

The Importance of Using Attribute-Based Costing in Facility Management

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Abstract:

The traditional cost system has been criticized recently because it is done in an inappropriate manner and deviations in the cost occur. Therefore, modern facilities have tended to shift to an attribute-based costing system (ABC), because it provides accuracy and speed in calculating costs, which are important factors in helping the company Not only in preparing cost reports but even in reviewing the pricing of their products and linking these prices to the size of demand and competition. With the growing competition in businesses, satisfying clients' individual needs has turned inside a competitive edge. Highly diversified client's requirements lead to not only high product variety but also the associated cost implications. Hence, several recent approaches have arisen to develop the traditional systems to measure the costs to meet the new environmental needs, including Attributes Based Costing (ABCII). The attribute-based costing is one of the most important costing methods. It is an extension of Activity-Based Costing (ABC), where employs detailed cost-benefit analyses concerning information on client requirements. It is proposed due to the limitation of ABC. This research investigates the importance of using attribute based-costing in facility management. In this regard, the ABC II is important for any facility management due to the ABC II helps the economic units to put good planning and strategies for the product costs and achieves the target cost and target quality. Therefore, the ABC II reduces costs and increase profits, as well as identifying attributes that met customer needs and desires in the product which achieves their satisfaction and lastly the ABC II will achieve competitive advantage and efficiency for the overall company.

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I. INTRODUCTION

Holding a budget surplus is critical in any facility. To do so, administrators must be mindful of the facility's situation assets and identify techniques that incorporate company needs in their profits. It's no wonder that many uses costing techniques for this purpose. Costing techniques are usually the technique used to calculate expenses which include the procedures of the company, such as production and sales. As there are many forms, it is very important that the facility considers its main assets and sees which alternative best suits its setting. In this respect, one of the most important costing

models is attribute-based costing (ABC II It is an aspect of activity-based costing, uses comprehensive fee-benefit analysis of client need details (in terms of performance attributes of a commodity including reliability, longevity, responsiveness, and so forth) and also the prices of incremental changes required to obtain certain attributes. ABC II relies on planning, rather than previous cost assessments. Additionally, such a high proportion of the life-cycle costs of an item are trapped across the development phase of the item. This method emphasizes on fulfilling consumer expectations via looking for optimal development in customer service by evaluating alternatives for attribute enhancements in

relation to the prices of these enhancements (Emblemsvåg, 2003). Additionally, the facilities are essential to all types of companies worldwide, taking into account the various cultures and methods of control from one context to the next (Alexander, 2013). In this context, facility management (FM) is characterized as the mechanism by which an institution provides and maintains vendor support services to meet strategic specifications (Alexander, 2013). It can also be characterized as an integrated method to the operation, maintenance, enhancement and adaptation of building and infrastructure assets to benefit the key purposes of the occupants, managers, and owners of facilities (Atkins and Brooks, 2009). FM is an extensive field comprising multidisciplinary and autonomous disciplines with the overall purpose of optimizing building functions while ensuring healthcare for the occupants (Atkin and Brooks 2009, Becerik-Gerber et al. 2012). Thus, Management of the facility is also essential to every institution.

1.1 Problem Statement

With the rising rivalry in organizations, the fulfillment of the personal needs of consumers has turned into a competitive advantage. Highly varied consumer demands not only contribute to high product variety but also the related cost implications (Zhang and Tseng, 2007). In this regard, several recent approaches have arisen to develop the traditional systems to measure the costs to meet the new environmental needs, including Attributes Based Costing (ABCII). In spite of the importance of using Attribute-Based Costing in facilities management, however, to the knowledge of the researcher, this field has not received much attention from researchers, as there is a dearth in studies that dealt with the concept of Attribute-Based Costing. In addition, many companies still rely on conventional systems to calculate the cost of products, which does not produce the possibility of correct measurement, while ABC can be used more effectively than conventional systems. In light of this, the researcher decided to prepare this research to identify the

importance of using Attribute-Based Costing in facilities management. So the research problem stems from the following question: what is the importance of using attribute based-costing in facility management, and how much the contribution of ABC II to reduce costs and increase profits.

1.2 Research Objectives

This research seeks to identify the importance of using attribute based-costing in facilities management. In addition, the following objectives will be covered:

1. To highlight the methods of calculating costs.
2. To determine the need of Attribute-Based Costing (ABC II).
3. To determine the need of facility management.

1.3 Research methodology

To achieve the goals of the research and to verify the validity of the hypotheses, a descriptive-analytical approach was used, Where the case study was done for a sample of companies to get acquainted with the reality of the methods of calculating the cost used and their effectiveness, in addition, studying previous studies that relate to the concept of the importance of using attribute based-costing in facilities management. Where this research includes five main sections:

1. Costing methods.
2. Activity-based costing.
3. Attribute-based costing.
4. Facility management.
5. The importance of using attribute based-costing in facility management.

