempts to diminish the perceived importance of interdepartmental allocations in decision-making, the profit centre organisation had proved to be firmly established in the minds of the hospital staff. The employees seemed to be well aware of the departmental divisions, up to the point of refusing to work in another profit centre unless the work was taken into consideration when determining allocation bases or their salary was divided between cost and profit centres. The well-established and strongly institutionalised organisational structure caused us to abandon the idea of a single, hospital-wide cost accounting project, and instead, to divide the project so as to move from one profit centre to another, leaving the support centres out of the project for the time being. The support centre costs were allocated to the user departments and were not required to set prices for their services (of which the most produced only one type, with exceptions such as laboratory and radiology) – hence they were irrelevant for cost accounting and pricing.

The activity-based costing project for Profit Centre Gamma was started in December 2000, just in time to get the project mentioned in the annual report of that year. In the workshop of May 5th, the following points had been raised.

“The chief physician of Profit Centre Gamma explained that revenues have not realised at the expected level. There had been several bottlenecks, and the production was not at the expected level. Cost centre 2 is running on a good level, but the outpatient unit is causing serious problems. There have not been enough detailed and timely reports in order to react to the situation before summer. But in the coming autumn, the profit centre should be taking an upward turn.” (Field notes, May 5th, 2000).

The upward turn, however, did not come immediately. Thus it seems that the reasons for starting out with this profit centre were largely economic, and the profit centre volunteered as a pilot project

“With the outpatient care and all that, the profit centre is producing heavy losses. With new investments, there is a danger that the situation will not improve, but deteriorate. Something needs to be done.” (Field notes, June 7th, 2000).

“Discussion with management consultant and chief of administration about which profit centre to choose as a pilot project. Delta is more important than Gamma, but

it is undermanned and the personnel relations are bad. It would therefore be a dangerous pilot project. The chief of administration emphasised the financial crisis in outpatient care, which had to be discussed with the profit centre manager. The management consultant stated an opinion that a plan should be made either to develop or downsize that particular function. The chief of administration commented, that the profit centre is lagging behind the budget and will produce a loss". (Field notes, September 8th, 2000)

The chief of administration referred to the fact that according to the absorption based cost statement (the marginal cost report plus the interdepartmental allocations), the profit centre had shown a significant loss. The objective of the cost accounting project would then be to pinpoint the sources of that loss and to make recommendations on how to remedy the situation. The present author ran the entire project with the profit centre manager, with the assistance of some secretarial resources.

The project started out by defining the activities so that it would be possible to determine the proportion of the resources spent in the profit centre, as the specialist workers especially would perform tasks outside the profit centre. It soon became clear that the personnel resented the idea of a detailed activity analysis. After considering the situation, the rest of the activities were defined as being either pre-care, post-care or administrative, the core activities being the care of various patients. This way, the activity analysis ended up quite aggregate. The information gathering, however, was extremely detailed with the profit centre manager handing out a form to each and every one of his subordinates, and expecting it to be completed accurately, with name attached. He then reviewed the forms, and in the case of missing information, contacted the person concerned.

This way, activity analysis was given a very small role right from the start. The objective of the project was defined as calculating the absorption-based profit / loss of services provided the objective was most economically served by tracking the resources, namely labour hours, per service provided. The labour hours were divided into six price categories to avoid pinpointing specific individuals in the cost accounting report. In labour-intensive care, the number of cost drivers was also not great, direct and indirect labour hours, number of patients and bed-days, plus some administrative overheads being allocated as a percentage of product turnover. This way, the activity-based costing for rehabilitation started increasingly to resemble conventional job-order costing, although in the official reports it was still called activity-based costing.

Nevertheless, the product cost report was finished and the recommendations were submitted to the newly-formed pricing committee (see 4.3). The project report identified services, which were, according to the calculations, producing the loss, and also pinpointed some of the reasons behind the resource consumption that was not being charged from the municipalities or the S.I.I. as patient revenue.

The product costing exercise led the profit centre manager to drop some of the most unprofitable services, with the intention of developing more profitable services to replace these. To accomplish this, the cost centre which produced these unprofitable services was obliterated from the responsibility accounting structure, a fact which led the chief of administration to believe that

“this is a sleight-of-hand trick, they are sweeping their problems under the carpet, out of sight” (Field notes, November 11th, 2001)

This would be achieved by joining the unprofitable Gamma cost centre 2 with a larger and more profitable Gamma cost centre 1.

In the spring of 2002, the product cost calculation was renewed using 2001 historical data, in order to routinise the costing practice, to track down the current situation and to simulate the influence of the substitution of new products. As a result of dropping the services in 2001, and not yet developing enough new services to replace them, the turnover of the most problematic cost centre, Gamma cost centre 2, had decreased, but the costs had increased due to salary increases. The overall absorption-based profit situation is presented in the following Table 12 (note that the figures in the table have been altered slightly so as not to reveal confidential business information).

Table 12. Aggregate cost report of the Profit Centre Gamma

Cost centre	Total revenue (1000 Euros)	Total cost (marginal cost report)	Allocated cost	Total cost	Profit / turnover (Profit ratio)
Gamma cost centre 1	2 524	1 402	1 138	2 541	-1 %
Gamma cost centre 2	447	409	250	660	-47 %
Gamma ward	694	220	240	460	34 %
Gamma outpatient unit	198	374	63	438	-120 %

Gamma cost centre 1 was producing three service packages (products), all of which were operating close to zero profit, whereas the cost centre 2 was producing six very unprofitable-looking products. The ward seemed to be producing a significant profit, while the outpatient unit was producing serious losses. The profitability of the ward and the subsequent cross-subsidisation was seen as a business risk due to the competitive situation – the S.I.I. had already complained about the ward bed-day fees, which it thought to be somewhat high. Although the financial situation looked somewhat bleaker in reports than what was thought in reality – due to the support functions in the profit centre that were serving other profit centres, too - the new cost report provoked heated discussion in the pricing committee meeting of August 20th, 2002.

5.2.2 Patient-based cost accounting for Profit Centre Delta

Hospital management thinking is often expressed in medical specialities, and it makes a difference whether the speciality is an operative or conservative speciality, the former referring to the need for surgical procedures in the care process. Socially and politically, surgical procedures seem to be treated specially in Finnish speciality health care. This is best demonstrated by the aftermath of the Finnish Medical Association’s (the physician’s labour union) strike in 2001, which resulted in a heated political discussion and significant additional funding in order to shorten the waiting times for operations. This is

further evidenced by the high status that surgeons often enjoy in the medical profession, and their above-physician-average salaries.

In terms of the activity-based costing project, the surgical profit centre was the only profit centre in the hospital which had an existing costing system. In the 1980's, a procedure-based product definition system had already been established, with costs allocated to treatment packages, i.e. the price of a surgical procedure, the price of a bed-day, plus the price of separately-billed special materials (prostheses, implants, etc.). To set the prices for the procedures, of which there were several hundred, a standard costing system had been developed in the mid-1990's, with DOS-based PC-software acquired for the purpose. The standard costing started out with a bill of materials being inputted for each procedure. Particularly expensive material was tracked separately. Then, the standard operating minutes per procedure were entered. Labour costs and anaesthesia costs were allocated to the procedures by using the standard operating minutes while rest of the indirect costs were allocated per procedure. In practice, since the number of products was so great, even greater than the number of procedures, since many procedures could be combined, not all cost information in the standard costing software was being regularly updated.

The activity-based costing project was started in the May-June of 2001, with the purpose of gathering existing data from the standard costing system, invoicing system, and the patient records through the summer and later in the fall to start the actual costing exercise. The project group consisted of the present author, the chief nursing manager of the surgical profit centre, plus one person from the data processing department. We would report our progress to the chief of administration, the chief surgeon of the profit centre (who was not taking part in the project), and the hospital managing director. Reporting was sometimes difficult due to time constraints:

“Meeting with the chief surgeon. The chief surgeon said he was very busy, and under tremendous pressure. He said he was working a full day in the operating theatre, and after that, he had to do the administrative stuff” (Field notes, August 20th, 2001).

Immediately after starting the project ran into trouble: the patient administration software could not be accessed automatically in order to obtain all the information needed. Therefore, it was decided to limit the number of surgical procedures for cost calculation, creating an aggregate output category “other products”. The chief surgeon agreed to pick the products for analysis most important to him. To this list, the care intensity data from the wards was added, with the aim of providing an overall picture of the patient's care from the operation to the ward. The care intensity rating project had been the personal accomplishment of the chief nursing manager, who was enthusiastic about the data being used also for other purposes than the original goal of developing nursing care.

Finally, in October 2001, the data processing department accomplished the manual gathering of invoicing data of the selected products for the year 2000. This historical data was combined with ward data on care intensity ratings to create the spreadsheet containing the elements of the costing exercise: patients, their operations and invoicing as cost object data, actual and standard direct material costs per cost object, actual operating minutes, care intensity ratings, and number of procedures as overhead cost drivers, and the historical cost data. The first results were obtained in December 2001, but, according

to the chief surgeon, the numbers were not supported by intuition, nor was there any logical cause which would explain the cost differences between some very much similar operations. This was the object of debate in January, 2002.

“Meeting with the chief surgeon. He was late, but in a seemingly good mood. He said that he had not been able to comprehend the cost calculations and that perhaps the grouping of surgical procedures had not been the best possible” (Field notes, January 22nd, 2002).

The chief of administration assigned the present author to find out why the results did not appear dependable. In the spring of 2002, I found myself in the middle of a small dispute, when the chief surgeon criticised the project group for inappropriate methods and lack of understanding concerning the activities of the operating theatre, while the chief of administration and the managing director blamed the chief surgeon for lack of cooperation.

“According to the chief of administration, the chief surgeon had expressed doubts about the validity and usefulness of the cost figures” (Field notes, March 27th, 2002)

Technically, in addition to the selection of representative cases for costing, it was the combination surgical procedures which caused the problem. Often, when the patient was admitted, up to four surgical procedures would be performed. The surgical procedures would be classified and filed according to the major procedure. But that was exactly the problem – what procedure was major and what constituted the minor procedures were determined on an intuitive fashion, with no clear-cut rules for combining the procedures?

In April 2002 the present author telephoned the nurse responsible for defining what procedures were major and combining them. From the financial manager I learned that this person had been absent from work during the winter, which had led to delays in invoicing, since no other person was capable of creating the combination procedures for invoicing.

Our meeting, which took place only after the nurses had confirmed that the chief surgeon would approve of our meeting, confirmed that the multiple procedures during one operation were combined together for statistics in an intuitive fashion. The combination of surgical procedures created a mismatch between the cost object (which was expressed in terms of patient cases and major procedures for those cases) and some of the cost drivers (which were expressed in terms of combined surgical procedures).

Despite initial controversies, at a meeting held at the end of April, 2002, the problem was expressed as technical, namely the lack of a proper audit trail from the calculated standard price of a surgical procedure, which may consist of several combined procedures to the invoice. At that time it seemed that the expression of the problem as a technical one would relieve some of the tensions evident between the administration and the surgical profit centre staff. This failure to produce credible product costs was partly a result of the deeply embedded practice of reporting all activity within profit centre Delta in terms of a surgical operation. The cost driver data, however, was not available in terms of surgical operations, but attached to patients instead. After one failure, and a few rounds of reproduction, patient-based cost reports were transferred into practice. This practice, however, involved manual labour:

“The IT manager had come up with a new chart where care intensity ratings had been combined with the patient records. The IT manager complained about the amount of manual work involved” (Field notes, May 4th, 2002)

In a revised project plan, the project group decided that the cost object should be changed from surgical procedure to a patient case. This way, instead of a product profitability calculation we would produce a patient profitability calculation. The cost object was changed according to Figure 15.

