

DBC IN HOSPITALS: A STRATEGIC COSTING PERSPECTIVE

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1. INTRODUCTION

The medical sector around the world appears to be in a process of severe reorganization. The parallel pressures for increased services and cost control provides many challenges to the management and governance of hospitals, which are comparable to the more often analyzed effects of globalisation in the private sector (Hill, 2000; Llewellyn & Northcott, 2005; Pizzini, 2004). For management accounting and control, part of this challenge is embedded in the adoption of costing methods that propose a standardized way of costing and reimbursements known as Diagnosis Related Costing or Diagnosis Treatment Costing (Llewellyn & Northcott, 2005; Samual, 2005; Evans III, 2001). Very little attention is paid to the significance of these costing methods in (re)formulation hospital strategies. Instead, the current discussions about the development in costing within hospitals have focused on the institutional and formal sides of instruments as Diagnosis Related Groups (DRG) and Diagnose Behandel Combinatie (DBC), that is, on the role that these systems

In this article we explore the potential role of DBC-costing (from this point on used as a synonym for DRG-costing) for supporting hospital's strategic choice, as we will argue that two arguments feed our preliminary expectation that DBC-types of costing may support hospital's strategic management. First, the basic logic of DBC-type costing systems shows similarities with cost management techniques that have been proposed in theory and practice under the heading of *strategic costing* (Cooper & Slagmulder, 2003, 2004; Baxendale & Raju, 2004). DBC-costing specifically seems to build on the ideas of activities as cost drivers, as is central to ABC-analyses. We will elaborate on these similarities more extensively below. Second, DBCs provides hospitals with a major and costly change, which by itself calls for any analysis of its associated costs and benefits of the related strategic moves.

The structure of this article is as follows. Section 2 defines DBC and presents a conceptual framework that addresses the potential strategic roles of DBC-costing. Available support for this framework is discussed in sections 3 and 4. Section 3 presents the normative support for this framework by distilling the characteristics that make a costing system 'strategic' from the extant strategic management accounting literature. Part 4 reviews empirical research to determine whether these strategic characteristics are indeed *de facto* characteristics of existing DBC-costing systems and whether they have proven to be performance relevant in hospital settings. Section 5 wraps up the article by presenting conclusions for theory and practice.

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play in the reimbursements of hospitals for the costs of goods delivered. An aspect of these systems that may be neglected in these analyses is the role that these systems potentially have in supporting hospital's strategic reactions to the external and internal pressures mentioned.

2. THE DBC CONCEPTUAL FRAMEWORK

According to the organization DBC Onderhoud, a Diagnose Behandel Combinatie (DBC) can be defined as: “The sum of activities performed by the hospital and specialist, as a result of the question for care with which the patient consults the specialist in the hospital. The activities contain medical and medical supporting actions, as well as clinical and outpatient activities.” To determine the cost of a DBC, costs are assigned to the activities in the care process, as well as usage of the hospital assets and the labour hours of the specialist.

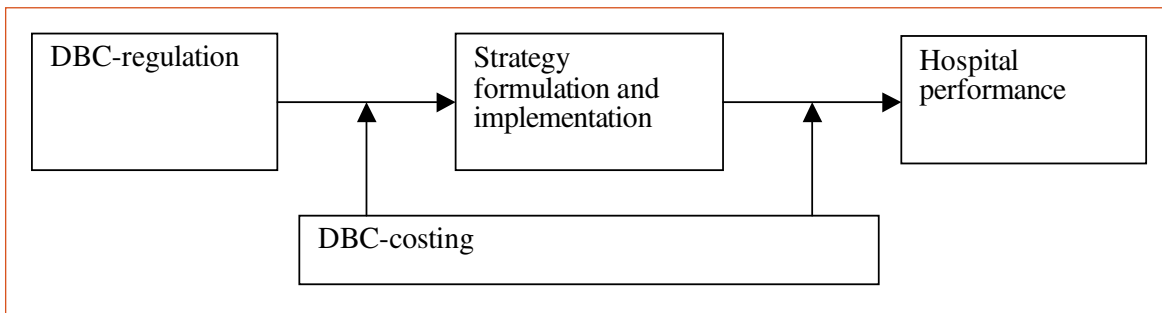


Figure 1. Preliminary conceptual framework

As stated in section 1, the introduction and implementation of DBC has an impact on the strategy formulation and implementation (SFI) of hospitals. The main question is *whether* the introduction of DBC costing attributes to SFI and/or is a result of SFI and hence what effect it will have on the performance of hospitals. This is illustrated by the following preliminary conceptual framework.

