# Activity based costing for healthcare institutions – drivers and barriers

*Определение себестоимости услуг учреждений здравоохранения – драйверы и барьеры*

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**Аннотация**

В статье проанализированы недостатки, присущие традиционным методам определения себестоимости медицинских услуг в сравнении с методами, предлагаемыми автором. Приводятся характеристики современных учреждений здравоохранения (Ливана) и их сферы обслуживания, мотивации к применению оценки затрат их деятельности. Помимо этого целью статьи послужило выявление главных причин, ограничивающих использование предлагаемых методов определения себестоимости медицинских услуг в учреждениях здравоохранения, и препятствий по внедрению этих методов.

**Ключевые слова:** учреждения здравоохранения, расчет себестоимости, деятельность, связанная с определением затрат.

**Abstract**

This paper analyze the limitation of traditional costing accounting compared to activity based costing, and the characteristics of modern healthcare care institutions and healthcare services that motive the adoption of activity based costing by these institutions. In addition the paper aims to highlight the main reason of limited adoption for activity based costing by healthcare institutions specially the difficulties of implementation of such system.

**Keywords:** Healthcare institutions, cost accounting, activity based costing.

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## Introduction

Managerial accounting is part of an organization's management information system. Managers rely on managerial accounting information to plan and control an organization's operations. [1] argued that a cost management system is a management planning and control system with many objectives as:

- Measuring the cost of the resources consumed in performing the organization's significant activities.
- Identifying and eliminating non-value-added costs. These are costs of activities that can be eliminated with no deterioration of product quality, performance, or perceived value.
- Determining the efficiency and effectiveness of all major activities performed in the organization.
- Identifying and evaluating new activities that can improve the future performance of the organization.

Historically, organizations produced a limited variety of products. Indirect costs; overhead; were a relatively small percentage of total costs. So, using simple costing systems to allocate costs broadly was easy, inexpensive, and reasonably accurate. However, as product diversity and indirect costs have increased, broad averaging has resulted in greater inaccuracy of product costs calculations [2].

Absorption costing is the basis of all financial accounting systems. It means that all costs are absorbed into production and operation statements do not distinguish between fixed and variable costs [3]. In other words, both fixed and variable costs are included into the cost calculation. Because in absorption costing the cost objects are usually the final products (services or jobs), the absorption cost system is widely used to value the costs of products manufactured, or services and jobs delivered in manufacturing firms, as well as in service sectors, including health care.

Highlighting the limitations of traditional costing systems in overheads cost allocation in a situation of product diversity in terms of volume and complexity illustrated the need for activity-based costing system. Consistent with this research [4], found that the firms facing high level of competition and having diverse product mix are more likely to benefit from precise cost information and the introduction of activity-based cost systems with an added caution that the activity-based costing system introduction initiative itself should be cost effective.

Healthcare organizations have been facing difficulties and challenges in balancing limited resources and costs to provide their demand for services. Medical research has the effect in introduction of modern medical techniques and medicines, which usually causes the increase of consumed costs [5]. Increasing costs of healthcare systems have the growing demands on the public budgets, and also the patient's expenditures. Many countries start to seek the alternative sources of financing of healthcare systems, because the traditional systems of healthcare insurances are no more sufficient for covering of expansive healthcare services costs. In face of these tendencies, many hospitals are under pressure to become more cost efficient.

The healthcare delivery system is undergoing significant change and the need for credible cost data has not ever been greater. Healthcare organizations need cost

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data to make informed decisions and cost "guesstimates" based on "ratio of cost to charge" (RCC) are not viable. Without credible and detailed cost data, it is essentially impossible for healthcare organizations to strategically manage their operations and minimize the impact of declining reimbursement [5].