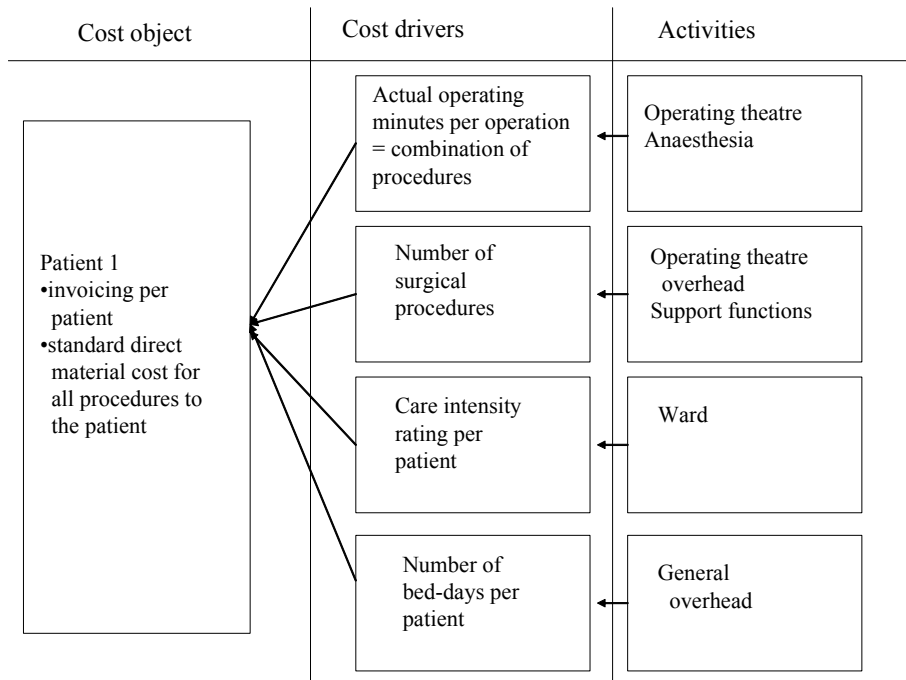


Fig. 15. Cost objects and cost drivers in Profit Centre Delta

The patients could be grouped by e.g. surgery type, reimbursing municipality or diagnosis in order to produce meaningful reports. There was an immediate need to produce a report on the profitability of the post-strike surgical patients, as the private sector had received its share of the increased municipal budgets to shorten the waiting times for certain type of surgical operations (the patient waiting lists had lengthened during the doctor’s strike of 2001). Patient-based costing would not be applied for calculating DRG prices, as the chief physician commented

“DRG is not suitable for us. It is a classification that is too aggregate and not specific to our speciality” (Field notes, May 4th, 2002)

The switch between cost objects highlights the significance of cost object aggregation to the costing system. Hospital, like many other service sectors, are special because of the many ways one can define and aggregate the cost object i.e. the service or product

provided. This is very different from most manufacturing surroundings. For instance, studies such as that by Datar and Gupta (1994) that analyse aggregation and specification issues take the products for granted and do not address the issue of possible alternatives in cost object aggregation. In the above mentioned situation, if the cost objects were changed, this would require changes in the structure of the costing system itself.

Not all structures of the costing systems are compatible with every definition of hospital outputs. The DRG, for instance, requires in practice that the primary cost object be the patient. The patients are then grouped to DRG's. In the case Tampere University Hospital, there had been plans for DRG as an output measure without patient-output costing, but these plans had not been carried out to date. Were such a costing system implemented, it would require activities to be allocated directly to various DRG's. This would have the effect of introducing many allocations, especially those of common cost type. It seems that, paradoxically, DRG is an aggregate output measure which, in order to function properly, would require a decidedly disaggregate patient-based costing system.

5.2.3 Simplified cost accounting systems for Profit Centres

Alpha and Beta

The project for establishing some sort of cost accounting systems for the two remaining profit centres started in February 2002. The cost accounting project had been scheduled to go from one profit centre to another, in the order of probable acceptance and expected cooperation. One of the remaining profit centres had especially proved quite uncooperative in the past, but there had been a change of management since then. It was decided that these two projects would run simultaneously. Since there already had been two other projects the management already had had some feedback on the ideas of cost system development.

The feedback received by the chief of administration included two main ideas. First, simplicity would have to be increased as the profit centre of administration was unable to provide support for detailed cost accounting (one would need to have a management accountant, or a business controller) and the administrative personnel in the profit centre was not yet ready to adopt complicated costing systems. Second, it would be beneficial to the project if the care intensity rating system were incorporated into the cost accounting system.

The present author had a discussion with the both profit centre managers in May 2002. Both managers stressed that they were busy and had no time for extra administrative work. This message was emphasised by the constant interruption of the discussions by telephone calls from patients or subordinates. The profit centre managers were seemingly glad to hear that little work would be required of them, and that the present author would mainly bother the nursing managers with questions concerning the activities of their profit centre.

On the basis of this feedback the present author decided make a suggestion to the chief of administration that activity analysis be eliminated from calculation. However, activity analysis is described by Jones and Dugdale (2002) as being a core feature, or "the central plot" of activity-based costing systems. The nursing activities would be accounted for in

the care intensity ratings, that is, the care intensity rating could be broken down into components in order to analyse why one particular patient was more demanding than another.

Unlike in the Northern Ostrobothnia Hospital District, the hospital's care intensity rating system did not include an explicit activity analysis. Products in the two cost centres were defined so as differentiate between the various courses held for the patients, and actual bed care on the wards. The care of the patient on the wards was considered as a single product, with the exception of differentiating between patients who received "expensive medication" and others. The care intensity rating was used as the main cost driver for bed care while the courses would be handled by estimating the total amount of activities and labour required.

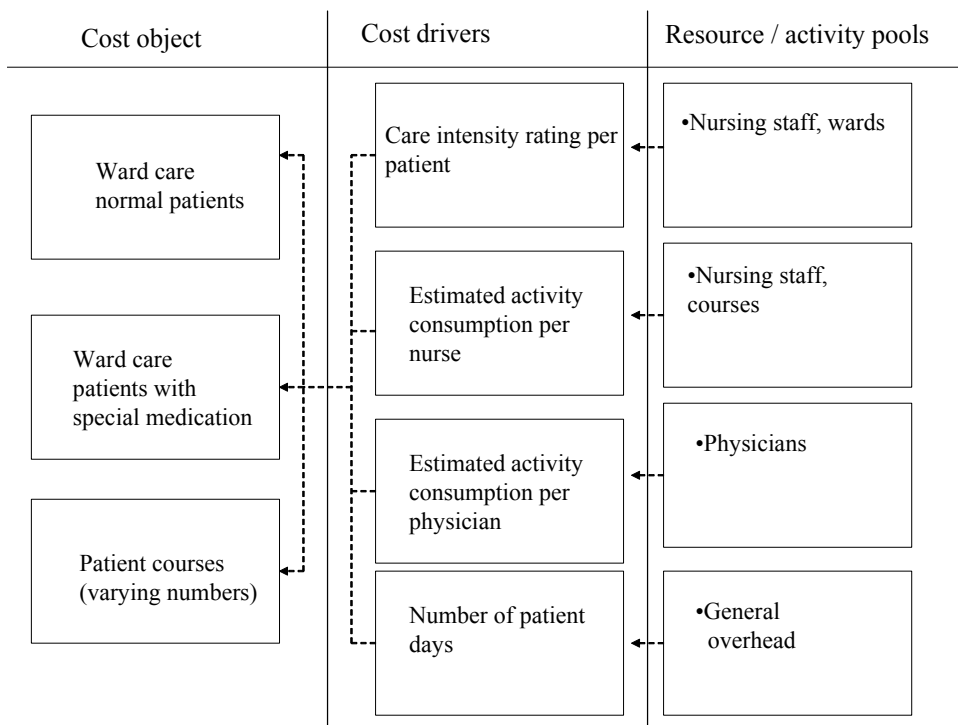


Fig. 16. Structure of the aggregate costing systems

Figure 16 shows the structure of the costing systems in the last two profit centres. These ended up being more aggregate and more based on estimation than the costing projects in the first two profit centres: Delta and Gamma. The majority of costs are driven by the care intensity rating, which can be considered a fairly accurate measurement and not an estimate.¹⁰ However, it seems that one breakthrough in the acceptance of the new cost

¹⁰ There seems to be some dispute concerning the specification (suitability as a cost driver) of the care intensity rating. In Pirkanmaa hospital district, it voices were raised because of its ambiguity. The hospital sector would indeed benefit from a study concerning the correlation of the rating and costs.

accounting system took place when the new cost accounting the use of care intensity ratings – new rule could be enacted and reproduced when it adopted the part of the current hospital practice.

One particularly embedded way of structuring reports (and the reports do reflect thinking) is the use of bed-days as a product, a basis for reimbursement, and a unit of analysis for many other care-related reports. As Profit Centre Beta had streamlined its processes and introduced the new medications, the average length of stay in the Private Hospital had started to diminish. As the length of stay deminished, so did the revenues based on bed-day reimbursement. This had the effect of new treatments being less profitable than the old ones. Still, there was no turning back the clock; the new treatments were deemed more effective, and they should eventually replace the old ones. This called for new thinking, also in terms of product definition.

The activity analysis part was greatly simplified, mostly due to the resistance of the profit centres and the wish to avoid administrative work. In this respect, ABC was not entirely “sold” to the profit centres, and did not overcome all the resistance. Instead, the established practice of recording care intensity ratings needed justification and legitimation. The new practice of cost accounting evolved by giving in to the demands for simplification, and incorporating the established practice with the new one. In August 2002, the chief of administration stated

“Recently I attended a seminar on hospital costing, arranged by a software vendor... There, a university professor in accounting was talking about how we should cost our processes, and to find out the cost of our activities. At that point, I totally realised that we had it exactly right, that this kind of activity-based costing is far too complex for us. What we need to have is accurate pricing. And in doing that, we are ahead of the big public hospitals. We simply don’t need to know the costs of our processes, we are too small a hospital... maybe that is something for the big hospital districts to do” (Field notes, May 4th, 2002)

By saying so, the chief of administration stated views on the efficiency expectation of the new costing system, and that a simpler system would be (utilising the concepts of the constrained efficiency framework by Roberts and Greenwood, 1997) a satisficing solution.

5.3 The Pricing committee

Despite all the activities aimed at profitability improvement and revealing cross-subsidisations, the hospital finances for the year 2001 did not improve significantly. The budget was originally targeted to show c. 2% profit, with two profit centres out of the four budgeted to show profit. The actual profit and loss statement, after the present author had calculated and added the internal allocations to the profit centre margin statements, did indicate the profitable and unprofitable profit centres as planned - Beta and Delta were still in the black, but less than budgeted. The losses for Profit Centre Gamma were considered quite severe. In response to the cost accounting and pricing projects,

organisation of the Profit Centre Gamma was changed so as to merge together the two profit centres.

