

HOSPITAL MANAGEMENT BY PRODUCT LINES

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Abstract

Over the last decennium many reforms of the reimbursement systems have taken place to improve the economic performance of health service organizations. These environmental changes have stimulated many hospital managers to introduce types of internal management control. Consequently budgeting is a very well known management tool. Less known in Europe is product-line management. The main purpose of this article is to introduce the concept of product-line management. Attention is paid to ways product lines can be defined in hospitals and which elements the implementation of product-line management envelope. Emphasis is laid on the consequences for the organizational structure and the cost information system. Finally, we deal with the advantages and disadvantages of product-line management.

1. Introduction

In most of the Western European countries health care sectors are confronted with substantial cutbacks of national budgets. In general these cutbacks are accompanied with structural reforms of the reimbursement system. In Britain these reforms are presented in the White Paper titled *Working for Patients*. In The Netherlands the government has presented the reforms in a report with the significant title *Changing Health Care in The Netherlands*. In FRG there is among others the reform of the statutory health insurance system, the so called 1988 Sickness Insurance Reform Law. A common objective of all these reforms is an improvement of the economic performance of health services

organizations. In other words a more business-like approach of the management of health service organizations is required. These policy intentions lead to a range of measures. The most important ones are mentioned below (Janssen and van der Made, 1990). Firstly, with the help of prospective reimbursement, eg fixed total budgets, incentives are introduced to improve the use of resources. This also is attended with enlargement of the discretionary power of the individual organization. Secondly, one tries to strengthen the role of third party payers, sick funds private insurers or state-owned funds. In this way it is intended to increase the market power of the demand side and develop more countervailing power against the structural powerful position of the

health service organizations. Thirdly, one tries to make the consumer of health care more conscious by introducing different kinds of cost-sharing. Although the latter measures meet in general strong social resistance, government tries to achieve more critical consumers who choose with more awareness.

All these measures make clear that health service organizations have to conquer the traditional duality in their decision-making process that is caused by the different interests of the management and the professional staff (Hornbrook and Rafferty, 1982). Still most health service organizations are organized along functional lines, where nursing administration, supervisors of laboratory, pharmacy etc are responsible for controlling the costs of services provided. Patients move through the hospital production process, usually under the direction of a physician who often is not employed by the hospital. Although the direct and indirect patient care services are under the administrative responsibility of the health care organization, the amount of services ordered for each patient is not (Neumann et al, 1988). Product-line management intends to separate responsibilities according to who controls costs. Further the concept lets a manager get an overview of the total service being provided to an individual patient. The patient's treatment consists in general of the use of different functional areas. This makes it opportune to develop product lines such as oncology programs performed by surgery, radiation therapy, clinical nursing, home care, etc. All these functions are elements of the product line under control of a single product-line manager. The interests of managers extend beyond patient care to include marketing and reimbursement (Goodrick and Hastings, 1985).

Product-line management could be a useful management tool to reach more monolithic organization targets. Next to this product-line management could be an expedient to reach the effects that are targets of the mentioned comparable reforms in many Western European countries.

In section 2 we will first present different concepts of control that are used in health service organizations, ie facility management, function management and product-line management. Then section 3 deals more extensively with the concept of product-line management. Section 4 pays attention to the aspect of implementation of product-line management in the

organization. Finally, some advantages and disadvantages are discussed in section 5.

2. Concepts of Control

The function of control is to ensure that the organization behaves as it should do. The control system is defined by Flamholtz (1979) as the set of mechanisms which are designed to increase the probability that people will behave in ways that lead to the attainment of organization objectives. Control is often looked upon as a logical consequence of the process of strategy implementation. This does, however, exclude the fact that a system of control is also necessary if no strategy is formulated. But a certain fit between the system of control and the function of the organization should exist. We think that the concept of control is highly dependent on the way the hospital's function is defined by the management of the hospital. The hospital's activities can be structured in two ways. The first way is to describe the hospital's activities with regard to the position these activities occupy in the process of diagnosis and treatment. Three sets of activities can then be defined. The first set of activities is the delivery of care by the medical departments. Here decisions are taken with regard to the process of diagnosis and treatment (eg internal medicine, cardiology). The second set of activities is the delivery of services (ancillary services) which support the process of diagnosis and treatment (eg laboratories, nursing). The third set includes activities that are not directed at processes of diagnosis or treatment but which are necessary for the operation of the hospital (eg bookkeeping, maintenance).