The difficulty inherent in choosing a proper and accurate product costing method for manufacturing enterprises has been widely discussed by academics and practitioners. The important limitation of traditional (absorption) costing methods had been also deeply discussed along with advantages of other costing method as Variable costing or Activity-based costing (ABC) Cardinaels [5] states that more developed cost systems such as activity-based costing (ABC), may facilitate strive for cost efficiency. ABC provides more detailed cost information on the activities of the hospital, which could typically result into better cost reduction and cost management. Carvalho [6] supports the use of ABC in hospitals with statement, that information generated by ABC significantly contribute to hospital management in planning and managerial control, as they enable organizational behavioral changes by enhancing the attention focus for activities due to volumes. Application of the ABC in healthcare institution entails a number of predictable benefits, especially the ability to quantify the actual costs of activities, to identify the relationship between the costs and means of carrying out these activities, to identify capacity influences on the overall costs of the organization and in the assessment of legislative issues regarding the reimbursement of particular performances to also measure the "profitability" of provided operations. It is necessary to view profitability in this case as an identified discrepancy between the amount of reimbursement for a certain performance and the actual (full) cost after taking into account all overhead costs.

Despite the relatively high number of existing applications use of the Activity-based costing method in hospital management still entails a number of issues related to the practical applicability of costing for the health organization environment, and its further practical usefulness for decision-making bodies and characteristics of specific information outputs of such methods especially for the specific conditions of national legislative environment [7]. As stated, application of the ABC method in healthcare service provider could bring a lot of benefits for an organization, but brings also large number of risks related to bad system construction and utilization [8].

## Activity Based Costing vs. Traditional Costing

Traditional absorption costing system and activity based costing system allocate indirect costs to cost object. The purpose of cost allocation technique is to find an indirect measure how to allocate indirect costs to cost object. This can be done using measures such as allocation base and cost driver. These are measures that establish some kind of consumption pattern among indirect cost and cost object [9]. When the allocation base significantly captures the relationship between the indirect cost and the cost object then the term cause-and-effect allocation is used. In case that the allocation base is rather a weak measure then arbitrary allocation is the appropriate expression. An example of arbitrary allocation is the usage of direct labor costs/hours as an allocation base for allocating indirect costs to cost object. As direct labor costs/hours do not determine the amount of indirect costs incurred, this would likely lead to inaccurate allocation of indirect costs. Figure 1 [10] explain the traditional approach to the flow of indirect costs.

Activity based costing (ABC) assigns manufacturing overhead costs to products in a more logical manner than the traditional approach of simply allocating costs on the basis of machine hours. Activity based costing first assigns costs to the activities that are the real cause of the overhead [2]. It then assigns the cost of those activities only to the products that are actually demanding the activities. Figure 2 [10] explain the Activity-Based approach to the flow of indirect cost.

The practical distinguish between the Traditional and Activity-Based approach for the flow of indirect costs may be explained in the following table [10].

The suitability of traditional absorption costing system may be questionable and managers may start to feel concerned whether it is the right moment to revise this kind of costing system [11] picked up some points that can serve as one out of approaches how to evaluate the costing system and discover the need for change:

- Direct labor operations have been replaced with automated equipment since the costing system was lastly revised.
- Indirect costs are becoming a much larger percentage of total costs or overhead rates have been increasing during recent years.
- All overhead is applied to cost object on the basis of direct labor costs/hours.
- Only a few overhead application rates or only one plant-wide rate is in use.
- The organization appears to be competitive on one end of its product line, but not on the other end.
- Operations exist that do not require the same number of operators.
- Many operations are set up, started and then run with little or no human intervention.
- Accounting personnel spend a great deal of time doing special studies to develop answers to fundamental questions.

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Activity based costing has grown in importance in recent decades [12] because

1) manufacturing overhead costs have increased significantly,
2) the manufacturing overhead costs no longer correlate with the productive machine hours or direct labor hours,
3) the diversity of products and the diversity in customers' demands have grown, and