Figure 1 shows that DBC-costing may impact the performance of the hospital in several steps of the strategic management process. It affects *ex ante* the strategy formulation of hospitals and *ex post* the strategy implementation and/or the strategy reformulation. Thus DBC-costing can be considered as an essential element of the strategic planning and control cycle.

In this article we will determine the strategic characteristics of a DBC-costing system and explore through literature research whether these elements are indeed characteristics of existing DBC-costing systems.

3. STRATEGIC COSTING

The topic of strategic costing appears in every management accounting textbook but its exact meaning and empirical significance is not yet crystallized. Many authors have elaborated on the characteristics of management accounting, management accounting systems and cost accounting in a strategic context but empirical evidence on the validity and substantive importance of the ideas is limited (e.g. Drury, 2004; Hirsch, 2000; Horngren, et al., 2005; Kaplan, et al., 1998; Zimmerman, 2006; Cooper & Slagmulder, 2003, 2004a, 2004b; Anthony & Govindarajan, 2004; Freeman, 1998; Elliott, 2001). As it comes to Strategic Management Accounting (SMA), and particularly to the role of strategic costing within SMA, these descriptions typically obtain a distinct normative tone, in that they convey what characteristics a management accounting system should have for supporting the formulation, implementation or realization of the organization's strategy. These characteristics are important, but their eventual significance requires their operationalization and testing in an empirical setting. Table 1 present an overview of available concepts and techniques in the extant textbook literature.

In our analysis, we focus on the conceptual meaning of SMA to derive the strategic characteristics of costing systems. The operational elements in table 1 indicate that SMA apparently concerns the application of a very wide range of techniques, which are related to the strategy of an organization: strategic product costing, customer profitability analyses, target costing, cost allocation of products and services, financial resources, competitor cost assessment, quality costing, value chain costing, life cycle costing and attribute costing are essential elements of strategic costing from the viewpoint of strategic management accounting. Most of these elements focus on cost allocation and cost-efficiency improvement as a basis for management decision making, and these have been discussed extensively in the present and past cost accounting literature. This seems obvious; an organization should first focus on a cost driver analysis to find out what causes costs to occur, the organization can take effort to control costs subsequently.

“SMA APPARENTLY CONCERNS THE APPLICATION OF A VERY WIDE RANGE OF TECHNIQUES”

As is apparent from table 1, the literature seems not very successful in distinguishing between the conceptual side and operational side of strategic management accounting. There are attempts to define SMA, but there is an even stronger focus on elements of SMA.

Moreover, on the one hand there is variation but on the other a number of aspects seem to come up more often. As it is, there is not much evidence of the strategic relevance of what is labelled 'strategic' costing, and what elements are necessary or sufficient conditions for the strategic relevance of management accounting systems. A rough summary of what elements seem to be central to most author's connotations of strategic management accounting, the following recommendations can be extracted from the literature. A strategic costing system should allegedly have the following characteristics.