Some individuals in the administration had apparently suggested that this was merely to put the problems out of sight, while the profit centre manager claimed that this would help in reallocating personnel resources. Seemingly shocked by the accounting loss, the managing director agreed that pricing would from now on be one of the top priorities of the management, and formed a team called the pricing committee, the members of which included the managing director, the chief physician, the chief of administration, the financial manager, one of the chief nursing managers, and the present author as the researcher/consultant. The first meeting of the committee was held on February 28th, 2002. The most concerning issue was the situation at the Profit Centre Gamma, and ways to improve profitability. To this end, the manager of the profit centre was also present. The meeting engaged in a lengthy discussion on the cost accounting principles used in the product profitability calculation, the possibilities of changing the product mix and dropping some unprofitable products. The last option was not met with enthusiasm,

“Chief physician: even though we are private, we are still a hospital,” (Field notes, February 28th, 2002)

It seems that there was a strong opinion amongst the physicians that hospitals should be offering a wide variety of treatments, and not just the profitable ones. The meeting ended with recommendations to update the product profitability calculation in order to account for the changes in the organisation, to further refine the internal allocations, and to produce a what-if analysis concerning the introduction of new products. At this time, the present author updated the internal allocations for costing purposes using the 2001 historical data. The step-by-step allocation scheme showed that Profit Centre Gamma's losses had increased.

The pricing committee convened in August 20th, 2002 to discuss the actions required to change the situation. On the agenda were the results obtained from the cost accounting studies conducted in Profit Centres Gamma and more recently Alpha. According to the cost studies, the situation in one of the most problematic cost centres had deteriorated, with diminishing turnover and rising costs. According to the profit centre manager, actions had already been taken to abolish many of the non-profitable products.

The relatively independent cost centre where the problems had amounted had been abolished in the beginning of 2002, but now the chief of administration demanded that it be reinstated, a proposal to which managing director agreed.

In addition, the cross-subsidisation became a subject for various discussions: according to the new costing calculations the profitable ward seemed to subsidise other cost centres. Also under scrutiny was the outpatient unit, whose turnover had increased significantly, but so had costs. The heavy cost structure of the outpatient unit was noted, and it was agreed that actions would be taken to decrease the rental costs of premises.

Alpha Cost Centre 1, while producing a slight loss, provoked less discussion. What seemed to be wrong there was the too low price of the basic bed-day. The hospital had made long-term contracts with the municipalities and had not expected the costs to rise so steeply as they had done – therefore the bed-days had become unprofitable during the last year of the contract. The situation could be corrected by more accurately anticipating the

future rise of costs. The possibility of adding a reservation in the contract stating that prices would be checked annually according to price index was also discussed.

After the second meeting of the pricing committee, the pricing system at Profit Centre Delta was discussed. In addition to the present author, those present were the managing director, the chief physician and the chief of administration. The chief of administration presented a proposal that the rather confusing pricing system of the Profit Centre Delta should be replaced with a simple formula based on material costs, actual operating minutes, actual bed-days and a profit margin. This was a rather ad-hoc proposal, invented on the same day at lunch, but which had its background on the unsuccessful first attempt at costing of surgical procedures. The managing director stressed that such a change had to be well planned in order to overcome resistance, and it was the job of the hospital chief physician to make the change happen. The managing director stated

“it is not the right way to change these things that we tell the personnel that the board has decided it, or that I personally insist that this be done”. (Field notes, February 28th, 2002)

Thus, instead of making direct demands for increased accountability, the managing director took another route. Cost accounting and profitability reports would be designed in such a way that the cross-subsidisations would become clearly visible. In order to implement the new reporting, the hospital's administrative chief physician decided that he should approach Profit Centre Delta and argue from the point of risk management: since the old pricing system was heavily dependent on a single specialist nurse, what would happen if that person were not present. Would the profit centre chief physician take care of the pricing and invoicing? It was, after all, a critical function. But if the pricing was more mechanistic, if there existed a pricing formula based on cost accounting, then somebody else from the administration could take care of it. This would be risk-free, and additionally, enable the specialist nurse to participate more in the operating theatre.

Another major task that the pricing committee assumed was to monitor the cross-subsidisation between various profit centres. This was very important, since different customer/funders (municipalities and the S.I.I.) were likely to be sensitive about subsidising the other parties. Carefully maintained cross-subsidisation was seen as vital in maintaining the hospital finances. The issue was highlighted as the financial situation deteriorated in 2000 and the investment budget for 2001 was cut as a result. The budget cuts provoked protests, especially in those profit centres which were making profit, as the profitable clinics were, at least for the moment, also denied many of the investments.

The delicacy of the situation is exemplified in that some time after the meeting, the administration was contacted by the S.I.I., and asked for details about the interdepartmental allocation system. The S.I.I. was interested in the alleged use of interdepartmental allocations to direct S.I.I. funds intended for social insurance covered treatment to the treatment of other patients. Representatives of the S.I.I. threatened to perform a special audit on the matter. The audit would take place in June 2001. There had been S.I.I. audits before, as it regularly audited the hospitals which received patients funded by it in order to check that agreed quality of treatment was provided, but an audit of accounting systems was new. After some discussions, however, the S.I.I. took the position that a management accounting system was a concern of the hospital

management, not outside funding parties, and the threat of any special audit was cancelled.

These kinds of incidents may have caused the hospital policy to keep internal allocations as restricted information. The goal congruence problems were seen as so severe as to warrant the restriction of detailed information concerning the system and its allocation bases. For budgeting and budgetary control purposes, marginal cost based budgets were seen to serve the purpose. One would only report those interdepartmental allocations in detail, which were at least in part controllable (such as laboratory and radiology costs). This is similar to the results obtained by Kloock & Schiller (1997), who argue that marginal costing -based budgets can be used effectively for cost control, because only controllable costs need be reported. For pricing purposes, however, there remained a need to analyse overhead costs and to provide absorption cost based reports.

The pricing committee can be characterised as a separate project, the purpose of which was to legitimate the changes that were made in the pricing practices. For instance, if costs were calculated, and the full cost calculation showed a unprofitable product, it was the task of the pricing committee to ensure that plans were made to correct the situation, and especially, to follow and to ensure that the plans were carried out in some way or another. The legitimating aspect applied to both external and internal pricing. Thus, it was considered important that the pricing system appeared legitimate to the financiers (and did not reveal the extent of cross-subsidisation), but it was considered equally important that profit centre managers would feel that the numbers were justified.

5.4 Discussion

The following section will employ the constrained efficiency framework by Roberts and Greenwood (1997) to interpret the Private Hospital's activity-based costing implementation. First, the efficiency-based rationale of the implementation is reviewed, with particular reference to transaction cost economics based cost-benefit argumentation. Then, satisficing search behaviour for a new organisational design (ABC system) is viewed in the light of rational arguments why a sophisticated costing system might not be a rational choice for an organisation. After that, Section 5.4.3 deals with the pre- and postconscious constraints of the cost system design in the Private Hospital.

5.4.1 Efficiency-based rationale for costing system implementation

The constrained efficiency framework starts out from the notion that costing systems have inherent rational aims, which in this case study would be the accuracy of pricing external products in order to raise profitability; improving internal prices (allocation system) to increase efficiency and to eliminate excess demand for auxiliary services; and to improve the efficiency of budgeting and planning processes. However, these rationalistic aims are constrained by the cognitive abilities of individuals, who are often unable to accurately calculate the costs and benefits associated with organisational designs. Individuals with bounded rationality will set criteria for an acceptable solution,

and when such a solution is found, will try to implement it (satisficing search behaviour). Here the acceptable solution was defined in terms of internal and external pricing, as well as support for the existing administrative practices.

However, rational actors are also subjected to institutional environment, which can be seen to favour or even “push” certain solutions, and to which organisations must be responsive to (DiMaggio and Powell 1983, and Oliver 1991). In this case, institutional isomorphism was mostly *mimetic* (as other hospitals, public and private, had been implementing similar systems and these had been discussed in various seminars) and to some extent *normative* isomorphism (as consultants and academic professionals were able to influence the administrative profession).

According to the transaction cost perspective, it is the control of the organisational activities that constitutes a problem where a management accounting system can provide various solutions (see e.g. Dietrich 2001). From this perspective providing motivation (incentives) and exercising financial control are among the most likely explanations for the prevalence of cost allocations in the hospital setting (other explanations include external reporting and third-party reimbursement - see Zimmerman, 1997). Cost allocations are an integral part of organisation’s budget system, by which resources are allocated inside the hospital from one profit centre to another. As the financial orientation in management had been increasing, the cost allocations had also become more important in performance evaluation. This effect was by no means direct, but was enacted through the pressures for not producing deficit, a part of which is the costs that are being allocated.

In the new budgeting process, a main profit centre’s revenue budget was to cover the costs of the profit centre itself, plus its fair share of the costs of the two supporting profit centres – this was calculated through the revised interdepartmental allocation system. The desire to improve and explain the old marginal costing –based budgeting formed a the background for the interdepartmental allocations – thus the calculation of the interdepartmental allocations was prerequisite to full cost pricing, and also the activity-based costing aimed for that purpose. The profit centre managers, chief physicians and nurses, had felt that an aggregate margin requirement gave them a feeling that the support function costs were uncontrollable. This had supposedly had adverse effects on their motivation to contain the costs. On the other hand, the administration sought to increase and improve the budgetary control of the profit centres. If the margin requirement were replaced by a disaggregate system of internal allocations, that would bring increased cost awareness and improved controls. Thus, two obvious motivations for internal allocations existed in the Private Hospital: full cost accounting and pricing, and budgetary control.

External reporting in hospitals becomes relevant especially when there are two or more major funding parties who wish to control the cross-subsidisation via prices. Third party reimbursements, such as those occurring in hospitals, have often been cited as a major reason for allocating costs. In addition to hospitals, a similar situation occurs in public procurement, and has given rise to some research, for example into the actions of United States defense contracts and the Cost Accounting Standards Board which regulates them (see e.g. Demski and Magee 1992, Rogerson 1992, Thomas and Tung 1992). The revenues of public utilities such as electric companies are also tied to reported costs. Public authorities often grant monopolies over service territories for electricity production - these are natural monopolies. Since the distribution of electricity is subject

to fierce competition, this has led to widespread arguments over common cost allocation between production and distribution.

Zimmerman (1979) has also defined the incentive-based reasons for cost allocations. His views originate from a transaction cost economic perspective, according to which institutions are formed because of transaction costs, i.e. the economic efficiency of organisations and institutions exceeds those of free-market transactions. Zimmerman's incentives are formed in three ways.

