

AN OVERVIEW OF THE THEORETICAL ACTIVITY – BASED COSTING

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ABSTRACT

Activity Based Costing (ABC) is an accounting methodology that assigns costs to activities based on their use of resources, rather than products or services. This enables resources and other associated costs to be more accurately attributed to the products and the services which they use. It doesn't change or eliminate any costs; it provides detailed information about how costs are consumed. According to research cited in this review of the theoretical and Activity-Based Costing Theory explains.

Keywords: Activity Target, Costing, Activity-based Costing

INTRODUCTION

Economic analyses can be significantly improved by the availability of detailed and specific data provided by the new tools and systems adopted in PA. This richness of data needs to be directed through a structured process of elaboration that enables the transformation of raw data into a structured and synthetic form that conveys the information required in decision making. Crop choices, machinery renewal, the use of external services are some examples of decisions that require the adoption of specific management and accounting tools to set cost comparisons and support decision making. Furthermore, in many cases general costs (e.g.: depreciation of machinery) are not correctly allocated to crops: they are usually allocated considering only the extension of the plots. Although this approach may be useful to evaluate costs where land is the main cost driver and production constraint, nevertheless this approach may lead to significant evaluation errors in managerial choice, for instance favoring complex products realized in small quantities, and disfavoring simpler products realized in large quantities. To address these issues, two main approaches have been proposed in accounting that supports a structured decision making process: DC and ABC. DC is an accounting practice that is oriented at charging variable costs directly to products. ABC is a methodology developed to face the increasing level of fixed costs in the modern companies. Allocation of fixed costs to products is complex and ABC "measures costs and performances of activities, resources and cost objects, assigns resources to activities and activities to cost objects based on their use, and recognizes causal relationships of cost drivers to activities (Carli, 2013).

An ABC system is based on the idea that products make use of certain general activities developed inside the company and these activities require some resources to be done. It means that, first, the cost of the resources are allocated to the activities and, then, the costs of activities are allocated to the products (costs objects) using specific activity drivers for each activity. In this way, it is possible to assign overheads to products in a more accurate and precise way. This logic enables managers to have a deeper control on how products or services, brands, customers, channels of distribution, or facilities consume resources and generate costs. Furthermore, this logic fosters the understanding of patterns of resource consumption at the micro level. Managers can have access to a deeper level of information that enables corrective actions directed to the enhancement of revenues, profitability and cost reduction. ABC prevents some distortions related to product cost information that arise from traditional accounting systems where the overheads (indirect costs) are arbitrarily attributed, usually in proportion to an activity's direct cost. Traditional systems create higher distortions when there are sophisticated production structures, with a wide range of products or services that require the assignment of large amount of general costs. The combination of DC

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and ABC enables to analyze cost supporting detailed managerial analysis based on a precise view of the cost of the single crop, considering its relative use of machinery and human resources. In agricultural and food literature there is only sparse evidence on cases of application of DC and ABC to farm management. ABC has been applied in case studies regarding different situations: fish processing in Finland , fish markets in Taiwan, combined with a linear programming technique , sawmilling in Finland , winemaking in Spain , ornamental plant cultivation in Spain . Only Chrenková proposes a complete framework not depended to a specific business. Nevertheless, her analysis is oriented at defining an analytic framework on Microsoft Excel (Carli, 2013).

Here, our purpose is to consider the specific information flows required by the use of a combination of DC and ABC in a FMIS. Modern ICT and PA technologies offer the possibility to collect a large amount of data that can be used to set a precise monitoring of costs with a reduced intervention by farmers, since automatic processes could collect large part of the data and perform information processing activities (Carli, 2013).

In the next sections we detail the model presenting data flows, then we propose a possible architecture of the system, and, finally, we show the reporting functionalities of this application (Carli, 2013).

According to research cited in this review of the theoretical and Activity-Based Costing Theory explains.

Classification of Activities

In the first stage of the Activity-Based Costing activities are identified and classified into different categories or segments of the production process.