Table 1. Overview of SMA literature

Author	SMA is ...	Elements of SMA
Hornigren (2005)	Form of management accounting in which emphasis is placed on information which relates to factors external to the firm, as well as non-financial information and internally generated information	Collection of techniques, future oriented, multidisciplinary. Cost management implications of customer profitability analysis, life-cycle issues, quality concerns, activity-based management and target costing practices
Hirsch (2005)	Positive: about the role of MA in sustaining strategy	Cost allocation, use of ABC
Drury (2004), Lord (1996)	No comprehensive framework, strategic management accounting involves the provision of information for the formulation of an organization's strategy and managing strategy implementation Cost reduction in stead of cost containment	<ul style="list-style-type: none"> External information about competitors Accounting in relation to strategic positioning Gaining competitive advantage Use of different cost reduction techniques e.g. life cycle costing, target costing, kaizen costing, ABC, ABM
Guiliding, et al. (2000)	Use of strategic management accounting practices	<ul style="list-style-type: none"> Competitive position monitoring Strategic pricing Competitor performance appraisal based on published financial statements Competitor cost assessment Strategic costing Quality costing Target costing Value chain costing Brand value monitoring Life cycle costing Attribute costing Brand value budgeting
Zimmerman (2006)	Adapt the management accounting system to a changing environment and organization	No ad hoc use of management accounting tools
Anthony & Govindarajan (2004:67)	Distinction between the relative differentiation position and the relative cost position	Achieving the cost-cum-differentiation: superior differentiation and less superior cost position
Cooper & Slagmulder (2003)	Conversion of unfocussed cost management to strategic cost management	<ul style="list-style-type: none"> Auditing cost management initiatives Extension of cost management beyond the boundaries of the firm
Cooper & Slagmulder (2004a, 2004b)	<ul style="list-style-type: none"> Extra-organizational cost analysis Inter-organizational cost management 	<ul style="list-style-type: none"> Product teardown Roundtables Benchmarking Competitor cost analysis
Freeman (1998)	Conceptual model for understanding where cost management systems can focus	<ul style="list-style-type: none"> Activity based decision support systems Process-based view of the firm
Donelan & Kaplan (1998)	When competition is intense, companies must manage activities and costs strategically	Value chain analysis
Shank & Govindarajan (1994)	Using management accounting systems in support of TQM	Measuring the cost of quality
Elliott (2001)	5 basic tenets as a basis for effective cost management: <ol style="list-style-type: none"> cost structure complexity change employee commitment optimizing of employee performance 	<ul style="list-style-type: none"> Clear and consistent performance objectives A total commitment to continuous knowledge enhancement A solid understanding of the true cost of products and services An ongoing commitment to excellence A bold acknowledgement of nonessential activities A commitment to knowledge driven involvement A commitment to structural cost reduction
McNair (2000)	Cost-value relationships that define a firm's competitive position and long term success	<ul style="list-style-type: none"> Bridge the gap between finance and marketing Bridge the gap between customer value and shareholder value
Baxendale & Raju (2004)	Strategic judgement concerning the development and promotion of new products	<ul style="list-style-type: none"> TOC information ABC information
Christopher (2004)	Total business produces profitability, not individual products	<ul style="list-style-type: none"> Contributions to profitability are measured and managed, no fully absorbed standard costs, no variances No cost allocations Revenue is managed according to product/market opportunity
Garg, Ghosh & Halper (2004)	Best practice framework for the successful foundation in cost management	<ul style="list-style-type: none"> Managing by information Finance as a catalyst for change Testing the boundaries of tool development Leading change Striving for continuous improvement
Hansen (1998)	Linkage between rising competition and the investment in more extensive management accounting systems	Increasing the number of competitors leads to a decreased investment in cost reduction subsystems

1. *Future oriented*, capable of predicting future cost development. The focus should not be on the ex post situation, but on the ex ante estimation of future developments.
2. Focussed on *cost reduction* (or descending cost increase), continuous improvement, and quality. Comparison can be made with the economic principle: achieving a goal with minimal resources or achieving a maximum goal with given resources. Cost optimization seems to be relevant.
3. Can be used by means of different approaches and techniques. A *contingency based* usage of strategic costing elements seems to be appropriate. There is not one way which leads to Rome.
4. *Externally focussed*, value chain analysis oriented, focussed beyond the boundaries of the firm. Cost control is also determined by the suppliers and customers.
5. *Multi-disciplinarily* internally constructed, not initialized only by the management and cost accountant. Different departments should contribute to the cost control of an organization. This can be compared with the formulation of the master budget.
6. *Cost allocation*, causality based in order to judge the profitability of output. Cost allocation which is not based on causality can lead to wrong decisions concerning the product mix and therefore the strategically interesting product-market combinations.

The question is how these criteria can be used to assess the strategic relevance of the current developments in hospitals which are confronted with the DBC structure and, subsequently, whether we can analyse and evaluate DBC-costing based on these criteria.

4. DBC-COSTING

In the outset of the article we suggested that DBC-costing may have strategic consequences. In a brief analysis below, we will confront elements of DBC-costing with the normative strategic costing content summarized in the previous section. This analysis is based on the available empirical literature on the role of DBC-costing in the management of hospitals and the effect of DBC-costing on the use and users of the accounting system. Available evidence is limited, however, and research is done from various perspectives.

Aidemark and Lindkvist (2004) have focussed on hospitals run as limited companies. Their study demonstrates that in two hospitals in Sweden company formation did have effects. On the short view (the first year studied), production increases and the financial situation improves. The study also shows that the leadership of the hospitals becomes more commercially minded and develops more rapid decision making procedures. A foundation was created for goal congruence between the medical professionals and the hospital leadership.

Preston, et al. (1997) take a government-cost-reduction perspective, and suggest that retrospective reimbursement and Diagnostic Related Group – Prospective Payment System (DRG-PPS), in different ways, contained the problem of government of rationing health care to the elderly, c.q. containment of health care costs for the elderly. The introduction of DRG-PPS can be interpreted as a strategy of government and an attempt to balance the competing ‘convenient ends’ of the health of the elderly versus the cost of government.