1. *Allocations are an internal tax system.* Like a tax system, they can change the proportional factor inputs between profit centres, and thus guide and alter behaviour. This is only true if the profit centre managers exhibit profit-maximising behaviour, which is influenced by accounting measures. If they do, the factors, which receive proportionally more overhead allocations become more expensive. The profit-maximizing combination of inputs is then shifted to the direction in which less expensive resources are consumed and vice versa. Since many of the Private Hospital's common costs were allocated to the externally invoicing profit centres on the basis of personnel headcount, this had the effect of raising the cost of inexpensive labour proportionally more than expensive labour. For instance, products which require significant input from a high-salary professional, say an orthopaedic surgeon, will appear relatively cheaper to produce as a result of the allocation while a product that requires significant input from low-salary personnel, say physiotherapists, will appear relatively more expensive. This effect is most marked when such differences exist in the same profit centre under the manager's discretion, but may this may influence the factor allocations between profit centres.
2. *Factor prices understate total costs.* If the process of acquiring factor inputs in one profit centre causes (negative) externalities in another profit centre, these costs should generally be charged from the profit centre acquiring the inputs. If the overhead rate is smaller than the marginal cost of factor inputs, any allocation will dominate no allocation. This is the case when the costs of personnel administration in the Private Hospital are allocated on the basis of number of personnel. It is assumed that as the headcount of personnel increases, so do the costs of personnel administration. This is especially so in the case of short-term labour. If costs of recruiting short-term is not allocated, short-term labour will appear relatively cheaper since costs incurred in the personnel department are not included in the profit centres accounting report.
3. *Insulating and non-insulating allocations* of common costs. In the case of performance rewards being tied to financial figures including cost allocations, an important issue can be whether the performance of one profit centre can affect cost allocations in the other. The use of such allocations would distort performance measures and the prices of outputs under cost-based pricing, but is argued to enhance co-operation and enable risk diversification across profit centres. The quality of the hospital's headcount-based allocation of administrative expenses is that the personnel headcount is not insulating. The profit centres seem to have a significant amount of interaction e.g. they may hire a common local work force, and deal with the same officials. Ideally, the profit centre managers should cooperate with each other, but cooperation may be limited if the managers are put in a competitive position. If one profit centre does poorly, it may actually benefit other managers' position inside the

hospital. If the headcount-based allocation of administrative cost is insulating, one profit centre's performance would not depend on the operating performance of the some profit centre. However, the case material suggests that it is more reasonable to believe that the allocation of administrative costs in non-insulating, and the allocated costs of one profit centre do depend on the operating performance of another profit centre.

Zimmerman's theory is founded on an assumption that financial incentives exist due to profit-maximizing behaviour and accounting measures-based incentives. It makes use of the idea that cost allocations are part of the performance evaluation system and therefore the cost allocations affect managers' welfare through either pecuniary or non-pecuniary rewards. Certainly this view can be challenged in a hospital setting. For instance, the health economic literature stresses the maximizing of society's welfare as a decision rule. Kurunmäki (1999b) puts this in accounting terms by claiming the differences in accounting entity – decision-making is not based by hospital's costs alone, but also society's costs are considered.

According to Zimmerman (1997), cost allocations are likely to change the way decision rights (in the form of resources) are partitioned within a firm. The way the costs are allocated certainly changes profit centre managers' incentives and thus their behaviour. The change in behaviour can be positive or negative, depending on goal congruence – whether economic behaviour contributes to short-term optimising behaviour or is for the long-term benefit of a greater whole. Goal congruence and the motivational effects of interdepartmental cost allocation were a common topic of discussion among the managers. In the management training camp in 1999, the motivational effects had already been a topic of discussion. An anecdotal quote from a profit centre manager:

“...the clinic corridor needed cleaning, quickly. I found a ward assistant cleaning the nearby stairs, and I asked her to wipe our corridor before any visitors would see it, but she was assigned to another profit centre, and was quick to point out that the work would have to be invoiced interdepartmentally. So I took her mop and a bucket of water, and cleaned the clinic corridor myself. Imagine the bad image we would get if visitors or relatives of the patients would have seen the corridor in the shape it was in.”

The organisational structure of the hospital was such that very little or no support function or administrative costs were directly assigned to the profit centres. This caused interdepartmental allocations to amount to a significant portion of total costs, making the already large overheads appear even larger. As allocations were not reported to the profit centre personnel in detail, the proportion of support functions and administrative costs would often get confused. According to the chief of administration, the personnel complained about the “high salary costs of administrators” that were unfairly allocated to them, denying them their opportunity to use the money for the development of the clinic. According to one documented view, “a profit centre is not allowed to use its own profit, but instead the profit is used elsewhere” (“profit” is interpreted as the margin at the clinic level i.e. the difference between clinics revenues and the expenses in the marginal cost report).

However, at the end of the day, the institutionalised routines of marginal costing in the profit centre budgeting were too strong to be tackled at once. In spite of the new allocation system, budgeting went on as usual. The new interdepartmental allocations would be for the eyes of the profit centre chief physicians only, as the product cost reports were not accessible to most of the personnel. As it was, the system of profit centres, marginal cost reports and interdepartmental allocations was a *locked-in system*, described by Dietrich (2001). The desire to avoid increasing the administrative burden of the physicians involves high opportunity cost associated with the system, while certainly the budgeting process and overhead allocations constituted a highly locked-in pattern of behaviour. But still, the chief physicians were not willing to let go of their burdensome budgetary functions, as they constituted a common language and a tool in the maintenance of *professional encapsulation* (q.v. Tool, 1993).

5.4.2 Satisficing search behaviour: the case for not adopting activity-based costing

All in all, the Private (non-profit) Hospital decided to abandon activity analysis and replace it with a simpler model. This was justified by the transaction costs associated with activity analysis. Even though such rational behaviour (views over the cost-benefit trade-off of an accounting system) is always limited by bounded rationality and cognitive constraints, there is a strong body of literature that deals with the issue from an economically rational viewpoint. In rationalistic thinking, activity-based costing is an accounting system that allocates resources to activities, and activities to cost objects, through causal relations based upon either volume or non-volume cost drivers. This does not guarantee that indirect costs are correctly attributed to products. Therefore, approximation and estimation remain the basis of the activity-based costing system (see e.g. Bromwich and Bhimani 1994, Armstrong 2002, Jones and Dugdale 2002).

Some overheads may exist at a organisational level which makes them impossible to allocate, some may be costs of joint processes¹¹. Bromwich (1997) classified costs according to the operational, managerial and supply characteristics that underlie joint and common costs – the characteristics for not having to resort to arbitrary allocation a strict indeed. A nice argument here is also the one provided by Christensen and Demski (1994), who define the cost function characteristics of modern cost accounting systems. Concerning the usage of costs so obtained for decision-making purposes, Noreen (1991) finds the conditions under which activity-based cost systems provide relevant costs to be quite strict and limiting. These conditions involve linearity of cost functions, the proportionality of cost pools (which implies the existence of zero fixed costs at the cost pool level) and non-jointness of the cost pools. In practice, it is highly unlikely that these conditions are well respected in any firm, let alone a hospital. Therefore, the costs of activities can only be suitably allocated to cost objects when the relationship between the cost and cost object is strictly respected. If the relationship between the cost object and

¹¹ The inability of ABC to handle joint costs was addressed in Maskell's (1988) interview with Robert Kaplan. For joint costs and ABC, see e.g. Bromwich (1997).

resource cost pool is not evident, the result in absorption costing is an arbitrary allocation. An arbitrary allocation is “accurate” or “good” if it serves the purpose of the organisation (e.g. it has positive incentive effects).

A classic allocation treatise by Thomas (1977, p. 111) states “*Actually, you don’t have to have much of a “proof” to show that any allocation is arbitrary... An optimum allocation can be defined only with respect to a given objective function, but there is no reason why that particular objective function should be used and nothing else. This is because the choice of a utility function (which determines the objective function) is entirely left to the individual and not to scientists – Nobody is forced to like apples, thank god !*”.

A clear proof of the uncertainty inherent in all costing systems is provided by Datar and Gupta 1994, who demonstrate the difficulty of knowing for sure whether one method of cost allocation is better than another, or if the disaggregate costing system provides more accurate costs than the aggregate. In economic decision-making such as investments, make-or-buy decisions etc., a central concept is the incremental costs and revenues that result from undertaking a particular course of action. Concerning the concept of incremental costs, Bromwich and Hong (1999) have observed that many overhead costs assigned to the products by activity-based costing are definitely not incremental. This is verified in a hospital setting by Noreen and Soderstrom (1994), who studied the proportionality of overhead costs to activities in hospital service departments. The proportionality can be analysed in two components; linearity (if the cost function is linear) and separability (whether clearly defined additive cost behaviour can be observed at all). Noreen (1991) has concluded that activity-based costing systems do assume additivity, i.e. separable cost functions for all cost objects. Again, it is highly unlikely that reliable data could be obtained from Finnish hospitals to verify these assumptions – it is safer to assume that the assumptions may not hold in the case of a single hospital.

Activity-based costing commonly uses causality as an allocation criterion, i.e. the cost drivers are selected on the basis of the proportionality of the cost driver to the resource (cost) pool. In Belkaoui’s (1981, pp.337) terms this is the criterion of resource usage (benefits received) in allocation, the other criteria being fairness (equity), ability to bear and the criterion of facilities provided. In calculating excess capacity, ABC sets the resource usage above the facilities provided criterion, although in practical full cost calculations these may be the same. Some researchers point out that causality is not solely explained by activities but other factors such as decisions and passage of time (see e.g. Piper-Walley 1990, Bromwich 1997) which further contribute to the concern over the arbitrariness of ABC systems.

Jones and Dugdale (2002) argue that as ABC-builders experienced external challenges and internal reflections concerning the validity of ABC as an accurate costing technique, important transformations took place in the way ABC was “sold”. These transformations include switching of the terminology from “allocation” to “estimation” and defining accuracy as subjective judgement rather than an objective fact. Overstatements such as “in the long run, all costs are variable” have become an extended taxonomy of fixed costs, and the emphasis of ABC has shifted from the determination of product costs to activity-based management. In hospital settings, however, the determination of accurate product costs is still centre stage.

Activity-based costing is certainly not a panacea for problems relating to managerial accounting practices. In full cost pricing situations, the cost of ABC may be significant while the benefits if compared to a functioning traditional system with multiple overhead allocation bases may be low. Armstrong (2002) has commented: “Numerically, of course (putatively real) activity-based cost allocations can be reproduced exactly in the form of (avowedly conventional) multiple-based absorption costing. Only the rhetorical framing differs – a fact which has led some commentators to the conclusion that there is no essential difference between ABC and multiple base absorption costing” Armstrong further argues that it is the beliefs of organisational actors in the ability of ABC to mirror reality that “defines the difference between activity-based and absorption costing, not differences in computation”

Scapens (1991) argues that ABC is not an original approach, but is based on the same economic framework that underlies conventional management accounting wisdom. The view held by Bromwich (1997) is that the benefits of ABC are greatest in the intuitive modelling of the firm’s cost function, which promotes understanding about the cost behaviour. This is close to the views by Christensen-Demski (1994) representing of costing systems as images of a firm’s cost function. This raises the interesting question that if the cost function is intuitively understood, is activity-based costing needed at all?

Managers may refuse to implement ABC systems because their implementation is costly in human and physical resources, and may involve considerable organisational difficulties. In fact, an organisation might want to measure costs less in order to improve decision-making (see e.g. Merchant and Shields, 1993; Datar and Gupta, 1994 also clearly demonstrate why). This may explain why private-sector companies have not adopted activity-based techniques as much as some of the consulting literature anticipated from the widespread interest aroused by management consultancy and academic circles (see e.g. Bromwich and Bhimani 1994). Also, Hansen (1998) demonstrates why, contrary to a commonly held view, increasing the number of competitors may lead to a decreasing investment in cost reduction subsystems (such as ABC/M), and that a firm’s demand for cost data displays a U-shape. Of the cases presented in this dissertation, Oulu University Hospital, Tampere University Hospital, and the Private Hospital, it is the latter where ABC methodology met the most criticism, and was most subject to cost-benefit considerations.

This is interpreted as being a sign of *satisficing search behaviour* under bounded rationality (Roberts and Greenwood, 1997). The hospital managers had made their interpretation of the desired features of the system, and the associated potential benefits. Then, they proceeded to search for an accounting solution that would fulfil the pre-set requirements. Activity-based costing was initially implemented, but it was abandoned after it became clear that it surpassed the minimum requirements by too much; and that the pre-set hurdle could be achieved by implementing a simpler system with lower costs.