Table 1: Difference between Activity-Based Costing and Conventional Costing

Activity-Based Costing	Conventional Costing (or) Traditional Costing
(1)It begins with identifying activities and then to producing the products	(1)It begins with identifying cost and then to producing the products
(2) It mainly focuses on activities performed to produce products	(2) It emphasises mainly on ascertainment of costs after they have been incurred
(3) Cost Drivers used for identifying the factors that influence the cost of particular activity	(3) Cost unit is used for allocation and accumulation of costs
(4) Overhead costs are assigned to Cost Centre or Cost Pools	(4) Overhead costs are assigned to production departments or service departments
(5) Overhead costs are assigned to products using Cost Drivers Rates	(5) Overheads allocated on the basis of departmental overhead allocation rate
(6) Variable overhead is appropriately identified to individual products	(6) Costs may be allocated or assigned either on actual cost incurred or on standard cost basis
(7) In ABC many activity based on Cost Pools or Cost Centers are created	(7) Overheads are pooled and collected department wise
(8) There is no need to allocate and redistribution of overhead of service departments to production departments	(8) The process of allocation and re-distribution of the costs of the service departments to production department is essential to find out total cost of production
(9) It assumes that fixed overhead costs vary in proportion	(9) It assumes that fixed overheads do not vary with changes in the volume of output.

The grouping of activities is preferably done using the different levels at which activities are performed. Broadly, activities are classified into:

- (1) Unit Level Activities
- (2) Batch Level Activities
- (3) Product Level Activities
- (4) Facility Level Activities

(1) Unit Level Activities: Unit Level Activities are those activities which are performed each time a single product or unit is produced. These activities are repetitive in nature. For example, direct labor hours,

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machine hours, powers etc. are the activities used for each time for producing a single unit. Direct materials and direct labour activities are also unit level activities, although they do not overhead costs. Cost of unit level activity vary with the number of units produced (Makepeace, 1997).

(2) Batch Level Activity: These activities which are performed each time a batch of products or group of identical products are produced. All the units of a particular batch are uniform in nature and in size. The cost of batch level activities vary with the number of batches are ascertained. Machine setups, inspections, production scheduling, materials handling are examples of batch level activities which are related to batches (Makepeace, 1997).

(3) Product Level Activities: These activities which are performed to support the production of each different type of product. Maintenance of equipment, engineering charges, testing routines, maintaining bills of materials etc. are the few examples of product level activities (Makepeace, 1997).

(4) Facility Level Activities: Facility Level Activities are those which are needed to sustain a factory's general manufacturing process. These activities are common to a variety of products and are most difficult to link to product specific activities. Factory management, maintenance, security, plant depreciation are the few examples of facility level activities (Makepeace, 1997).

Advantages of Activity – Based Costing

ABC system is a very valuable tool of control. It offers a number of advantages to the management and the following are the main advantages:

- (1) It brings accuracy and reliability of the costing data in determination of the cost of the products_
- (2) It facilitates cause and effect relationship to exercise effective cost control.
- (3) It provides necessary cost information to the management to take decisions on any matter, relating to the business_
- (4) It is much helpful in fixing the cost and selling price of a product.
- (5) It facilitates overhead costs allocate directly to the specific product.
- (6) It enables to manage the activities rather than costs.
- (7) It helps to remove all types of wastages and inefficiencies.
- (8) It provides valuable information to evaluate on the relative efficiencies of various plants and machinery.
- (9) Cost Driver Rates will help in significant impact on the development of new products or modification of existing products (Makepeace, 1997).