1.4 Research Hypotheses

The researcher has made the following hypotheses, which will be validated through the current research:

H₁: Continuing to work in the traditional methods leads to costs being charged to all variables and affects production technology.

H2: The use of traditional methods of costing negatively affects the competitive advantage.

H3: The use of ABC II positively affects the enhancement of cost control, facility management, and sound decision-making.

H4: The use of ABC II affects the order size and competitive advantage.

2. COSTING METHODS

Institutional learning and knowledge development are the primary steps to success in the rapidly evolving business environment and are crucial for leapfrog the competition on the market (Tamura, 2013). Therefore, Management accounting tools are essential for organizations' service functions to collect the financial information they need to be used in decision making (Lyly-Yrjänäinen, 2010). Costing is the central term of management accounting, which is commonly used in pricing by applying a profit margin to a product's overall cost. While it is no longer an accepted form of pricing, understanding how important the cost of a commodity is to know the bottom line for costs to ensure profitability. It's also a vital principle for product creators to consider the cost implications of their actions (Lyly-Yrjänäinen, 2010). Costing methods are analyzed according to their cover of cost areas in Figure 1.

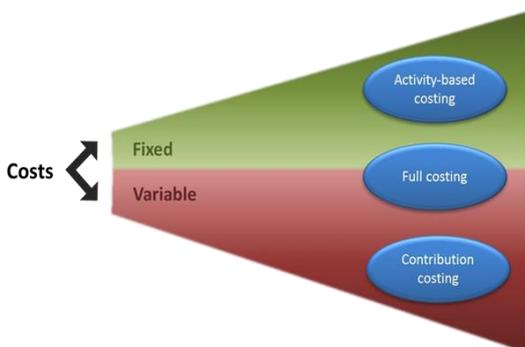


Figure 1: Costing methods, (Tamura, 2013).

Costing contributions is a costing method that focuses on a product's variable prices and neglects the fixed costs. Despite its simplicity, participation costs are generally recognized in retail and in many industrial enterprises (Lyly-Yrjänäinen, 2010). Full

costing helps businesses to price their goods, taking into account all of an organization's spending (fixed and variable) (Lyly-Yrjänäinen, 2010). As a result, it is seen as an innovative approach relative to contribution costing, taking into account the overhead costs. ABC is a costing approach used to assess an institution's operations and assign goods or services to each of these. ABC has been built to transfer a lot of indirect prices to direct prices in order to improve precision and focuses mainly on taking into account fixed costs when making cost analysis (Tamura, 2013).

3. ACTIVITY-BASED COSTING

The basic approach to activity-based costing consists of unique features compared to conventional models of costing which also distinguish the implementation steps from the current ones. The key difference with the conventional method is that the main focus of activity-based costing is on activities where conventional costing methods concentrate only on the commodity itself (Helminen 2003). The transition from commodity emphasis to operation has also changed cost awareness. With an activity-based view, indirect costs can be allocated to business activities and distributed to products through the use of an appropriate activity driver which dramatically increases the accuracy of product cost data. In addition, cost objects perform activities that perform sources; therefore source expenditures are tracked by source cost drivers to activities, and then operation costs are tracked to cost objects throughout operation cost drivers. A cost item maybe something for an estimation of costs/revenues. A commodity, for instance, is a classic cost item. Tasks are something you do in an organization, for instance, a manufacturing firm, of which all tasks are assembly, handling, welding, etc. A source is everything you need to do such things as labor, electricity, buildings, machinery, etc. ABC's primary advantage is that indirect costs are additionally correctly expressed at the expense of the company's varied goods. In short, two key

differences exist among ABC and conventional costing method, including in ABC, It is assumed that a cost object (e.g. product) absorbs activities (e.g. welding) and that activities consume sources (e.g. labor), whereas in the standard approach a cost object is assumed to consume sources directly. In addition, ABC uses multi-level source and activity drivers to track costs from sources to activities to objects in a causal, directly proportional manner, while a conventional costing model only uses unit-level allocation bases (for instance, volume-related) such as direct labor (Emblemsvåg & Bras, 2012). ABC has been extended to numerous industries such as telecommunications, automobile, aerospace and defense, aircraft and shipbuilding, while ABC is able to achieve more precise product costs, costing techniques are designed to track product costs rather than the product variety costs. In other words, the connection between the variety of dimensions in terms of product design and cost is still not clear, even though the cost of each product is available. For instance, it is presumed that there are one hundred products in a family in Mass Customization, and the true cost of each product has been achieved by ABC. Moreover, in order to determine if these hundred goods are properly constructed, the connection between the different dimensions and costs is, in most cases, a critical criterion which cannot be obtained directly from the ABC outcome (Zhang and Tseng, 2007). There are several limitations of ABC include; substantial sources required to implement and maintain, resistance to unfamiliar numbers and reports, desire to completely allocate total costs to products, potential misinterpretation of unfamiliar numbers, does not address some costing such as marketing and announcement, does not concern on relationship between activities and customer satisfied, and two costing systems might be requirement. Therefore, it is needed to find other alternatives such as ABC II.