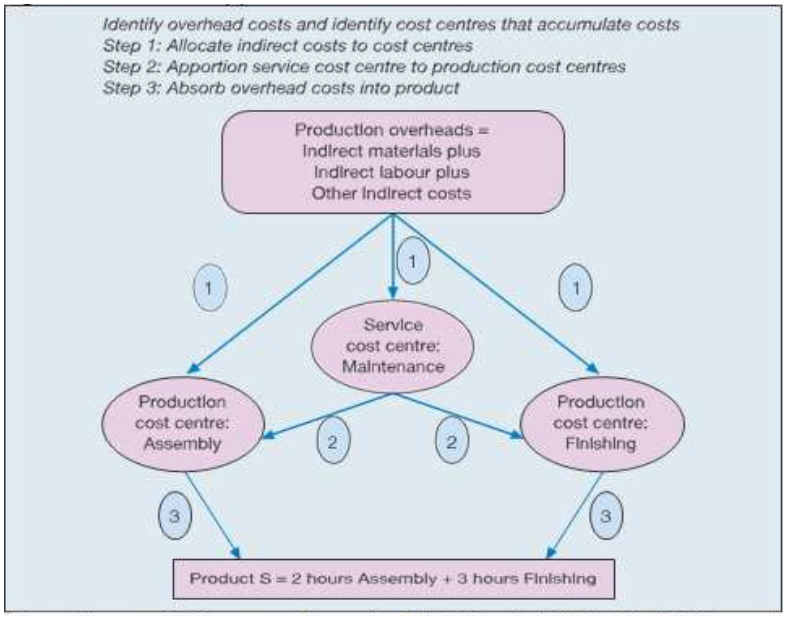


**Figure 1 – Traditional approach to the flow of indirect costs**

Source: Weetman, P. Management Accounting, 2nd Ed., Prentice Hall, New York, P. 75.

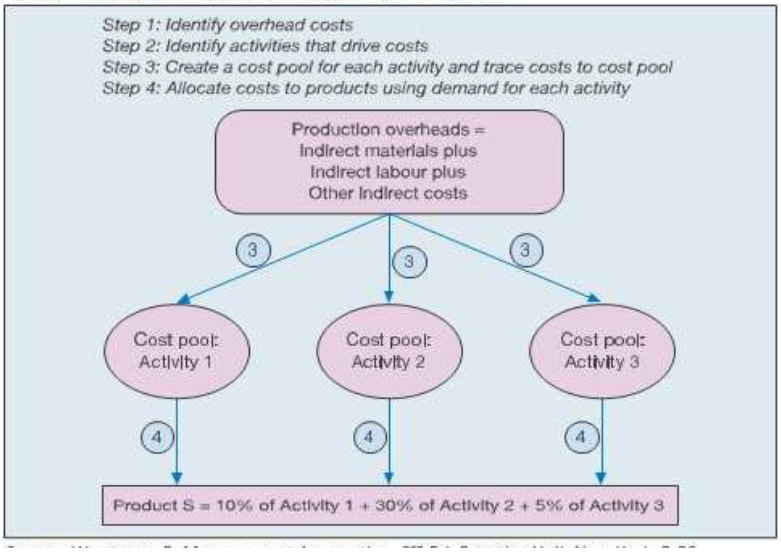


**Figure 2 – Activity-Based approach to the flow of indirect costs**

Source: Weetman, P. Management Accounting, 2nd Ed., Prentice Hall, New York, P. 86.

4) some products are produced in large batches, while others are produced in small batches.

Figure 3 [12] explains how rate of indirect costs to the direct costs increased since 1950's.

## Why Activity-Based approach is better for healthcare institutions

Healthcare industry is a wide and intensive form of services which are related to well-being of human beings. Health care is the social sector and it is provided at State level with the help of Central Governments. Hospitals are the main part of healthcare institutions, that provide the most diverse services related to this sector [13]. Health care sector has changed substantially. With improvement in Medical Science and technology it has gone through considerable change and improved a lot. The improvement affect in a majorly the way of providing healthcare services form both organizational and strategic prospective. Nowadays healthcare services have many unique characteristics [14]:

- Intangibility: Doctor Consultation, diagnostic services, and others may be a good example for intangible services. This feature effects the ability to inventories the healthcare service, which is not recognized by

