

The Applicability of the Principles of Activity-Based Costing System in Higher Education Institutions in Bangladesh

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Abstract

The widespread environmental and economic changes have forced many organizations to change and rethink their business and competitive strategies, particularly in cost management system, in order to achieve competitive edge in the marketplace. The cost management system is important to provide timely and quality information to help managers in their decision making process. To achieve this, many organizations shift their focus from conventional or traditional costing system to an increasingly popular cost methodology system that is Activity-Based Costing (ABC). This system simply collects cost in functional activity cost pools and then applies costs to products and services using individual cost drivers. Initially when this system was introduced, it was only popular among manufacturing context; however, now it also pulls the attention of service sector. It is obvious that to have access to good information in decision making in the management of service firms is more important than ever. Due to profound changes that have been occurring in the structure of service firms, especially, in universities, developing and implementing models that may actually be useful of the management of these institutions. As universities are belonging to service sector, we have found the suitability to apply ABC system in higher education institutions, both private and public universities, in Bangladesh. The aim of this work is to present a cost assessment model, highly influenced by the Activity-Based Costing, and applicable to higher education institutions. Therefore, based on the procedures used by the services of a faculty belonging to a Bangladeshi university, it is tried to create a model which allows the attribution of each department's expenditure to the various cost objects- courses, research projects, services. In this way, we tried to present a model that, without being too complex, has a level of sufficient detail to enable the production of reliable information and which can be applied in the context of higher education institutions.

Key Terms: Activity-Based Costing, conventional costing, management accounting

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Introduction

The challenges posed by the economic development of the 1980s led to new studies and further development in the area of cost accounting. According to Kaplan (1984), until then, cost accounting was based on models created in 1920, developed for industries where direct costs represented a high fraction of costs. Today, with the growing importance of indirect costs, it is crucial to adequately include them in full cost of products and to assign them to products to which they really correspond. Kaplan argued that the development of cost control systems was not following the evolution of business productive systems and the growing weight of indirect costs. It was in this context that the concept of Activity-Based Costing emerged, presented and divulged by Robin Cooper and Robert S. Kaplan.

The ABC was indeed a catalyst for management accounting progress and increased credibility. It allows for a more exact costing of products and a finer operational performance evaluation, due to the importance given to activities and to its perspective on the organization and management method.

Several studies called the attention to the fact that traditional cost accounting systems were not providing the essential information needed to support university managers decisions (Bourn, 1994). They argued for the implementation of an effective management accounting system in these organizations (Goddard and Ooi, 1998), drew attention to the fact that management accounting was gaining importance in the administration of universities and that there was a growing need for an effective system of cost accounting, mainly due to the decrease in financial resources available (Jarrar, Smith and Dolley, 2007). It becomes clear that universities need to adopt more sophisticated management models, in order to be able to plan, monitor and allocate the resources in a more precise way.

The majority of Bangladeshi companies still use traditional costing systems with a low level of sophistication. Although we are not aware of studies that can prove this, we believe that the cost accounting systems adopted by Bangladeshi universities are similar to the ones used in the Bangladeshi businesses, particularly in what concerns sophistication. It is against this background that the present work is prepared with an aim to developing a cost accounting system that uses the concepts of the ABC model and which higher education institutions can resort to. For this purpose a model is suggested which is not too complex and provides managers with truly reliable information about the costs of the various services provided by an institution, be it courses (undergraduate degrees, master degrees), research projects or other.

Research Objective and Methodology

The purpose of this paper is to study the applicability of Activity-based costing in educational institutions particularly in universities, both public and private, and whether this cost system provides better control over the cost in comparison with traditional costing system. Appropriate costing system is necessary as the university is under great pressure to lower cost and improve the quality and efficiency due to a competitive education industry. Particularly, the university requires cost information to improve the quality, timeliness and efficiency of the activities they perform and to understand accurately the cost of the individual department at the university. The research is qualitative in nature in the sense that this study critically analyses all the activities of each department and office of higher educational institutions and whether application of ABC is possible in higher educational institutions.

Activity-Based Costing

As a consequence of growing economic and market requirements of the last decades, especially since the early 1980s, companies were faced with a new reality, a new competitiveness paradigm. Companies, faced by this new reality which imposed stricter quality requirements and very short product life cycles, were forced to become more flexible both in their production procedures and their product design.

It is in this new economic context that Kaplan (1984) addresses the new challenges of the economy, raising the question of whether cost accounting was prepared for a much more competitive economic environment. Kaplan theorizes that until then cost accounting had been based on models developed decades ago, for industries with high direct costs, built for the mass production of standard products, with no major progress having been made since those times.