4. ATTRIBUTE-BASED COSTING (ABC II)

Recognizing the ABC limit, Attribute-Based Costing (ABCII) is proposed as an extension to ABC to determine price consequences at the level of product attributes (Zhang and Tseng, 2007). ABCII also helps in decision-making. ABC II is an abbreviation for terms Attribute-Based Costing, while II means number two in Latin and is used to differentiate between the meaning of ABC and ABC. In addition, ABC II uses the traditional ABC approach to attributes of the cost items. The problem arises, however, when one to one relationship no longer exists between a specific attribute and a specific operation (Emblemsvåg, J. 2003).

4.1 Definitions of Attribute-Based Costing

Emblemsvåg, 2003 defines attribute-based costing as an extension of ABC, using comprehensive cost-benefit analysis of customer requirement details, In terms of the product's performance attributes such as reliability, longevity, responsiveness and also the price of incremental changes required to obtain those attributes. The primary goal is to provide a comprehensive cost-benefit analysis of customer needs and to increase performance. In comparison, ABC II focuses more on estimating costs than on an overview of historical costs that may have little impact because the vast portion of costs has already occurred in the design stage. While Blocher et al. (2010) recognize that the ABC II seeks to assess costs and offers comprehensive advantages of products and services by translating consumer requirements to particular product characteristics such as efficiency, resilience, responsiveness. Hence, the researchers agreed that the ABC II might be described as is the approach that identifies products costs based on product analysis to series of key specifications and then analysis theses specifications to other minor and subset specifications and knowing additional costs for each specification accurately by knowing activates requirement cost to implement each specification and then identify product cost accurately by collecting all costs for each specification.

4.1 The Need of Attribute-Based Costing

Effective cost planning by determining achievement rates for each attribute from the product attributes then defining costs for all attributes as a result of using ABC II in the cost calculation is the total cost. ABC II incorporates a market-oriented theory that reflects on the commodity that cannot be marketed by the manufacture of goods that satisfy consumer demand. ABC II helps bring in alternate balances to enforce the cost of the decision. These alternative balances reflect estimated costs for one of the rates of accomplishment where administration of the facility may select one of those alternative balances which meet financial circumstances. In addition, ABC II may be strengthened in the process of allocating indirect manufacturing costs by defining requirements in the product that meet consumer needs and wishes. And lastly, ABC II is developed without stock keeping, depending on customer needs. And the target cost has also centered on the levels of achievement for each value from the product attributes to fulfill targeted targets.

5 FACILITY MANAGEMENT

Once an organization occupies any facility for the aim of implementing its core business services and processes, facilities management is then needed to support the core business and ensure continuity. Effective management of facilities is essential to any organization's success when integrating capital and activities. FM contributes to achieving strategic and organizational corporate needs, as well as ensuring an efficient and safe atmosphere through day-to-day operations. FM's position is strategically important because it translates senior decision-makers' needs into a day-to-day situation that affects people at work or where they live (BIFM, 2012).

5.1 Definitions of Facility Management

To understand the field and profession, one requires having a definition of the topic. Facility management, usually abbreviated as FM, has been

defined in several ways and from completely different aspects. Each definition is efficacious in understanding the nature of the field. The International Facility Management Association characterizes facility management as a specialty that involves several disciplines to ensure that staff, place, process, and technology are effectively incorporated into the built environment (International Facility Management Association, 2010). The British Facilities Management Institute (BIFM, 2010) defines facility management as incorporating multidisciplinary practices within the built environment and also managing their impact on people and the workplace. According to (Roper and Payant, 2014), a common concept of facility management is: the task of managing physical activity with the company's people and jobs, combining business management concepts, design, and behavioral and engineering sciences. Above are three totally different definitions from different sources; however one might see that they share some common points. All the above mentioned definitions mention people, place and method, in one kind or another. Facility Management has been represented as taking care of those three in a manner that creates them work together.

5.2 Common Functions of Facility Management

To better notice and understand what it is that facility management involves in the organization; it is good to look at the common functions of facility management. These functions include management of organization, facility planning and forecasting, lease administration, architectural or engineering planning and design, construction project management, operation, maintenance and repair, space planning, allocation and management, budgeting, accounting and economic justification, telecommunications, data communications, wire and network management, and others (Roper and Payant, 2014). As one might see, the common functions of facility management involve operations from several different fields of profession. This might explain

from one hand why facility management is described in different ways and from various focus aspects.