The arrangement of hospital activities we use focuses on the concept of production processes. This is in fact a second way to define hospital activities. The production process is in this respect the set of activities that delivers care to patients. But not only care belongs to the production process. All activities in the hospital can be regarded as production activities induced by a demand for care. The arrangement of activities for purposes of control (or administration) may transverse the already mentioned classification of hospital activities. The concept of production process is suited to link the hospital administration, the control system and the cost information system with each other. In this respect the production process is not to be regarded as a 'technical' transformation process

accompanied by decisions. In our view the production process is a system where transformation processes, means and decision processes are related to each other to obtain a certain 'fit': the organization. As far as this organization is directed to the transformation process to obtain certain goals the term 'control system' is suited. As production activities cannot be controlled without a certain arrangement of activities, the choice of the control system is a strategic one. When arranging these activities it is important to decide which activities will be controlled directly by the management and which activities only indirectly (and perhaps even loosely). This choice is necessary to avoid the problem that control becomes too complex and will eventually diminish.

Two aspects are central in the decision process of the choice of the control system. The first aspect concerns the effectiveness and efficiency of the production process. Production should be delivered and costs of production should be kept within certain limits. This aspect asks to mention the processes to be controlled and to develop standards for effectivity and efficiency. The second aspect which is important is the degree that a control system is capable to reduce the complexity of the decision-making process with regard to production (Bertrand and Wijngaard, 1986). The human capacity to make good decisions under time pressure is limited. Therefore the control system should be designed in such a way that important information concerning the situation under control is unambiguous and at the same time limited. This often means that optimal decision making is not possible. It is the task of the management to decide upon important target variables. With the help of the concept of production process various concepts of control can be defined:

- a. Facility management: the hospital as a set of facilities.
- b. Function management: the hospital as a set of functions.
- c. Product-line management: the hospital as a set of product lines.

Below we will discuss these concepts of control in more detail.

In the concept of facility management the hospital is in fact a company operating on behalf of physicians. The physicians ask the hospital to deliver facilities. It is the task of the hospital to deliver these facilities as efficiently as possible. The effectiveness of these activities

is not at the responsibility of the hospital's management. This concept may be implemented at different degrees. Physicians at one side and the hospital on the other could be looked upon as at least two organizations, where hospital management is only involved in the delivery of facilities. But it may also be the case that the hospital's management is involved in negotiations with physicians about issues which influence the economic functioning of the hospital. In this view the hospital is divided in two divisions. One division (the facilities) is managed by the hospital management, the other by physicians.

In the concept of function management, the hospital is seen as a set of functions to be delivered by physicians. Every function is produced by a medical department. For the management it is important to monitor costs and output. In this view all departments are seen as working for the primary functions. All costs should be charged to these departments. This insight can be gained via various control structures. A control structure should at least include the primary function. Ancillary services could also be incorporated. Other activities are left out of consideration. In fact function management is related to our first way of structuring of hospital activities.