5.4.3 Institutional constraints

In the process of implementation, previously formulated organisational designs may be modified as the group which implements them locates mutually acceptable ways of

implementation. This process is argued to be useful especially in understanding accounting change, where the satisficing search behaviour enables decision-making in a complex and uncertain environment.

Evaluation of current organisational designs is influenced by the competitive and institutional environment. A competitive environment provided the demand for new systems as the financial situation gradually deteriorated. Here, the external impulse was provided by the new managing director, who opened the organisation to institutional influences by bringing in the consultants and the academics to search for alternative organisational designs. They promoted new ideas such process management, customer orientation, new budgeting processes and activity-based costing.

These new organisational designs were then gradually adopted, but also had to conform to the existing organisational realities, such as the reluctance of the chief physicians to take on new administrative duties and become part of the “hybrid profession” (cf. Kurunmäki 1999a, 2004) and the unwillingness of the IT department to support accounting software. These organisational practices represent strong preconscious constraints of the organisational actors. Finally, as a result of both bounded rationality in the formation of efficiency expectations, and strong preconscious institutional constraints, activity-based costing was transformed into multiple cost driver costing without the analysis of activities or processes as a key factor. The outcome also supports the view that activity-based costing as a technique did not encounter strong postconscious constraints and was not perceived to serve legitimating purposes.

The institutionalisation process was carried out by individual actors, who faced preconscious and postconscious constraints. The roles of these individual actors are summarised in the following table.

Table 13. Key players in the organisational development

Actor / actor group	Goals / Actions
Managing director	Seeks to improve cost consciousness and profit orientation Brings in consultants and academics to initiate change Approves the content of the strategic worksheets, initiates projects for budgeting improvement and activity-based costing Establishes the pricing committee, where cost accounting and pricing are regularly discussed
Chief of administration 1	Seeks to improve interdepartmental cost allocation and budgeting Initiates accounting training for middle management Leaves the organisation in 2000.
Chief of administration 2	Enters the organisation in 2000 Seeks to improve budgeting Implements activity-based costing project together with consultants and academics Influences the content of the strategic worksheet. Influences the simplification of cost accounting
Consultants and academics (including the present author)	Proposes, sells and implements business oriented budgeting and cost accounting concepts Personnel training
Chief physicians	Concerned about increasing administrative workload See pricing as their responsibility Do not actively participate in cost accounting Seek to maintain existing administrative practices See cost accounting as a one-off exercise, not as a continuous system
Nursing managers	Increasingly cost-conscious, promote cost accounting in order to improve budgeting and pricing Emphasise the use of care intensity ratings and process management
IT staff	Seek to put the “basic things” such as patient administration, personnel administration, statistics and invoicing in order, cost accounting is not one of the “basic things” Do not prioritise budgeting or cost accounting software Propose simple spreadsheet models for reporting purposes Support cost accounting as long as no new software is needed

The role of the new managing director was in many ways pivotal in the sense of initiating change processes and giving new impulses. The role of top management is vital in most accounting changes. For instance, Simons (1990) reported that, while the management control systems resemble one another in many firms, CEO's often make the selection of what management control systems are interactive, i.e. where feedback is required. Therefore, the change of upper management may often be the impulse that initiates managerial accounting change. This was certainly the case with the Private Hospital - it was the managing director who brought in the consultants and academics. It was then the outside parties who originally suggested improved budgeting and activity-based costing, which supports the view that institutional isomorphism did play a role in the initiation of the projects.

The role of the two chiefs of administration was to carry these reforms out. In the development of budgeting, the consultants and academics had a supportive role, while in activity-based costing the role of outside parties was active. The chief of administration, however, supported the simplification of cost accounting, i.e. the transformation of activity-based costing to multiple cost driver costing without activities.

The chief physicians were profit centre managers who did not want to lose control over their profit centres, including pricing and budgeting processes, but who were reluctant to put much effort into these administrative tasks. As such, they preferred to have cost accounting as a one-off exercise, not a continuous accounting system.

Much of the administrative work was in practice carried out by the nursing managers, who were also mostly responsible for personnel administration. Since possible budget cuts would almost inevitably concern nursing staff, the nursing managers were quite concerned about their profit centre's cost structure and the accurate pricing of services. The nursing managers had picked up process management ideas from the personnel training, and were willing to accept the ideas of activity-based costing. Also, the nurses were concerned about the increasing resources consumed by difficult, high care intensity patients, who were reimbursed similarly as the easy, low care intensity patients.

The role of the IT department was an enabler of systems changes. The IT staff took time to inform the developers of accounting systems that other projects had to be prioritised, and that the simpler the solutions were, the better. This may have had a significant effect on the outcome of the cost accounting system.

In the Private Hospital, changes in management provided the *external impulses* which started the institutionalisation process. The managing director and the chief of administration had private, for-profit sector backgrounds, and initiated training and consulting processes to introduce new business models and tools into the organisation. Among these tools introduced was activity-based costing.

Thus, activity-based costing was included in the Private Hospital's strategic worksheets as a priority number one, although listed under the heading "Improving product and process management". The strategic worksheet priority number three, "Management support system development" included the development of budgeting and pricing methods, which were tied with the development of cost accounting techniques. These strategic goals were further clarified in project plans and pricing formulas.

The pricing workgroup, which controlled pricing strategy, was also responsible for the legitimisation of the costing system. The postconscious constraints involved both satisfying external purchasers and the hospital's own organisation. The costing system change may have been necessary because of being able to maintain the appearance of rationality and by so doing, to retain control of some members of the organisation. The managing director had formed the committee partly because of the concern that unless high-level action were taken, there would be few changes in the ways the profit centres acted. This type of thinking is in line with a view that health care organisations are often decoupled, i.e. have an "inner core" of health care –related decision-making and an outer core of bureaucratic administrative structure that provides a façade which deals with the outside world and which is not easily penetrated by those who wish to change organisational designs (q.v. Lapsley, 2001). The actions of professional service organisations are often decoupled from financial performance measurement, and these may not interact (see Brignall and Modell, 2002, Modell 2000). If the financial measures and the actions of the organisation do interact, they do so by balancing between the contradictory constituent interests (see Arnaboldi and Lapsley, 2003).

5.5 Conclusions

The case study explored events around management accounting system development in the Private (non-profit) Hospital between 1999 and 2002, and how this development was motivated by conceptions and beliefs concerning economic rationality, and how these events were subjected to various pre- and postconscious institutional constraints. More than other case studies this one analyses events at the micro level, a fact that was aided by the present authors deep involvement in events. In the course of years, the Private Hospital had formed very distinctive management accounting and control systems, which included the centralised, almost secretive budgeting process and the independent position of the chief physician in determining the pricing of his profit centre.

Historically, the Private Hospital would look up to the public health care organisations, and one might argue that the cost accounting concepts had been influenced by those in the public hospitals (mimetic isomorphism originating from the public sector). The profit orientation was a new concept, a new way of thinking, which originated in the private, profit-making sector rather than the public sector.

The result of this increased profit orientation backed up by managerial accounting systems, albeit simplified and adopted to suit the preferences of the chief physicians, was the strengthening of the administration's grip of accounting as a means of organisational control. Finally, a new, simplified cost accounting system emerged, which had incorporated some of the ideas of activity-based costing (full costing, multiple cost drivers) with the organisational reality of the Private Hospital. The impulse had been low profitability, and corporate-style budgeting and full cost accounting were introduced as a reaction to the impulse. In the course of implementation, the full cost accounting lost its activity emphasis, was adopted to the cost-conscious reality of the hospital, but survived by managing to incorporate several existing organisational practices such as care intensity ratings. The implementation of the cost accounting project and the pricing committee that followed completed the process of institutionalising the new cost accounting into the practice. Here, the use of the pricing committee made the full cost pricing mechanism an interactive management control system (see Simons, 1990) by which the top management signalled that feedback was required – and that pricing was of strategic importance.

The new product cost accounting that had started out as activity-based costing eventually skipped the activity analysis part of the project, and was transformed into a set of simplified costing systems (the costing solutions being different for operative and conservative specialities). The profit/cost centre structure was not replaced in cost accounting, as the increased budgetary emphasis required the responsibility structure, which was not seen as being separate from the needs of costing. In the end, the resulting costing system should not be characterised as a failure as such, but drawing on Malmi (1997), a rational choice to limit the data collection in a case where the central cost drivers were, perhaps subconsciously, understood by the middle managers. The choice to limit data collection implies that the cost accounting data had, in the minds of the hospital's decision-makers, passed the test of being acceptable cost information, and as such, was an example of *satisficing search behaviour*. Different decision-makers in various professional groups used different argumentation. Basically, the chief physicians had argued against the increasing administrative workload, and did not see that activity-

based costing numbers would be different from the numbers of any other costing system, and it is possible that their opinion carried much weight. Their arguments can be interpreted as resembling (bounded) economic rationalism.

An interesting question from the viewpoint of satisficing search behaviour was that the new costing had not been implemented throughout the entire hospital (the hospital was not, after all, very large). Why four or five separate costing models in a rather small organisation? The field notes reveal that the main motivations cited by the decision-makers were related to cost-benefit issues, the discourse of economic rationality and transaction cost economics. If the hospital would have to have a pilot study to find out what works, then other profit centres would save resources. The profit centre chief physicians would have to be kept at producing outputs, not burdened with excessive administrative work. The hospital management felt that they could not afford the purchase of ABC software and a large centralised project.

Traditionally, the internal allocations had been an area of interest for the middle managers. The interdepartmental allocations had been abandoned and replaced with marginal costing, but now the system was reinstated. From the outset it was evident that the allocations could also easily become a tool for resisting change. Those who disliked the overall management reform were likely to show interest in the reform of internal allocations. If a resource were included in the budgets of one profit centre, they would be reluctant to give it to another without internal compensation. But in the internal allocation system, which used the basic textbook method of step-by-step allocation, the actual profit centres were not allowed to do this. The argument was that the allocations, even though they were justified for pricing considerations, instigated sub-optimising behaviour and internal power-struggles – a conclusion familiar from TCE and agency theory argumentation (see e.g. Vosselman 2002).

The development of the cost accounting system was preceded by changes in the hospital's budgeting system. According to the interviewees, budgeting had previously been an exchange of information between the chief of administration and the chief physicians, and the budget was prepared by the chief of administration alone. The big drive by the new chief of administration had been to have the chief physicians participate in budgeting, and to set goals. This process may have been *isomorphic*, since Kurunmäki (1999a) notes that increasing physician participation in budgetary practices has been characteristic of the Finnish public hospital sector. The concept of institutional isomorphism implies that practices are imitated from dominant institutional forces to organisations, which are subject to these forces. Here, many of the organisational practices may have been transferred from public to private health care organisations, as the public organisations play a dominant role in the industry. In this new situation of increased financial awareness, more income financing of the hospital's investments was required, and hence, the hospital was required to produce at least a limited amount of profit in a situation where this had just become very difficult. However, unlike in public hospitals, the budgetary system would eventually end up very much resembling corporate budgeting, starting with sales and revenue budgets, then expense and investment budgets, and ending up with forecasted financial statements, all in a PC-Excel application.