Thus is questioned whether the progress in the management and cost control systems was following the evaluation of the productive systems. Johnson and Kaplan (1987) thought in the new economic and technological realities that companies were facing both “new requirements and new opportunities” presented to management accounting systems.

This was the background for the development and dissemination of the Activity-Based Costing system. Although many of the concepts in this model had existed for decades and had been applied in some large companies around the world, it was only by the end of the 1980s that it emerged and gained popularity as a good model for management accounting, both amongst academics and entrepreneurs.

Characteristics of the Model

ABC is a costing system which allows for a better visualization of used resources, since it focuses on the analysis of the whole company's structure activities. The model's basic principle is a simple one, and stems from the assumption that resources are used during activities, which in turn are used by the items of cost.

Unlike the traditional systems, which focused on the principle that each product consumes a certain amount of resources (Cooper, 1989), the main focus of the costing process in the ABC model is the company's activities which consume resources that can be allocated to products. This means that, in the ABC system, the cost of a product is the sum of the costs of all the activities involved in the product's design, manufacture and commercialization.

The costs are attributed to cost pools, and then ascribed to products through cost drivers. In other words, the ABC model assigns indirect costs to the products through a two level process: first, these costs are attributed to cost pools, then, they are allocated to products, based on the extent products use the activities.

Activities

Kaplan and Atkinson (1998), Kaplan and Cooper (1998) and Cooper and Kaplan (1991) defined activities at four levels:

Unit-level activities: Unit-level activities represent the activities necessary for a single product to be made or a single service to be performed. The amount of resources consumed by these activities is proportional to the quantities produced or performed.

Batch-level activities: Batch-level activities are activities where a new product or service order is placed. They are independent of the number of units being produced, but the resources consumed are proportional to the number of, for example, order forms.

Product and customer sustaining activities: The product and customer sustaining activities represent the work performed by an organization that makes it possible for the product or service production to occur and that allows the sale to a particular customer to take place. Naturally, the resources consumed during these activities are independent from the volume or the mix. They are, for example, maintenance activities, product specification updating, commercial research and backing, individual product/service technical support.

Facility sustaining activities: These are the company's support activities which are not related to products. Some researchers advocate resources consumed during facility-sustaining activities should not be allocated to products or services commercialized by a company. However,

Kenndy and Afflec-Graves (2001) questioned the facility sustaining costs and their non-attribution to products. This level includes, for example, administrative and management, cleaning, maintenance and security activities.

Cost Drivers

The second stage of the ABC system attributes activity costs to the cost, through cost drivers which correlate the activities with those products and services. Cost drivers are used to identify the way activities are consumed by products or services. The cost driver is an event, associated to an activity, which results in resource consumption (Babad and Balachandram, 1993), a quantitative assessment of an activity's output (Kaplan and Atkinson, 1998). For each activity there should be an appropriate cost driver. A model based on ABC can include three kinds of cost drivers: transaction drivers, duration drivers and intensity or direct charging drivers.

Transaction drivers: Transaction drivers are the number of setups, the number of order forms, etc. They are used when the units consume the same resources of the activity.

Duration drivers: Duration drivers represent the time that is necessary to perform an activity. They are, for example, the time need to prepare an order; the time spent inspecting products; or labor hours.

Direct drivers: The minimum number of cost drivers necessary for an ABC system depends greatly on the desired level of accuracy. Once define the minimum number of cost drivers for a specific system, the adequate cost drivers can then be selected.

Universities

Bourn (1994) argued that the traditional cost accounting systems were not able to provide accurate data about costs and performance control and assessment, with the consequence that essential information was not being given to university managers in order for them to make decisions. Furthermore, Jarrar, Smith and Dolley (2007) called the attention to the fact that, in recent years, management accounting has gained relevance in university administration and that the need for an effective cost accounting system was a growing concern.

Cropper and Cook (2000) highlighted the need for universities to adopt more sophisticated management models, so that, it would be possible to plan, monitor and allocate resources in a more accurate fashion. English higher education funding bodies issued costing guidelines recommending a model which was an approximation of Activity-Based Costing management system. These guidelines included resource costs, activities, cost drivers and outputs. They also defined six key stages:

1. Identify key resources used (staff, consumables, equipment, etc.);
2. Identify products (courses, research, working-papers, consultancy, etc);
3. Identify activities (teaching, research, admissions, library services, registration, etc)
4. Attribute used resources to activities;
5. Assign attributes to products through cost drivers (staff, students, space);
6. Analyze and correlate results.