The product-line management approach views the process of treatment (and diagnosis) to be controlled: to every process of treatment and diagnosis requirements are set with regard to efficiency and effectiveness. A product line is a set of products that are related to each other by such factors as the type of need they satisfy, the way they are used, the customers who use them, the mechanisms through which they are marketed. In effect a product line is a set of products that when planned, managed or marketed as a group yields some advantage over being treated as isolated individuals. A product is in this respect any set of services and experiences that is offered and consumed by an identifiable set of people in ways that are different from other sets (MacStravic, 1986). Within the hospital two implementations of this concept can be found. The first implementation is at the level of case management (physician/patient). This is in fact the level of medical management. The physician designs (or chooses) a protocol for the treatment of a certain patient. This protocol indicates eg the tests that have to be done, the medicine to be given, which operations to be carried out, etc. As such a plan may also

include an indication of the length of stay check-points may be included to avoid that the patient does stay in the hospital longer than necessary.

A second implementation of product-line management could be found at the level of the hospital. In the hospital many treatments are carried out. Classification systems have been developed to arrange these processes of treatment. In the United States the DRG system is used to classify patients. This system classifies patients with regard to the diagnosis and with regard to costs made. The advantage for the management of this system is that information can be obtained concerning the case mix of the hospital and the costs that are 'caused' by this case mix. In this approach emphasis is laid on economic management ('administration') of hospital facilities. However, the DRG system is not a control system, it may give certain insights, but it does not indicate where and how changes should be implemented. The DRG system could however be an important part of a control system by integrating the first implementation of product-line management ('case management') and the second implementation ('economic management') in one control system. The main idea underlying this third implementation is that it is the physician who is responsible for the demand for hospital facilities in a certain case. This third implementation may be called medical-economic management. In Europe this approach is until now not implemented, but it seems likely that under pressure of cost control physicians and hospital management have to cooperate. The hospital control systems should be adapted to this new situation.

3. Defining Products

As mentioned above three levels of product-line management can be distinguished. When defining product lines it is important to know to which level the definition applies. We shall assume medical-economic management. Management may choose among different strategies. But this does not exclude that there are some requirements when defining the products within the product line involved. The first requirement is that the products should be aimed at a related target group (eg child medicine). The second requirement is that related facilities are involved. The third requirement demands relatedness in the kind of technology

applied. It will often be difficult to define a product line that satisfies all three requirements. It will be necessary to compromise. Product-line definition could go along different strategies. The first strategy could be to define 'broad' lines such as a oncology line. The advantage of this approach is that it is quite simple to define the product line. The disadvantage of this approach is that the information that can be obtained to control the activities in the product-line is crude. A second strategy could be to assume that every treatment is in fact unique. This strategy is nothing else than case-management: the physician defines a protocol for each patient. The disadvantage of this approach is of course the absence of medical-economic management. A third strategy tries to combine both mentioned approaches. Define product lines where products are related in some way according to management, physicians and patients (or their insurance companies), but define the product lines in such way that economic management is possible to a certain degree.

For purposes of control the following five criteria for defining the product line exist:

1. Measurement of activities: Activities performed on behalf of products should be measurable. If activities cannot be measured easily they should be left out of consideration.
2. Identifiable relationship between costs and activities: For the purpose of cost control a 'causal' relationship should exist between activities and costs.
3. Reduction of complexity of cost control: As mentioned earlier a control system should reduce the complexity of the situation under control. If no reduction of complexity of cost control can be achieved the control system should not be implemented.
4. Comparison between hospitals: Hospital's performance is often relative to other hospitals. The information of cost control should be comparable with information from other hospitals.
5. Suitability to budgeting: In a hospital people perform activities. They should be held responsible for the quality and cost of activities.

4. Implementation

Implementation of product-line management in health service organization implicates a funda-

1. Defining products and product lines
2. Developing standards
3. Defining responsibilities
4. Adaptation of the information system

Figure 1 Plan of Implementation

mental reform of the structure of the organization and a redistribution of responsibilities. Such a reform needs not only time but also an explicit plan of implementation in which the different elements of the organization development are defined (Figure 1). Four main elements can be distinguished in such a plan of implementation. Firstly, the product lines or programs have to be defined. In section 3 we already mentioned relevant requirements when defining products. Secondly, efficiency norms have to be developed according to the use of production facilities. Two kinds of efficiency can be distinguished.