Assentials Factors of a Good Activity – Based Costing

The success of the Activity-Based Costing system depends on the following factors:

- (1) Objectives of costing system and level of competition.
- (2) Number of products manufactured.
- (3) Product diversity and the business_
- (4) Adaptation of cost management measures, standardization and technical aspects.
- (5) Degree of sophistication and suitability to the firm.
- (6) Determination of single or combined Cost Driver.
- (7) Determination number of Activity Centre, Cost Pools and Cost Drivers.
- (8) Determination of total overhead costs and economy.
- (9) Evaluation of tradeoff between measurement of costs and cost of errors.
- (10) Elasticity and adoptive to the changing circumstances. (Makepeace, 1997)

System of Activity–Based Costing and Activity–Based Management in the Academic Word

The methodology of the ABC system was created in the U.S.by Kaplan and Cooper (1988, 1991) and developed by Miller and Volkmann (1985). This philosophy changed the way academics and managers thought about the usefulness of cost information systems in both private and public organizations. Furthermore, company directors saw the need to discover a new way of managing organizations to make them more competitive and focus on the concept of the chain of value as a valid instrument for customers and users. Thus, the philosophy of the ABC system has been shown to be a valid instrument since it identifies the processes in the chain of value and assigns costs by specific activities related to the product,

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the service, the customer, program me or project. This helps in analyzing pro-fit ability, efficiency and cost control of the firm as a yardstick for comparison with competitors. Based on the method established by Kaplan and Cooper, several authors have established the steps to be taken in the methodology needed for putting it into practice in organizations, according to size and/or sector (Muñoz *et al.*, 2011). However when implemented, this cost management system has come up against a series of difficulties, which have reduced the optimistic expectations established by this methodology (Banker *et al.*, 2008). The fact is that ABC methodology establishes the basis for working in large corporations, although micro, small and medium-sized firms in Mexico, as in many other countries, accounting for more than 90% of Gross Domestic Product have found more difficulties when developing or implementing them. An attempt has been made to tackle this problem through researchers, who have developed and applied an ABC methodology for SMEs (Fladkjaer and Jensen, 2011), and also by firms specializing in ABC software which have designed an ABC system for SMEs as 3Com Technology (Vázquez, 2004) or by implementing the ABC model from SAS(OROS System) (Januszewski, 2008).

The Foundation and Framework of the Standard Activity-Based Financial Management Model

The standard activity-based financial cost management model takes the whole activity chain, value chain as the foundation stone, focuses on reflecting as the R&D, purchasing, manufacturing, marketing and after-sale service, etc. The system of the standard cost and activity-based cost coexist, compatible among them. The standard activity-based financial cost management model practically and fully reflect the rationality and superiority of the standard cost system and of the activity-based cost. The scientific management and effectively control of standard cost system together with the extension financial cost management and expanding financial cost management intension of activity-based cost have been fully used in the standard activity-based financial cost management model. All the direct cost of material and labor that can be allocated directly to the cost of corresponding goods in the whole activity chain and value chain are calculated and managed according to the thought of standardization control of the standard cost system as much as possible. Make the advanced and feasible standard from the price and quantity in order to take strong control beforehand, in the process control the cost and find out the reason in real time according to the difference situation, correct the deviation, reduce, improve the cost according to the analysis of the difference afterwards, and finally offer the reliable basis for revision of the standard cost. To those expenses, which cannot be directly allocated to the cost of corresponding goods, different treatments are given regard to the amount and proportion size. Aggregate those expenses that in smaller amount and lower proportion, and allocate to the cost of relative goods according to the standard that in the greatest relevance. Recognize the activities that consume these resources, take the activities as the intermediary and allocate these expenses to the cost of corresponding goods, fully use the advantage of calculating the cost accurately of the activity-based cost, and in a permitted situation standardize the activities cost (Qingge, 2012).

Experiences in Applying Activity-Based Costing in Mexican Small and Medium Enterprises

Abstract text of abstract text of abstract text of abstract textenterprises In Mexico several studies have been published on firms which have adopted ABC methodology for SMEs in different sectors, such as printing firms, small manufacturers of metal, aluminum and ironwork structures or the polyvinyl chloride industry. Studies have also been carried out on small and medium-sized firms in commerce, services and transformation, outstandingly those published by Ruiz and Escobedo (1996) and Garcia, Marin and Martinez (2006). The first was developed in the metropolitan area of Mexico City aimed at determining the use of cost systems by centering upon whether cost systems were applied and whether software was used for it. A total of 69 firms were contacted and the results indicated that 43% had a real or historic cost system, 37% had estimated or standard ones and only 6% were activity-based costs; 14% did not reply. The second, carried out in the state of Veracruz, Mexico, showed that cost accounting was scarcely used in microforms since only 12.2% calculated their costs, whereas 24.3% of small firms and 38.1% of medium-sized firms adopted cost systems. It was Centre don questions similar to the previous one. Other interesting results that 36% of firms use hi-tech cost accounting systems extensively, whilst the percentage of firms with no sustainable technology infuse is 49.2%. Finally it analyses how the cost