Broad and Crowther (2001) concluded that, in fact, universities did not adopt the ABC system but rather a hybrid system somewhere between ABC system and Traditional systems.

The ABC System Applied to a Higher Education Institution

At this stage, the aim is to propose an analytical accounting system which is at the same time founded on the Activity-Based Costing model and adaptable to higher education institutions.

The work methodology was based on the principle that it was crucial to acquire in-depth knowledge about the faculty that was the object of the study. So, the first step was getting to know the faculty's cost items. A higher education institution's cost items can be divided into four major groups: teaching (Undergraduate degrees, postgraduate courses, masters courses), research (research projects), services provided to external customers (consultancy services to public institutes and courts), and to other institutions (such as museums, libraries, laboratories and sport entities).

In the next step, the direct and indirect costs will be defined that a higher education institute may incur.

Direct Costs

The most important resource for the majority of the higher education institutions is certainly the teaching body. The reason is it represents a considerable percentage of total cost. It is observed that, usually, these costs can be either direct costs (when the activity of the teachers is teaching) or indirect costs (when the teachers perform other activities in the institution such board or council duties).

It seems that the teaching staff costs distribution has to be based on staff time. Time spent teaching, time spent doing research and any other function must then be defined.

The time each teacher spends doing research or providing a service, assuming a specific research projects or service can in this way be directly attributed to the corresponding cost item. The time each teacher spends teaching can be attributed to each of the courses he/she teaches. Time spent with students individually and thesis supervision still needs to be accounted for.

Indirect Costs

In a higher education institution, indirect costs are the costs related to various services, sections and offices. At this point, it is tried to identify the activities each department perform and their cost structures. On that basis, it can determine a possible structure for the departments, the cost drivers that can be used to allocate cost to the cost items and the possible ways of collecting data.

IT Support Services

This service is responsible for setting up of all IT systems in the faculty, from communications to servers and all associated services available to other departments, teachers and students. This service's cost structure includes staff costs, purchase of replacement parts and consumables, purchase of tools, amortization of equipment and costs ascribed to it by other sections.

Activities that this service performs are: technical support, computer equipment management, printing support.

Technical support: This is the main activity of the service and consists of providing IT support to the whole institution. When it is the case of technical support provided to teachers, services or offices in the faculty, the cost thereof should be attributed to the requesting body. When it is the case of technical support provided to students, the cost should be assigned directly to the cost item, i.e. the course attended by the student.

Computer equipment management: This is mainly the repair of damaged equipment from the various services and offices, and other shared equipment. The cost should be assigned to the requesting department, except the equipment being repaired is shared equipment. In this case, the costing should be addressed in the same way as are other shared facilities.

Printing support: This is possible, again using time-sheets, to register and consequently process the information relative to this activity.

Administrative Services

The administrative services comprise four sections: undergraduate student section, postgraduate student, human resources section, current administrative work and archive section.

Student sections perform task related to student life, such as application, enrolments, registrations and student follow-up through their academic pathway (issuing of grades, charging of school fees, issuing of extracts, etc).

The human resource section is responsible for all administrative matters regarding the institution's staff.

The current administrative work and archive section deals with processing (registering and forwarding) correspondence, keeping the administrative work up-to date, etc.

The administrative service's cost structure includes staff costs, purchase of goods and services, amortization of equipment. However, it is necessary to be able to allocate the costs to its four sections.

The human resource section and the current administrative work and archive section interact with all other services in the faculty, since they provide and receive material to and from them. They do not have direct contact with cost items. Thus, it seems that the section costs should be allocated by the other services, offices and sections. An acceptable criterion for the allocation would be staff numbers in each of these other services.

The undergraduate student section issues extracts, verifies the completion of student's studies, maintains personal file archives, dispatches requests, issues grades, manages students' change in subject and students' transfers. It is possible to attribute this section cost to the cost items (undergraduate courses) using the criterion of "number of students per course".

The postgraduate student section does the same things as by undergraduate student section and the same method can be applied to attribute this section costs to the cost items. However, we acknowledge the fact that it might not be the most accurate and that, in situations where sections are organized in a different manner; a more complex model is required. Then, it is due to define activities and cost drivers. Activities could be reply to requests (information requests, document requests), providing support to visiting teachers, application and registration processing, etc. In this situation, it is possible to resort to cost drivers such as number of request, events, visiting teachers, applications, registrations, etc.