**Table 1 – Indirect cost comparison between traditional and activity-based costing**

| Traditional overhead cost allocation | Activity-Based overhead cost allocation |
|---|---|
| Identify *cost centers* in which costs may be accumulated. | Identify the way in which products drive the activity of the business and define suitable *cost pools* for collecting the costs relating to each activity. |
| Cost centers are determined by the nature of their function (e.g. production or service department cost centers). | Activity cost pools are determined by the activities which drive the costs (e.g. obtaining new customers, negotiating customer contracts). |
| Collect costs in cost centers. | Collect costs in activity cost pools. |
| Determine an *overhead cost rate* for each production cost center (e.g. cost per direct labor hour). | Determine a *cost driver rate* for each activity cost pool (e.g. a cost per customer contract, cost per customer order received). |
| Allocate cost to products using the calculated cost rate and the measure of the *product's consumption of that department's cost* (e.g. number of labor hours required). | Allocate cost to products according to the *product's demand for the activity* which drives cost. |

Source: Weetman, P. Management Accounting, 2nd Ed., Prentice Hall, New York, P. 95.

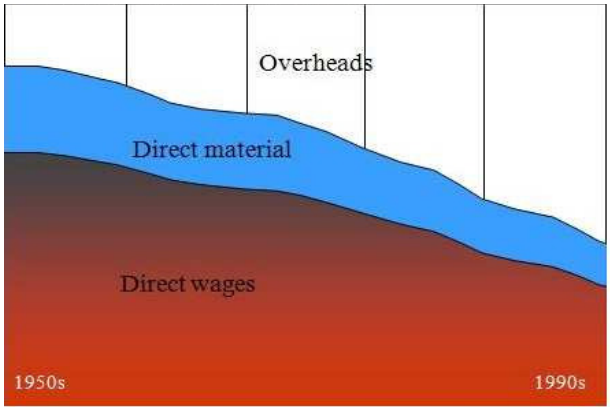


**Figure 3 – Change in the structure of costs after 1950's**
Source: Cokins, G. 2002. Integrating target costing and ABC. Journal of Cost Management (July/August): 13–22.

traditional cost accounting systems that consider work in process and finished products inventory.

- Individualism: Same service, will be provided in a different way for different customers. For example a simple Hernia surgery will take 30 minutes for a patient and 60 minutes for second patient and 120 minutes for a third patient. This individualism will affect the accuracy of standardizing the indirect cost distribution rate for same services, which is used in traditional cost accounting.
- Complexity: healthcare service mostly will be a combination of many services, for example a surgery will include Managerial services as admission procedure, diagnostic services as Laboratory tests and radiology diagnosis, hospitality services as nutrition, medical services like nursing care and doctors acting, and other services. The total cost of the service should include all relevant costs, which is not included methods traditional costing methods.
- Diversity: healthcare institutions, as most of institutions are divided into departments, but in healthcare institutions each department will provide a very wide range of services, for example in laboratory department different tests could be provided, in surgery department wide range of operations may be done. This wide diversity of services makes the predetermined rate concept unusable for indirect cost allocation, which is the base of traditional costing methods.
- Technology based: the innovation in medical research and relevant disciplines of science change deeply the infrastructure of healthcare services, and the human power was replaced widely by medical equipment. The replacement affect the cost infrastructure of healthcare institutions, where direct labor cost was replaced by indirect machinery cost, which in turn made the accuracy of allocation for indirect cost more critical to healthcare institutions.

The main characteristics of healthcare services, according to cooper are considered basic reasons for the healthcare institutions to shift from traditional cost accounting to more improved cost accounting system, basically activity based costing.

## Implementation of activity-based costing in healthcare institutions

ABC is not without its limitations, many of which relate to issues of implementations, such as: the desire to change to an ABC system is often met with reluctance at top-management level; problems are often encountered in identifying appropriate cost pools and related activity cost drivers; ABC implementation is costly and time-consuming [15]. This includes, for example, the costs involved in adapting the internal accounting system with the time involvement of all staff involved in the new accounting systems; ABC systems may be too complex for the needs of the organization. Complexity is brought about by a desire to cater for a vast number of activities, cost drivers, services and cost elements. However, ABC systems that are too complex often fail to meet management requirements. It is therefore important to evaluate the scope of and role for the proposed system, if implementation is to be successful [16].