However, it had not been easy for the hospital management to implement the corporate-style budgeting system. Field notes indicate how the chief of administration vividly described the difficulties involved in asking the profit centre managers for

estimates concerning the number of outputs, and the number of personnel required to produce the outputs. Sometimes the profit centre managers would decrease the budgeted outputs and increase the budgeted number of personnel, which the chief of administration had found especially unacceptable. On other occasions, the prognosis would seem unrealistic, if a significant increase in number of outputs was budgeted with a simultaneous cut in the number of personnel. There were varying practices in how these key figures were reported by the profit centres, which caused confusion in the administrative department. For instance, both the number of outputs and the number of personnel were sometimes unreliably reported. In the official financial report for the year 2000 the number of bed-days had been reported by using a different definition than many of the profit centres did internally, causing some confusion.

The role of economic competition was increasing, and during the course of the four-year observation period, new budgeting and cost accounting systems were set up with the intention of transforming this private but non-profit hospital into a more profit conscious organisation paralleling the profit-maximising private sector. It seems, however, that many *preconsciously institutionalised* management processes - prevalent ways of thought and action - stemmed from the background ideals of non-profit, charitable, organisations. At the same time, some management ideals (especially those related to physician-managers) were adopted from the public sector - many of the employees had, after all, been employed in public hospitals before coming to work in the Private Hospital (i.e. normative isomorphism). The independence of the chief physician certainly falls into the category of ideas adopted from the public sector, as well as immovability of personnel positions, and strict adherence to one's own profit centre. These may be interpreted as examples of *professional encapsulation* by Tool (1993).

The winds of change began to blow in the wake of the economic depression in Finland in the early 1990's, which resulted in layoffs, downsizing and change in top management, especially the managing director and the chief of administration. The new managers, with their private-sector backgrounds and non-health care education, did not share the same preconscious institutional constraints as the physicians. Thus, the new managers quickly introduced private sector ideals into an organisation that had previously been strictly non-profit.

However, the routines embedded in the day-to-day life of the hospital were strong, and the change to increased profit orientation did not come quickly. First, a training programme was set up to educate the top and middle management. This also had the effect that the concepts such as ABC were introduced to the managers as solutions to their problems (mimetic isomorphism).

While the top management may have adopted these ideas, they were met with resistance among the middle managers, a group that was somewhat undefined but large and influential - up to a quarter of the hospital's labour force, since all doctors wanted to be considered managers. This definition of "manager" exemplifies some of the problems which occurred when ideas were transferred from a private, profit-making and industrial environment to the Private (non-profit) Hospital. Similar problems in the transposition of the ideas may partly explain the fate of the ABC system, too. After the training, consultants were called in to transform management processes to resemble a leaner, more profit-oriented organisation. Relating to this, new budgetary systems were set up, then an

internal allocation system, and finally an attempt was made to adopt activity-based costing.

When the interdepartmental allocation system was set up, it became possible to compare the net profits of the various profit centres. This revealed cross-subsidisations, and caused resistance in those profit centres which were profitable. It seemed that the top management had underestimated the strength of the legitimating status of the profitability reports. In the managerial thinking embedded in the ways of the Private Hospital, the internal allocations were of great importance, since one must be wary so as not to let other profit centres to use the resources “for free”, as the profit centre could acquire legitimacy in the eyes of managers by being able to report sound numbers. Another type of *postconscious institutional constraint* became evident in the debate over the cross-subsidisation between municipal and S.I.I. reimbursements. The hospital as a whole had to legitimate its actions towards the reimbursing parties – thus it could have been harmful to produce reports where cross-subsidisation was evident.

In the end, the legitimacy problem was solved by taking a decision that the internal allocations were confidential information, and middle managers (as well as some of the profit centre chief physicians) were denied access to the calculation, except as a part of the full costing system. This did not stop the behaviour pattern from reproducing itself from time to time. The internal allocation issue also had an impact on the way the costing system was perceived and could be designed. Perhaps the managers were already convinced of the dangers of too detailed information. Thus management decided to implement a cost-efficient costing system that was accurate enough for pricing, but not too transparent or detailed – a conclusion similar to that of Merchant and Shields (1993), or that of Preston et al. (1997) - a “latourian black box”.

All in all, the development of a cost accounting system in the Private Hospital had a background in a change of organisational thinking, the new management not sharing the preconscious institutional constraints of the old. As competitive environment changed, the hospital began to develop its management accounting systems, first corporate-style, budgeting, then internal allocations, and finally activity-based costing. What started out as a text-book style activity-based costing project was soon transformed into “traditional” costing with multiple cost drivers or overhead rates, but without definitions of activities. In terms of accuracy, this is at least as good a method as ABC, but more aggregate, less costly, and perhaps less informative about the reasons behind the cost structure (see e.g. Armstrong 2002).

In the early initiation / implementation phase, institutional isomorphism was present in the form of management training and consulting. At least once the managers made reference to professional seminars where ABC had been advocated. The abandoning of activities in the calculations was justified for transaction-cost views that show characteristics of satisficing search behaviour, as the activity-based costing was simplified because of its high cost.

In conclusion, cost accounting in the Private Hospital was justified by both institutional and economic argumentation. Rather than focusing on external influences such as management fads, this case has considered the internal institutional factors which caused the transformation of cost accounting from activity-based costing to a more simplified multiple cost driver costing. One important aspect of this is the division of roles between the administration and the chief physicians, the administration being

responsible for the budget, and wishing to share this responsibility, but the profit centre managers retaining independence over pricing issues. The main motivation for a new costing system was pricing, both internal (interdepartmental allocations) and external (prices of health care services produced). A good costing system was seen to have the characteristics of reasonable accuracy, low cost and ability to work in both interdepartmental pricing as well as full cost pricing for products sold.

6 Conclusions

6.1 Research results

In the management accounting literature, the rise of ABC was associated with broader diagnoses of global change in production and markets, and prescriptions for corporate managers were adopted in response to them. The ABC phenomenon originated in the particular managerial environment of the U.S.A. in the late 1970's and early 1980's, and reflected a "productionist response" to this new environment (Jones and Dugdale 2002). However, the specifics of its origin were soon obscured by its extension to other countries and other industries and public services.

Now, however, ABC has come to be advocated for organisations such as Finnish hospitals, which are experiencing quite different kinds of change – rising costs and dwindling public funds, marketisation pressure, contractual management / managed care systems, contract-based budgets and the legislative demands to show close-to-zero accruals-based profit.

The research problem in this study has been to explain the motivations and rationale of the three case hospitals for adopting new (activity-based) cost accounting systems. Of special interest is the extent to which the adoption process has followed the logic of economic rationalism, and the influence of various institutional forces in the adoption process. Following Roberts and Greenwood's (1997) constrained efficiency framework, all organisations are constantly searching for more efficient organisational designs. A cost accounting system is one such design that is implemented with the ultimate aim of increasing organisational efficiency. This efficiency, however, is constrained by both cognitive and institutional constraints. The cognitive constraints include bounded rationality that limits various organisational actors' abilities to evaluate exactly what kind of cost accounting system would best secure their interests, and to make comparisons between various alternatives. The key findings of this study relating to economic and institutional rationales of ABC adoption are summarised (respectively) in Tables 14 and 15.

The following Table 14 provides a summary of the economic rationales of ABC adoption found in the case studies.

Table 14. Summary of economic rationales

	Case Oulu University Hospital	Case Tampere University Hospital	Case Private Hospital
Method of ABC implementation / costing system structure	Several, non-interlinked, non-uniform ABC models. The software solution is a common factor for most of the models.	One, centralised and uniform ABC model	Several interlinked models that become simplified over time
Use of ABC / cost accounting	Full cost pricing in individual clinics	Initially no use, intended for full cost pricing at the hospital district level	Profitability analyses and reporting. Increasing cost awareness.
Role of efficiency related rhetoric and cost vs. benefits considerations	Strong efficiency –related rhetoric that views pricing as a key to efficiency	Efficiency speech found, but seems mainly directed at outside parties	Increasing cost awareness, strong debate over costs and benefits of the costing system
Bounded rationality and satisficing search behaviour manifested in	use of different external consultants results in model heterogeneity	aggregate and low-cost ABC model that relies heavily on existing responsibility structure	Full ABC is deemed too costly, search for simplified solutions
Efficiency-related rationale to adopt ABC	Search for efficient organisational designs such as full cost prices and elimination of cross-subsidisation	Increase the accuracy of pricing while keeping the costs of calculation to a minimum	Implementation of cost accounting is used to help in adopting more businesslike ways of operating..Costs and benefits of the new costing system are carefully weighed
Change in efficiency-related rationales	Initial enthusiasm and centralised efforts are replaced by pragmatism and decentralised management control.	Little change evident in efficiency-related motivations	Cost consciousness increases, level of detail in cost accounting decreases.

In organisational environments there are no laboratories which would allow the actors responsible for constructing cost accounting systems to experiment with different solutions, and, based on those experiments, to make a rational choice among various alternatives. Instead, the organisational actors must rely on their limited knowledge, and establish pre-set criteria for a functioning cost accounting system. This satisficing search behaviour leads to an implementation decision when an accounting solution fulfilling the pre-set conditions concerning e.g. functionality, the quality of information, and cost of setting up and running the system is found. As the development covered in the case studies coincided with a strong supply of activity-based costing systems originating from the consulting industry (see Malmi, 1999) this alone may have contributed to the choice of ABC as a methodology of cost accounting.

In the case studies, where economic rationality was combined with strong advocacy for ABC systems - namely Oulu University Hospital and the Private Hospital, the economic rationality changed significantly over time. In the case of Oulu University Hospital, initial enthusiasm was replaced with either one-off cost studies (in most clinics) or gradual development with emphasis on integration into other information systems (in surgery and intensive care). In the Private Hospital, this waning of ABC-enthusiasm can be attributed to increasing cost awareness about increasing administrative workload and the costs of calculation. Almost paradoxically, increasing cost awareness was what the ABC projects set out to achieve.

In addition to economic rationality bound by cognitive constraints, the institutional realm influences the choice of cost accounting systems. Recently, these institutional influences have been a focus of much of the discussion about activity-based costing adoption in the private sector firms (Armstrong, 2002; Drennan and Kelly, 2002; Granlund and Lukka, 1998; and Jones and Dugdale, 2002; Malmi, 1999; and Soin et al. 2002) as well as the cost accounting in the health care sector (Arnaboldi and Lapsely, 2003; 2004 and Northcott and Llewellyn, 2002). Institutional constraints include preconscious and postconscious constraints. The former often take the form of taken-for-granted beliefs about what is seen as constituting reality. Thus, the organisation in which the implementation process takes place influences the design of a costing system through its own peculiar traditions and practices that have been developed over time. A prime example of these would be the tradition of clinical management in hospital clinics. Postconscious constraints include the isomorphic pressures, and where organisations respond to these pressures by seeking to legitimate their actions in the eyes of external parties such as financiers, legislators etc. It is often in the interest of health care organisations to appear modern and cost-conscious by adopting fashionable and at least seemingly state-of-the-art cost accounting systems. All in all, the view taken here is in contrast to the claim by Meyer and Rowan (1977, pp. 91) according to whom efficiency and institutional pressures contradict one another, and efficiency pressures are a pernicious influence on institutions. In this dissertation, however, the view is that institutional and efficiency pressures are more aligned, and not necessarily contradictory, but instead both influence the ABC adoption process. Table 15 provides a summary of the elements related to institutional rationales found in the three case studies.