Marketing and Communication Office

This office is responsible for external communication and for promoting the faculty's image, namely through liaising with the media and other entities, and answering requests from the public in general. It publicizes the courses taught at the faculty, through brochures and advertisements. Furthermore, it supports the organization of conferences, seminars, meetings, etc.

In this case, the cost structure includes staff costs, amortization of equipment and purchase of goods and services, such as brochures and leaflets, advertisements in the press and the cost of other faculty services attributed to this office.

Therefore, it can account for three activities in this office:

- Communication- Brochures;

- Communication- Advertisements;
- Organization of events- Conferences, Seminars, Meetings

As for the allocation of costs to activities, it can be done in two ways: costs which are related to specific activities (purchase of brochures, expenses of advertisements in the media) can be attributed to the corresponding activities. The remainder of office's costs (staff, goods and services, amortizations), which are common to the three activities, can be assigned according to a logical criterion: the perception of the extent to which each one of them uses time and resources.

Library

Library staffs exclusively provide services to the students but some staffs are responsible for other task such as, conservation of library material, liaising with publishers, purchasing books, magazines and other supportive materials.

The library's cost structure includes staff costs, equipment amortization costs, costs of purchasing books and magazines, preparing data bases, etc. The allocation of the library cost, to some extent it is possible to attribute direct costs to corresponding cost objects, especially, the cost of books for departments, directly to various departments is quite impossible because of nature of services this office offers. So, allocating costs of library, only indirect costs, proportionately to the activities is advisable.

Finance Services

The finance service encompasses five sections: Accounting, Treasury, Purchasing, Inventory, and Finance Management Office. In this case, the cost structure includes staff costs for the five sections, equipment amortization, purchase of goods and services and the cost of other faculty services attributed to this service.

The tasks usually performed by this type of service indicate that it is not possible to assign activities which will then allocate costs to the costs items. This is an auxiliary cost pool. Thus, two costing procedures can be envisaged.

The first one, certainly the simplest, resorts to direct allocation, where costs are attributed to cost items in a reasonable proportion: One portion to teaching, a second portion to research. Then, the cost attributed to teaching can be allocated to the courses based on the number of students enrolled in each course; the cost attributed to research can be allocated to ongoing research projects.

The second one, more complex, consists of defining the auxiliary activities that this service performs for other services in the faculty. This would be an indirect form of allocating the finance service's costs to cost items, via other services.

Maintenance and Auxiliary Services

The aim of these services is to assure equipment and facilities maintenance, repair and safety, health and safety services, necessary support for smooth running of lessons.

The cost structure includes staff costs, equipment amortization, cost of purchasing goods and services and the cost of other faculty services attributed to this service.

Again these are the services which do not have direct connection to the cost items. It seems that allocating its costs can be done in the same manner as was proposed for finance service.

Conclusion

Activity-Based Costing is a recent development in the field of Management Accounting. After development, it was used in manufacturing industries to have proper and accurate costs and costs information. But now, it is equally applied to service industries. Hence, it is applicable to hire educational institutions as these institutions belong to service industry. But whole implementation of such a management accounting system is almost impossible or devoid of reality because of peculiar nature of activities performed in various departments and offices of higher educational institutions.

The traditional cost accounting systems do not provide university managers with reliable information about costs and their assignment to the cost objects. Due to the decrease in financial resources available to these institutions, universities need to adopt more sophisticated management models and costing systems. This will produce information about costs and allow identifying the profitable and non-profitable courses. It is possible to implement a complex model for determining costs, such as ABC system or a hybrid system influenced by the later, in the higher education environment.

The present work, by presenting a cost accounting system adaptable to higher education institutions, argues for a hybrid model. A model similar to the ABC system is advisable for some departments, such as IT support services, marketing and communication office. The finance services and the maintenance and auxiliary services have specific characteristics that make it difficult to implement the ABC system. So, it is advisable to use a system closer to traditional costing models. For other departments, the administrative services and the Student Assistance Office, it seems that both a system similar to ABC and a traditional costing model would be applicable. Thus, with strong influence from the ABC system, a hybrid model is presented and discussed which includes the concepts of activities and cost drivers. However, it is recognized that in certain departments this

system is not likely to work, the solution being to resort a cost allocation system similar to traditional system.

It is strongly recommended that the system described here is possible to develop a cost accounting system for this type of organization that, although based on the basic concepts of ABC, is flexible enough to allow its adoption by institutions with very specific characteristics of private and public universities in Bangladesh.

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