First, with regard to the inputs of so-called intermediate products like number of tests, number of nursing days, materials etc. The second kind of efficiency reflects the use of resources when producing these intermediate products. It may be clear that different functionalities are responsible for these two kinds of efficiency. The management of the different functional departments is responsible for the first kind of efficiency and the medical staff for the second one. This leads to the third element of the plan of implementation, defining responsibilities. Product-line management implicates the appointment of product-line managers, who are responsible for the total performance of the product line. This includes planning and delivery of assigned product lines, defining product-line costs, and determining product-line profitability by type of service, payor and physician. The latter is of course in the context of the European reimbursement systems for the

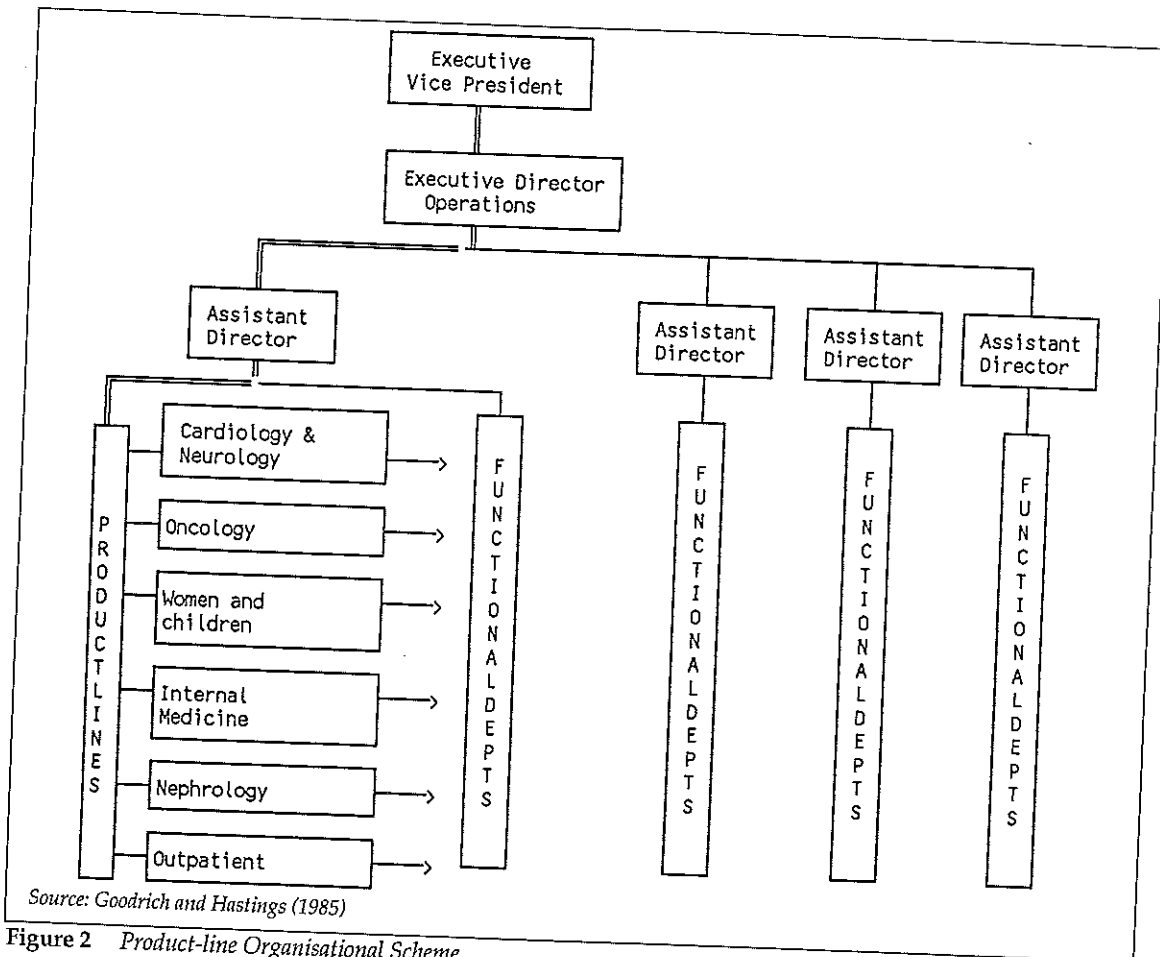


Figure 2 Product-line Organisational Scheme

time being less important. Further product-line managers assist hospital executives in marketing efforts, including market research and negotiation with third-party payors within their specified product lines. Along with the functional managers, they monitor and control the consumption of hospital resources within their product lines (Nackel and Kues, 1986). Figure 2 shows a possible organizational scheme in case of product-line management.

An important aspect of the appointment of a product-line manager is the question if it should be a physician. It is clear that he or she should be able to understand all the ins and outs of the medical production process and should have the qualities of a manager. Further a 'meta' target of the organization of product-line management could be the realization of a 'one team' feeling. This is not just stated to promote uncritical business peptalk. In our opinion it is an essential element of the quality of a production process. It makes functionaries feel responsible for each other's contribution to the end product. It is an important aspect of quality of a so-strong human-related production process as health care is.

The fourth element of the plan of implementation is the adaptation of the information system. Product-line management requires monitoring and controlling in another way than the concepts of control mentioned in section 2. First, costs of the intermediate products and the endproducts (DRGs, ICD-9 codes) have to be identified. Standards need to be developed for the components such as labour, materials equipment, etc for every intermediate product. Furthermore, the monitoring system should provide information for which patients and which product lines intermediate products are used. As Neumann (1988) states, there is no difference with the process used in itemizing the repairs done to an automobile when you leave it at the garage. Figure 3 shows which types

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1. Division of costs in components as labour, materials, etc with a distinction for volumes and prices