Table 15. Summary of institutional rationales

	Case Oulu University Hospital	Case Tampere University Hospital	Case Private Hospital
Role of the institutional environment	Isomorphic pressures, ABC as a management fashion, extensive use of consultants	Strong external pressure to adopt ABC. Formal contracting mechanisms require the use of full cost prices.	Two customer groups (municipalities and the S.I.I.) have divergent interests. Pressures to appear more business-like. Extensive use of consultants.
Role of preconscious institutional factors, "taken-for-grantedness"	Full cost pricing as a self-evident, unquestioned goal. Division of accounting tasks between physicians and accountants	Full cost pricing as a self-evident goal. Managed care and the reimbursement mechanism set requirements for costing.	Views about the nature of a non-profit hospital range from charity to plain business.
Role of postconscious institutional factors and legitimating behaviour	Little evidence of this at the hospital level. Individual clinics face pressures to appear modern and progressive in the eyes of the top management.	Legitimation of prices seems to be the main motivation for implementing ABC	Little evidence. Some pressures to appear modern, and to show no cross-subsidisation between customer groups.
Change in institution-related rationales	Postconscious institutional influence is strong initially, but fades over time.	Little change discernible in institution-related rationales.	View of the hospital as a cost-conscious, business-like organisation (preconscious constraint) strengthens.

In the first case study, Oulu University Hospital, activity-based costing was initiated and carried out mainly because of a desire to achieve accurate full cost pricing, with a firm – yet unsubstantiated - belief that this would prove to be beneficial and in the interests of the organisation. The discussion is centred on the themes of full cost pricing, and the cost allocations needed for that purpose, with the ultimate aim of preventing cross-subsidisation between various departments and outputs. Clinical managers and other chief physicians seem to have played a major role in determining the desired features of cost information, while the role of accountants could be described as either supportive (in the case of hospital accountants) or advocating (in the case of external consultants). While the role of consultants can be interpreted as being a postconscious constraint, the division of accounting and financial management related tasks between physicians, accountants (and in some cases, nursing managers) has in effect preconsciously constrained activity-based costing implementation. Interestingly, the strength of the institutional influences, especially postconscious legitimation, seems to have declined over time.

However, the Tampere University Hospital also adopted ABC for purposes of trying to address the issues of budget balance, cost efficiency and transparency. The case evidence points to the fact that the institutional pressures seem to be particularly strong in the public health care setting, but must still take the requirements of efficient pricing into consideration. The pressure from the municipalities took a different form for different actors and different stages of the project. This institutional pressure affected attitudes to activity-based costing and the use of information concerning costs and prices. The project decision resembles a situation described by Arnaboldi and Lapsley (2004), where none of the interviewees was able to justify the choice of a particular costing technology, whose selection seems to be more related to the presence of a champion of ABC in the organisation (in this case, the director of financial control) and management's desire to use "modern" techniques than to a real evaluation of its benefits and its costs (a situation resembling the "juggernaut of modernity"). However, the main finding in this case study relates to the coercive isomorphic pressure exerted by outside groups, and the aims of the ABC projects relating to alleviating that pressure.

The Private (non-profit) Hospital differs from the two other cases in that the competitive environment is considerably more market driven. Despite these circumstances, cross-subsidization between various clinics, treatments and reimbursing parties has remained an essential feature of the business logic. This is interpreted to have originated from the views about the nature of non-profit health care – a strong preconscious constraint that the management may have wished to change. Instead of full costs and financially self-supporting products, the efficiency-related rationality in this case was more related to the increasing cost awareness and the debate over (transaction) costs and benefits of various activities. This cost-benefit debate also extended to the cost accounting project itself, and eventually led to the simplification of the system. The postconscious institutional constraints in this case study are weaker, mostly relating to mimetic isomorphic pressures originating in an overall movement to adopt ABC and normative pressures facing the accounting profession.

6.2 Contributions and suggestions for further research

According to Keating (1995), theory illustration case studies seek to establish the plausibility of a specific theoretical perspective by demonstrating its capacity to shed light on some previously unappreciated aspect of management accounting practice. This study has employed the constrained efficiency framework by Roberts and Greenwood (1997) to examine the economic and institutional rationales of ABC adoption in hospitals. This study has found the institutional influences in hospitals to be quite strong and capable of influencing decisions relating to costing. In fact in the Tampere University hospital case, postconscious institutionalisation seemed to play a major role in the decision to implement ABC, while in the Private (non-profit) Hospital the role of ABC was to induce change in the preconsciously institutionalised way in which the organisation viewed its mission. In Oulu University hospital, the role of postconscious institutional constraints in ABC implementation may have been important at first, but these gradually gave way to more rationalistic and efficiency-related interpretations.

Therefore, this study contributes to the constrained efficiency framework by illustrating the way the constraining elements, i.e. cognitive, pre- and postconscious constraints, have interacted in these case studies and changed over time. With these three case studies it has been possible to illustrate what is meant by the concepts of economic rationality and institutional influences in management accounting, and how both these forces shape cost accounting systems in health care organisations. The market efficiency pressures, shaped by neoclassical thinking, call for functioning markets where marginal costs equal prices (implying no cross subsidization) – this alone causes demand for cost accounting. Most organisations are conscious of the perceived transaction costs of the cost accounting systems themselves, which shapes views about the cost effectiveness, and eventually the structure of the accounting systems as time passes. However, these perceptions regarding the costs and benefits of the systems are not accurate since the cognitive abilities of organisational actors are constrained. Hence, the decision-makers have adopted approaches where pre-set criteria are applied for evaluation of the accounting systems (satisficing search behaviour).

The institutional forces appear to be externally oriented, extra-organisational factors influencing management accounting systems (postconscious constraints), but the process of institutionalisation also occurs at the micro level, where new systems encounter old habits deeply embedded in an organisation, and new practices are formed (preconscious constraints). By now it should be possible to conclude that the motivations and rationale for adopting activity-based costing in these case studies are never totally related to the rationalistic desire to improve efficiency, or to institutional influences, but instead there are different diverse and often confusing motivations for costing system adoption in which the economic and institutional rationale are mixed. The search for alternative organisational designs, while based on economic rationality, is constrained by the bounded rationality of both decision-makers and their advisors (consultants, academia etc.) so that the outcome is not based on any clear anticipated benefits, but instead on the belief that there is a need for change, and that some benefits, economic or social, may result from a change (Carruthers 1995, Chua 1995, Oliver 1991). This suggests what Chua (1995) anticipated – new accounting systems may also emerge not because there is certain knowledge of the economic outcomes, but because there is an uncertain faith that a new system is needed.

While it may be possible to demonstrate that the use of activity-based costing often, but not always, results in better cost estimates for decision-making purposes than allocations based purely on labour hours (e.g. Baband and Balachandran, 1993, Datar and Gupta, 1994) such rational analyses will not explain the processes through which ABC techniques have been put to use in some hospitals, but not in others. In the second case study the pressure for accurate pricing originated in the municipalities, which were applying financial pressure through the managed care mechanisms, and the auditors. Adopting ABC was seen as a signal of accurate pricing, regardless of the structure and the allocation mechanisms of the costing system. This signal was reinforced by the presence of academia in the project coordination group. The actual product costs obtained as a result of the activity-based costing project were not put to use in pricing. Here, more than in the other cases, the evidence points to *decoupled organisation* (see e.g. Brignall and Modell, 2000; Modell, 2002 and Arnaboldi and Lapsely, 2003) - a notion widely discussed in public sector management accounting.

It also seems that the preconscious institutional constraints relating to the division of management accounting-related tasks between health care professionals and accountants has affected the way the projects were carried out (see Kurunmäki, 1999a; Kurunmäki 1999b; Kurunmäki et al. 2003). This nature of this interaction in Finnish hospitals has been a subject of study earlier (Kurunmäki, 1999a, Kurunmäki et al 2003), and it seems that the subject has not been exhaustively covered, but would instead warrant further research.

The field study method and multiple phases of data collection also enabled detailed analyses of the structures of the cost accounting systems involved. Thus, the present author had the opportunity to triangulate (Yin, 1984) much of data related to system design. Interestingly, the activity-based costing models were found to be quite dissimilar in structure. Institutional theories predict that organisations facing institutional pressures come to look alike through the process of isomorphism. Comparing these three cases it seems almost as if institutional isomorphism only influenced the names of the accounting systems (activity-based costing) and not the structure and content of the systems. This empirical finding may have both rationalistic interpretations related to e.g. product diversity (Abernathy et al. 2001) and institutional interpretations related to the concepts of sagacious conformity (Meyer and Rowan, 1987) and decoupling (Brignall and Modell, 2000; Modell, 2002). This demonstrates the need for a continuing discussion and debate between the new institutional sociology-inspired new public management research and more economic rationalism-oriented management accounting research.

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Appendix 1

List of data for case 1 (Oulu University Hospital)

Archival material:

1. Letter, September 29th, 1996. *Hospital district-level activity definitions*. Author: Director of marketing. Circulation: Hospital district management. 1 page.
2. Memorandum, October 20th, 1996. *Activity-based costing in the hospital district*. Author: Director of marketing. Circulation: unknown, possibly hospital district management. 2 pages.
3. Memorandum, November 14th, 1996. *Integrating the new financial accounting system with activity-based costing*. Author: consulting company. Circulation: consultants, hospital district management. 2 pages.
4. Letter, Nov 16th 1996. *Possibility of defining hospital activities*. Author: Director of marketing. Circulation: unknown, possibly hospital district management 1 page.
5. Fax, November 28th, 1996. *Activity-based costing in the hospital district*. Author: Director of Marketing. Circulation: hospital district management, consultants. 4 pages.
6. Notes by the present author, Jan 14th, 1997. *Hospital district's activity-based costing workshop*. 19 pages
7. Handwritten notes by the present author, Jan 14th, 1997. *Hospital district's activity-based costing workshop*
8. Document, Jan 14th, 1997. *Activity-based costing in the hospital district*. Author: Activity-based costing project group. Circulation: Management and all those involved with the cost accounting projects. 19 pages.
9. Memorandum, January 14th, 1997. *Activity-based costing in the hospital district. Completed projects, project plans and guidelines for the future*. Author: Director of Finance, with comments from chief administrative physician. 22 pages.
10. Memorandum, January 27th, 1997. *First planning session of the Clinic of Urology ABC system*. Author: Consultant. Circulation: project group. 3 pages.
11. Memorandum, February 24th, 1997. *Activity-based costing for the clinic of urology and the revised macro activities for the hospital district*. Author: Consultant, chief surgeon. Circulation: project group. 6 pages.
12. Memorandum, February 25th, 1997. *Activity-based costing for the clinic or Otolaryngology*. Author: consultant. Circulation: project group. 1 page.
13. Northern Ostrobothnia Hospital District internal newsletter no 1/97. *“Activity-based Costing introduces financial responsibility to the clinics – in Regional Hospital, activities have been recorded and costs calculated”* Author: newsletter editor. Circulation: hospital district personnel.
14. Fax, May 3rd, 1997. *Proposal for the activity list of the operating theatre*. Author: consultant. Circulation: chief surgeon. 1 page.
15. Fax, May 7th, 1997. *Proposal for the activity list of the clinic of otology*. Author: consultant. Circulation: surgeon in the clinic of otology. 1 page.