Llewellyn and Northcott (2005) examined the consequences of the introduction of Healthcare Resource Group (HRG) reference costs for six hospitals in the UK. HRGs are a variant on the Diagnostic Related Groups (DRGs) developed in the USA for pricing healthcare services. One of the purposes was cost reduction: average hospitals will be cheaper to run and easier to control than highly differentiated ones. They draw three conclusions. First, there is a movement towards the average. This seems likely to continue consequent upon the government announcement in 2002 that hospitals are to be funded on the basis of the average HRG cost. Second, the talk of the key players concerned with the average costs (regulators, clinicians and managers) indicated that they believed that hospitals were becoming more average (in cost and practice terms) as a result of HRG costing. Third, theoretical discussion on the impact of regulation, categorization, and standardization posits that these processes result in more similarity, homogeneity and ‘average-ness’ in practices.

Samuel, et al. (2005) have focussed on cost reduction in hospitals. They state that DRGs were engineered and subsequently traded to reduce medical costs by controlling variations in medical practices. That stated goal has not been met. On the contrary, medical costs are still on the rise. But there is a symbolic effect of DRGs and health economics: whereas market prices for care channel cash to the most profitable kinds of sickness, administrative fiat filters out the unprofitable ones.

“THERE IS A SYMBOLIC EFFECT OF DRGS AND HEALTH ECONOMICS”

Krishnan (2001) examined the relationship between market restructuring and pricing. Empirical results indicate that hospital mergers and acquisitions increase prices at the DRG level, especially in DRGs where the merger hospitals gained substantial market share. The cost of DRG and possible cost reduction after mergers was not examined.

Evans III, et al. (2001) have also focussed on cost reduction in hospitals. They concluded that the potential savings from fewer patient length of stay (LOS) appeared to have been offset by a concurrent increase in procedures per-

formed per patient day, and therefore the profiling program did not produce a significant reduction in hospital costs. The physician profiling program produced benchmarks in terms of mean LOS by DRG against which to compare individual physician's performance in subsequent periods.

Pizzini (2005) took a general costing perspective and examined the relations among cost-system functionality, managers' belief about the relevance and usefulness of cost data, and actual financial performance in 277 US hospitals. The results indicate that managers believe that systems supplying greater cost detail, on average and relative to hospitals in similar contextual settings, provide more relevant and useful data. Hospitals using such systems are significantly more profitable, generate greater cash flows, and have proportionately lower administrative expenses. There is also some evidence that better classification of costs, in general and relative to a homogeneous peer group, is associated with higher managerial evaluations of data relevance and use, as well as actual financial performance.

Jacobs, et al. (2004) have examined the availability and use of cost and performance information for doctors. They conducted a case study of six hospitals in the UK, Germany and Italy. They found that although there was some interest in cost and activity information that clinical staff generally did not have access to it. Cost and activity information were only available to clinical staff at the most senior levels.

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Hill (2000) examined the reason for adopting costing systems by hospitals. Empirical results suggest that the change in the Medicare reimbursement policy was a driving force in the adoption of costing systems over the 1980s (Hill, 2000). Other factors which influence adoption were revenue constraints, competition and organizational characteristics.

Eldenburg and Kallapur (1997) state that according to their findings hospitals change their patient mix and cost allocations to maximize hospital cash flows. Outpatient revenues based on reported costs increased after 1983 compared to inpatient revenues at fixed rates. There was also an increase of overhead cost allocations to outpatient departments after 1983.

Judging the described empirical hospital studies by the strategic costing characteristics of part 3, the following remarks can be made.

1. The orientation towards the future can circuitously be derived from the study of Aidemark and Lindkvist (2004). From the management control perspective, there is a strive for goal congruence between the various disciplines in the hospital setting.
2. The focus on cost reduction leads to contradictory conclusions. Preston, et al. (1997) and Llewellyn and Nortcott (2005) have found evidence for cost reduction, while Samuel, et al. (2005) and Evans III, et al. (2001) conclude the opposite. In the study of Krishnan (2001) cost information was not available.

“THE FOCUS ON COST
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3. Evidently, the different hospital studies are contingency based, leading to contradictory conclusions.
4. Almost all hospital studies show that a change in government rules and reimbursement forces hospitals to adapt an external orientation. For instance Hill (2000) has found evidence that costing systems were adapted as a result of changing reimbursement. Evidence of a voluntary external orientation was only found by Aidemark and Lindkvist (2004).
5. A multi-disciplinary approach is clearly present in the study of Aidemark and Lindkvist (2004).
6. Pizzini (2005) and Eldenburg and Kallapur (1997) have found a strong focus on cost allocation, while Jacobs, et al. (2004) conclude that cost information was not accessible to clinical staff.