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accounting system impacts on the performance of the SME but does not differentiate to whether the system is a traditional or management one. The findings obtained in both works are relevant, albeit limited in their field of study and in questions for research. Subsequently, Prieto *et al.*, (2007) made a study of the Mexican logistics sector and how it implemented activity-based costs. From a 27-firm sample, 22.25% were microfirms, 22.25% medium-sized ones of similar proportion, 25.9% small and 29.6% large enterprises. The adoption rate of ABC was as high as 22.2%, a decision taken by top management (60%) for the following reasons: reduction and administration of costs; to establish the price of the product/service; measuring and improving the performance by activity, cost modelling; budgets; client profitability analysis; product/service decisions; new product/service design; and inventory evaluation. Another significant finding is that the main reason why it was not implemented is unawareness of ABC (51.9%). This finding coincides with that presented here. In a similar fashion we agree with the fact that the main cause is ignorance of the methodology even though in this paper problems involved in its implementation are determined both from the viewpoint of users of traditional systems and those adopting ABC/ABM. What is more, both works agree that there is no relationship between firm size and adopting ABC, although, as can be seen in subsequent pages, small firms adopt ABC in greater proportion than medium-sized ones. So, taking as reference the findings obtained in previous works, in this study we have analyzed the evolution of cost systems used in Mexican SMEs, describing competitive activity, adoption of cost management and administrative systems in this type of firm, as well as activity-based costs (ABM) by means of activity-based costs (ABC), and replying to the following questions: what are the cost systems that Mexican firms adopt in order to be competitive? Is there any relationship between level of adoption and firm size? What reasons lead Mexican firms to adopt the ABC/ABM system? Can the ABC system be a key instrument in the decision making of the Mexican businessman? Do they have enough technical and economic capacity to maintain the ABC system if they adopt it? What is the level of adoption of the system in Mexico? (Manríquez *et al.*, 2014).

Advantages and Disadvantages of ABC

Advantages

- ABC provides a more accurate cost per unit. As a result, pricing, sales strategy, performance management and decision making should be improved.
- It provides much better insight into what drives overhead costs.
- ABC recognises that overhead costs are not all related to production and sales volume.
- In many businesses, overhead costs are a significant proportion of total costs, and management needs to understand the drivers of overhead costs in order to manage the business properly. Overhead costs can be controlled by managing cost drivers.
- It can be applied to derive realistic costs in a complex business environment.
- ABC can be applied to all overhead costs, not just production overheads.
- ABC can be used just as easily in service costing as in product costing (Kaplan, 2012).

Disadvantages of ABC

- ABC will be of limited benefit if the overhead costs are primarily volume related or if the overhead is a small proportion of the overall cost.
- It is impossible to allocate all overhead costs to specific activities.
- The choice of both activities and cost drivers might be inappropriate.
- ABC can be more complex to explain to the stakeholders of the costing exercise.
- The benefits obtained from ABC might not justify the costs.
- Other systems may need to be changed - for example, how variances are calculated (Kaplan, 2012).

CONCLUSION

Activity-based costing (ABC) is a costing methodology that identifies activities in an organization and assigns the cost of each activity with resources to all products and services according to the actual consumption by each. This model assigns more indirect costs (overhead) into direct costs compared to conventional costing. CIMA (Chartered Institute of Management Accountants) defines ABC as an

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approach to the costing and monitoring of activities which involves tracing resource consumption and costing final outputs. Resources are assigned to activities, and activities to cost objects based on consumption estimates. The latter utilize cost drivers to attach activity costs to outputs.

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