16. Memorandum, May 24th, 1997. *Activity-based costing for the clinic of urology*. Author: chief surgeon. 3 pages.
17. Note, May 26th, 1997. Northern *Ostrobothia Hospital District Activity-based costing project*. Author: consulting company. Circulation: pilot project groups. 1 page.
18. Memorandum, June 12th, 1997. *Meeting of the hospital districts ABC follow-up group*. Author: Director of finance, hospital district accountant. Circulation: hospital district management and all project groups. 4 pages.
19. Project report September 22nd, 1997. Content: *The Cost Control ABC project report*. Author: consultants and the project groups. Circulation: hospital district management, project groups, other interested parties. 21 pages.
20. Document, January 22nd, 1998. Content: *Activity-based costing for Cardiac surgery*. Author: consultant. Circulation: project group. 1 page.
21. Project Plan, May 3rd, 1998. *Joint cooperation project for cardiac surgery activity-based costing*. Author: consultant. Circulation: project group, hospital district management. 7 pages.
22. Project status report, April 18th, 1998. *Cardiac surgery activity-based costing project*. Author: consultant. 1 page.
23. Memorandum, May 4th 1998. *Meeting of the joint project*. Author: chief surgeon. 1 page
24. Memorandum, May 18th, 1998. *Activity-based costing for cardiac surgery. Summary of notes from meetings on February 12th, February 17th, May 5th and May 18th*. Author: chief surgeon. Circulation: project group. 2 pages.
25. Document, May 28th, May 29th and July 1st 1998. *Activity sheets for defining and recording activities in activity-based costing*. Author: consultant. Circulation: present author, chief surgeon, nursing manager
26. E-mail, July 8th, 1998. From a consultant to academic researcher. Subject: *Elective and Acute patients*.
27. Memorandum, June 15th, 1998. *Two possibilities for costing acute and elective patients*. Author: consultant. Circulation: present author, chief surgeon. 1 page
28. Memorandum + notes, August 14th, 1998. *Meeting of the joint project*. Author: Chief surgeon, with handwritten notes by the present author. Circulation: project group. 1 page. Appendixes: A) Allocation bases for cardiac surgery theatres, B) pricing in the clinic of urology C) pricing in clinic of surgery. D) pricing in the urologic ward.
29. E-mail, August 17th, 1998. Sender: consultant, Receiver: Present author. *Placement records for physicians vs. surgery hours as an allocation base*. 4 pages
30. Memorandum, April 12th, 1999. *Activity-based costing in the operating theatres*. Author: Chief surgeon. Circulation: project group. 1 page.
31. Memorandum, May 10th, 1999. *Activity-based costing in the operating theatres*. Author: Chief surgeon. 3 pages.
32. Project plan, May 10th, 1999. *Activity-based costing in the operating theatres*. 5 pages.
33. Note, October 4th, 1999. *List of things to do in the activity-based costing project*. Author: consultant. 1 page.
34. Presentation, February 24th, 2000. *Cost accounting for surgical specialities*, by the present author, along with the chief surgeon. 13 pages.

35. Project report, February 24th, 2000. *Activity-based costing project in the operating theatres*. 11 pages, appendixes 6 pages.
36. Project plan, May 31st, 2000. *Activity-based costing for surgery*. Author: the present author and the chief surgeon. 4 pages.
37. E-mail, May 31st, 2000. To: present author. From: chief surgeon. *Answers to your questions*. 1 page.
38. Nov 29th, 2000. Handwritten note by the present author in an activity-based costing project group meeting.. *Overview of the costing system and the allocation bases*. 1 page.
39. Project plan + notes, November 6th, 2000. *Activity-based costing in the neurological ward*. Author: project group with notes by the present author. Circulation: neurological ward staff, hospital district management. 3 pages.
40. Notes by the present author, December 7th, 2000 – March 29th, 2001. *Activity-based costing project in the neurological ward*. 4 pages.
41. Project Plan, January 2001. *Activity-based costing for the integrated teaching of dentistry*. Author: project coordination committee. Circulation: project group, hospital district management, city of Oulu social and health services management. 2 pages.
42. Memorandum, March 21st, 2001. *Activity-based costing for dentistry*. Author: City of Oulu administrative dentist. Circulation: project group, hospital district management, city of Oulu social and health services management 1 page
43. Memorandum, April 26th, 2001. *Activity-based costing for dentistry*. Author: City of Oulu administrative dentist. Circulation: project group, hospital district management, city of Oulu social and health services management 1 page
44. Memorandum, May 30th, 2001. *Activity-based costing project for the integrated teaching of dentistry, health services system*. Author: City of Oulu administrative dentist. Circulation: project group, hospital district management, city of Oulu social and health services management. 1 page
45. Note, May 30th, 2001. *Slowness of dental operations due to teaching*. Author: City of Oulu administrative dentist. Circulation: project group, hospital district management, city of Oulu social and health services management. 1 page.
46. Report, October 16th, 2001. *Activity-based costing for the integrated teaching of dentistry*. Author: project coordination committee. Circulation: project group, hospital district management, city of Oulu social and health services management. 12 pages.
47. Memorandum, Dec 5th, 2001. *Developing cost accounting and cost reporting in Surgery and Intensive Care* Author: Present author and the chief surgeon. Circulation: project group, hospital district management. 5 pages.
48. Project plan, dated Dec 3rd, 2001. *Developing cost accounting and cost reporting in Surgery and Intensive Care*. Author: Present author and the chief surgeon. Circulation: project group, hospital district management. 3 pages.
49. Memorandum, December 10th, 2001. *Developing cost accounting and cost reporting in Surgery and Intensive Care*. Author: chief surgeon. Circulation: project group, hospital district management. 2 pages.
50. Notes, Jan 25th, 2002. *How to allocate anaesthesia costs*. Author: the present author. 1 page.

Cost Accounting Models:

1. Cardiac bypass surgery process model. May 5th, 1999. 23 pages. Paper version by consulting company.
2. Oulaskangas Hospital ABC model (CostControl database)
3. Ophthalmic Clinic ABC model (CostControl database)
4. Clinic of Urology ABC model (Cost Control database)
5. Neurological ward ABC model (Cost Control database)
6. Integrated Dentistry ABC model (Cost Control database)

Ex-post interviews (taped and transcribed in verbatim)

1. Chief physician, May 31st, 2005. 45 minutes
2. Chief physician, June 3rd, 2005. 65 minutes
3. Accountant / member of the administration, June 6th, 2005. 45 minutes
4. Chief physician, June 8th, 2005. 30 minutes.
5. Accountant / member of the administration, June 10th, 2005. 60 minutes
6. Chief physician, June 20th, 2005. 25 minutes
7. Accountant / member of the administration, June 21st, 2005. 60 minutes

Appendix 2

List of data for case 2 (Tampere University Hospital)

Field notes:

Field notes, bound notebook, 31 pages

Field notes, January 8th, 2001. 5 pages

Field notes, February 12th, 2001, 5 pages

Field notes, May 23rd, 2001. 2 pages.

Archival material:

1. Aamulehti (local newspaper), October 26th, 1999. *Hospital district's pricing is inaccurate, and cost accounting a failure.*
2. Hospital district internal report concerning the financial statement for the 1999. *The hospital treated the budgeted number of patients, but did not achieve the zero-level profit.* 2 pages
3. Auditors memorandum May.4th, 2000. *Management control in the joint municipal organisation is not entirely satisfactory.* Circulation: hospital district management.
4. Memorandum, August 25th, 2000. *Background material for the meeting concerning pricing practices in the hospital district.* Author: hospital district physician with prior experience from activity-based costing. Circulation: project group. 2 pages.
5. Project plan, August 25th, 2000. *Activity-based costing in the hospital district.* Author: director of financial control. Circulation: project group. 3 pages.
6. Memorandum, August 25th, 2000. *Activity-based costing in the hospital district.* Author: director of financial control. Circulation: project group. 10 pages
7. Memorandum of the project group meeting, September 25th, 2000. *The ABC project is about to be started.* Author: director of financial control. Circulation: project group. 2 pages.
8. Memorandum, November 28th, 2000. *Cost allocation rules and timetable for the project.* Author: director of financial control. Circulation: project working group, all those responsible for gathering data for the project. 12 pages
9. Project document, February 8th, 2001. *Activity-based costing for the Centre for Laboratory Services.* Author: Laboratory Centre project group. Distribution: Laboratory Centre Personnel. 5 pages.
10. Hospital district report on the pricing and cost accounting project. May 23rd, 2001. Author: director of financial control. Circulation: Hospital district management, all those involved with the project. 23 pages.
11. Presentation, May 6th, 2002. *Cost accounting in the Pirkanmaa Hospital District.* Author: chief surgeon. 17 pages.

Appendix 3

List of data for case 3 (Private Hospital)

Field notes:

Field notes, December 11th, 2000-November 26th, 2000. 35 pages, bound notebook.

Field notes, August 20, 2001 - May 4th, 2002. 25 pages, bound notebook.

Interviewed persons in February, 2000:

Chief of administration (no. 1)

Chief of accounting

Service manager

Nursing manager

Chief nursing manager

Profit centre Beta nursing manager

Archival material:

1. Memorandum + notes, May 1999. *Setting budgeting guidelines for the year 2000 – draft*. Author: chief of administration, with notes by the present author. 7 pages.
2. Memorandum, November 4th, 1999. *Interdepartmental allocations and the budget for the year 2000*. Author: chief of accounting. Circulation: administrative department. 3 pages.
3. Project Plan, February 1st, 2000. 4 pages.
4. Memorandum, February 10th, 2000. *Budgeting process*. Author: chief physician, clinical services. Circulation: chief of accounting, IT-officer, nursing manager. 2 pages.
5. Memorandum + notes, April 12th, 2000. Subject: informing the profit centres on the renewing of the budgeting process. Author: chief physician, clinical services with handwritten notes by the present author. 2 pages.
6. Memorandum, May 5th, 2000. *Strategic worksheet for the year 2000 and beyond*. Author: business consultant and the hospital's managing director. Circulation: hospital management team. 9 pages.
7. Memorandum, May 11th, 2000. 2 pages. *Renewing the budget process – notes*.
8. Memorandum, August 14th, 2000. *Financial management issues for strategic planning*. Author: the present author. Circulation: business consultant, chief of administration. 1 page.
9. Email, January 5th, 2001. Sender: chief physician, profit centre Gamma. Receiver: present author. *Considerations for activity-based costing*.
10. Project plan, January 9th, 2001. *Project plan for activity-based cost accounting*. Authors: present author, chief physician, profit centre Gamma 2 pages.
11. Presentation, March 27th, 2001. *Developing product cost accounting and preliminary results from profit centre Gamma*. Author: Chief of administration. Circulation: Management team. 10 pages.
12. Memorandum, March 27th, 2001. *Results and actions for cost accounting*. Author: present author. 12 pages. Circulation: the pricing committee.

13. Project plan, May 11th, 2001. *Cost accounting project in profit centre Alpha*. Authors: present author and the chief of administration. 3 pages.
14. Budget document, August 8th, 2001. 13 pages. *Budget proposal for the year 2002*.
15. Memorandum, Dec 7th, 2001. *Financial situation and the possibility to improve profitability through pricing*. Author: chief of administration. 3 pages. Circulation: hospital management team.
16. Memorandum, Dec 11th, 2001. *Cost accounting and the definition of products*. Author: present author. Circulation: chief of administration, chief of accounting. 1 page.
17. Report, July 7th, 2002. *Analysis of cost accounting and pricing*. 4 pages. Author: present author. Circulation: hospital management team.