5. ANALYSIS AND CONCLUSIONS

Overall, the evidence of the effects of DBC-costing on the management and management accounting of hospitals is varied. In general, it appears that DBC-costing seems to affect cost awareness, which is a necessary but, on its own, no sufficient condition for strategic costing. In regard to the potential role of DBC-costing for strategic costing, the available studies provide only tangential evidence. This is summarized in Table 2. It indicates that cost reduction and cost allocation are important issues, but also that the effects are not clear and sometimes contradictory. This can partially be explained by the fact that external factors, such as changing reimbursement, force hospitals to react internally. This is done in different, not always logical ways.

As stated in the introduction, the effect of DBC on strategy formulation and implementation and subsequently performance of hospitals seems to be obvious. The question to be answered was what strategic costing can attribute to that.

The literature on strategic costing suggests the existence of several characteristics of costing systems that contribute to the strategy formulation and implementation of organizations. By looking at recent hospital literature concerning the adjustment of costing systems to the new hospital output definitions, some evidence was found that performance was improved. DBC costing does have strategic implications, but it is not yet clear which characteristics of strategic costing, as described in part 2, are most relevant to hospitals to make a costing system a useful contribution to the strategy formulation and implementation of hospitals.

A preliminary conclusion in that direction could be that a causal cost allocation towards DRGs and subsequent striving to achieve cost reduction attributes to the performance of hospitals. The impact of future and external contingency-based orientation and striving to achieve goal congruence between the medical professionals and hospital leadership on the strategy formulation and implementation of hospitals is uncertain.

As in any organization costs can be allocated to the defined output, in order to judge its economic profitability which subsequently attributes to make strategic choices that make sense. This is one of the conclusions which can be drawn from the empirical hospital research: sophisticating the costing system in hospitals can be a means to

support the by government intended rationing of health care.

This has also *several* practical implications: the design of costing systems in hospitals should focus on the previous mentioned characteristics of strategic costing. It seems obvious that the primary focus is on cost allocation. This can be considered as an important practical aid: on the one hand it can be a useful means of supporting the formulation of hospitals DBC-strategy and on the other it can have its meaning in reformulating and implementing DBC-strategy. The latter seems to be in line with the striving for cost reduction. An important initiative to achieve the goals mentioned above can be taken by the financial management OR the controller in hospitals.

“IT SEEMS OBVIOUS
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Further research is necessary to determine *whether* hospitals that implemented a strategic costing system with accent on cost allocation and cost reduction perform better than hospitals that did not.

Table 2. Overview of DRG literature

Aspects of strategic costing	Available in DRG
Future orientation	Only indirect <ul style="list-style-type: none"> • Foundation of goal congruence between medical professionals and hospital leadership (Aidemark & Lindkvist, 2004)
Focussed on cost reduction	Contradictory <ul style="list-style-type: none"> • Cost reduction for government, not for hospitals (Preston, et al., 1997) • Movement towards average cost, this can lead to cost reduction (Llewellyn & Northcott, 2005) • No, it leads to a rise in medical costs, only a symbolic effect is achieved (Samual, et al., 2005) • Price increase at the DRG level after mergers. No cost information available (Krishnan, 2001) • No cost reduction as a result of fewer LOS (Evans III, et al., 2001)
Contingency based	Different research leads to contradictory conclusions
External orientation	Only as a result of a change in government rules and reimbursement, not initialized by hospitals <ul style="list-style-type: none"> • For instance adoption of costing systems as a result of changing reimbursement (Hill, 2000) • Voluntary external orientation (Aidemark & Lindkvist, 2004)
Multi-disciplinary designed	Only indirect <ul style="list-style-type: none"> • Foundation of goal congruence between medical professionals and hospital leadership (Aidemark & Lindkvist, 2004)
Cost allocation based on causality in order to judge profitability	Contradictory <ul style="list-style-type: none"> • Greater cost detail provides better information, and leads to more profit (Pizzini, 2005) • Better classification of costs leads to better performance (Pizzini, 2005) • Clinical staff has no access to the cost information (Jacobs, et al., 2004) • Adoption of costing systems as a result of changing reimbursement (Hill, 2000) • Changing cost allocations to maximize hospital cash flows (Eldenbug & Kallapur, 1997)

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