 2. Information about allocating direct and indirect cost to different departments
 3. Information about fixed and variable costs as a function of patient services activities
 4. Information about costs (volumes and prices) allocated to end products (DRGs or ICDg-9 codes)
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Figure 3 Types of Cost Information Needed for Product-line Management

of cost information are needed for operating product-line management as defined in section 2.

5. Discussion

There is no doubt about the evidence that control systems of health care organizations have to be improved to cope with changes in the health care environment. Product-line management could be a useful management tool. As we have seen in the earlier sections implementation of product-line management takes a lot of doing. If one considers implementation it is important to assess the advantages and disadvantages of product-line management. Let us start with the advantages. First, product-line management connects the basis of control with the primary functions of the health care organization. This is contrary to for example budget systems that control mainly the way departments function. The product-line costing system enables managers to monitor and control cost and profitability of the primary functions. A second advantage is that product-line management makes clear the relation between the health care market, the supplied services, and the available capacity. Changes in the determinants of demand can be used to adapt the quantity and quality of services respectively of the available capacities. Furthermore, product-line management allows comparisons with competitors on the basis of quality, cost, delivery mode, and pricing. A third advantage of product-line management is that it provides information about the connection between departments and functions of the organizations. At the same time product-line management reduces the complexity of health care organizations and improves the manageable power. Finally, product-line management provides the management with accurate information that gives management a stronger position in the negotiations with the insurers. The latter have already available data on the basis of which they judge the performance of a specific health care organization (van Vliet, 1988). Product-line management that is based on medical-economic management gives more detailed information that could strengthen the external position of the management. So far the advantages.

The disadvantages of product-line management are mainly connected with the efforts that accompany the implementation and the maintenance of it. The refining of the information

system is one of the main efforts. The latter can be valued in money. That is not or at least less the case with the necessary changes in the culture of the organization and the behaviour of functionaries. Of the latter we think that it is not just a cost but that it has a value itself in that it improves the quality of the organization.

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