The implementation of an innovation is a conscious process. There are multidimensional factors that should be considered in such implementation. The factors that affect successful implementation extend beyond the adequacy

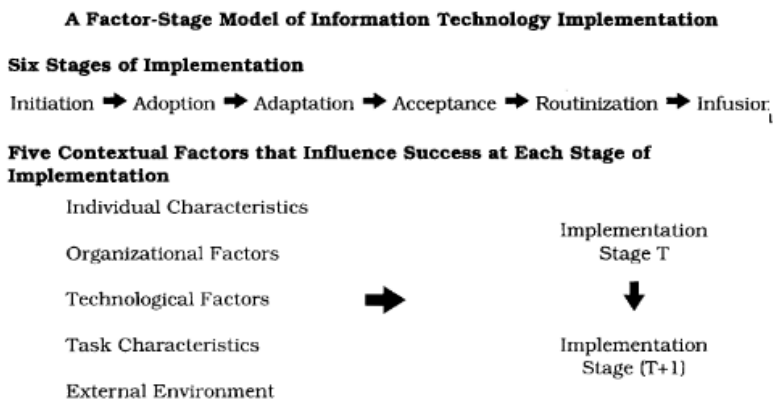


**Figure 4 – A factor-stage model of information technology implementation**
Source: Anderson, W. Adapted from Kwon and Zmud (1987) and Cooper and Zmud (1990), 1995, P.8.

of resources supplied for implementation. [17] found that successful implementation of ABC is associated with behavioral and organizational factors. These factors are top management support, linkage to competitive strategies, linkage to performance evaluation and compensation, training in implementing ABC, non-accounting ownership and adequate resources. [18] found that ABC success is influenced by a wider array of contextual and process variables, including top management and union support of the ABC project, adequacy of resources, individual commitment to the organization, the likelihood of lay-offs and the degree to which good performance is expected to be rewarded.

[18] used Cooper and Zmud's [19] model of information technology (IT) implementation to describe the implementation process at General Motors. This model consists of six stages. Anderson points out that some factors including individual, organizational, technology, task and environmental factors have different impacts among the various stages. For example, it was found that task uncertainty and worker autonomy reduce the probability of adoption while task responsibility and autonomy are important factors in promoting adaptation.

The implementation of ABC systems refers to the process of carrying out the decision to adopt the system. The terms 'Implementation' and 'Adoption' are used in the literature interchangeably with the exception of their use in the context of stages. [19] developed a model of IT implementation consisting of six stages: initiation, adoption, adaptation, acceptance, routinization and infusion. Cooper and Zmud's model is the theoretical model that explains the main stages of IT implementation. This model represents the base on which other studies, for example [18] regarding implementation stages have been built. The stages described in the model are

1. Initiation,
2. Adoption,
3. Adaptation,
4. Acceptance,
5. Routinization and
6. Infusion.

The boundaries between these stages are not distinct, but there may be some characteristics that differentiate each stage. Figure 4 explains Anderson [18] approach for implementation of activity-based costing.

## Conclusion

Healthcare institutions nowadays are working in a hard competitive market, this competitively makes healthcare institution management more demanding toward a more accurate cost accounting system. The demanded cost accounting system should help in achieving healthcare institution managements' goals which may be summarized by achieving best level of efficiency and provide the most quality for services using the least possible resources.

This optimization could not be achieved any more using traditional costing systems. Considering the characteristics of healthcare institutions and healthcare services, activity based costing system may be a suitable solution for this problem.

The added value from applying activity based costing is related to the condition of successful implementation of this system, the matter which may be point of discussion in healthcare institutions.

Considering activity based costing as a possible theoretical solution, makes the implementation of this solution in healthcare institution the current stage of research, and a point to be discussed in deep, especially that the actual implementation of this system in healthcare institutions is not popular until now, which arise a question, why?

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