5.3 The need of Facility Management

At its best, facility management deals with providing support to an organization's core business. FM works towards cost-efficiency, safety, long term relationships and life-cycle, better work environment and satisfied work-force. Put it simply facility management contributes to every side of the organization to work to its complete capacity in the most efficient way. Furthermore, facility management, like other business functions, aims at creating advantages to the business. In this regard, Van den Ende (2006) writes that FM leads and must lead to decrease the costs, a better quality of products and services, an efficient company, client satisfaction and competitive advantage. These purposes might also be named as the advantages that efficient facility management brings to a company.

Van der Ende (2006) has also listed some of the advantages of facility management. In his article, he mentions a clear and transparent communication among the demand side and the supply side, a simple and manageable concept of inside and outside responsibilities, integration and coordination of all needed support services and a reduction of conflicts among inside and outside service providers. Further advantages are listed by (Roper and Payant, 2014). They mention advantages such as facility plans matching company plans, space being available when and where required, capital expenditures being planned and controlled, employee productivity is maximized and the costs being minimized, often avoided, and always expected. Facility management is a significant part of the business. And as such it might bring a lot of advantages, however in order to achieve this impact, one requirement to be capable to plan the facility management functions of a company in the most efficient way. This means overcoming some challenges. Further, to achieve efficient facility management, one has to incorporate the facility management strategy to the business strategy of the

organization. These two require working together and supporting each other. It is significant to mention that differences in culture and management form should be recognized whereas planning facility management strategy. One of the main challenges is to incorporate facility management as part of the business in all regions. The organization and its management require understanding and seeing facility management as a significant part of the business rather than narrowly as a support service. (Roper and Payant, 2014). This way the facility management strategy might reach its purpose and bring the best results. Facility management has to face and meet, like any other business sector, some laws and guidance. One of the most significant law and regulation points is safety. Always when working with people, one requirement to follow the given rules. (Atkin and Brooks, 2015). Also, environmental issues are increasingly linked with legal regulations and guidelines that need to be met.

5.4 Facility management as a profession

It was just some forty years ago that rather than speaking about facility management buildings were only maintained, serviced and cleaned and that was largely that (Atkin and Brooks 2015). Facility management was developed from this humble begin. Also, it is developed into a new professional discipline with its own codes, standards and technical vocabulary. Nowadays, for example, the British Institute of Facility Management promotes the event of facilities management as an essential, professional and strategic business discipline (BIFM, 2010). According to Atkin and Brooks (2015), the core competencies in facilities management covers, amongst other things, real estate management, financial management, organizational management, innovation and change management, and human resource management. As one can see, the professionals working in this position requires having the knowledge, not solely of one field however several activities inside the business.

6 THE IMPORTANCE OF USING ATTRIBUTE-BASED COSTING IN FACILITY MANAGEMENT

In any facility management, it is important to keep a balanced budget. To do it, managers should know the situation finances of the facility, as well as define strategies that their incomes include the requirements of the business. According to this view, facility managers are responsible to select the best option of costing methods. Therefore, the attribute-based cost method is one of the most used in companies that identify situation finance. Furthermore, Facility management aims are to decrease the costs, a better quality of products and services, an efficient company, client satisfaction and competitive advantage. Hence, the attribute-based cost is one of the most ways arisen to achieve these goals due to the ABC II helps the economic units to put good planning and strategies for the product costs and achieves the target cost and target quality. Therefore, the ABC II reduce costs and increase profits, as well as identifying attributes that met customer needs and desires in the product which achieve their satisfaction and lastly the ABC II will achieve competitive advantage and efficiency for the overall company.

CONCLUSION

The attribute-based costing is one of the most important costing methods. It is an extension of ABC, where employs detailed cost-benefit analyses concerning to information on client requirements. It is proposed due to the limitation of ABC. The primary aim of attribute-based costing is to provide a detailed cost-benefit analysis of client requirements and to enhance efficiency. ABC II achieves philosophy towards the market that focuses on the product which can be sold not produced through products manufacturing that met customer value. ABC II helps to put alternative balances that implement option costs. These alternative balances represent estimated costs for one of the accomplishment levels where facility management

can select one of these alternative balances that met financial situations. Furthermore, ABC II is produced depends on customer needs without stock keeping and achieves target cost. Therefore, the target cost has focused on accomplishment levels for each attribute from product attributes to meet aims desired. On the other hand, efficient facilities management is fundamental to the success of any organization. FM contributes to the delivery of corporate strategic and operational requirements, as well as provides an effective and secure environment by carrying out day-to-day operations. The role of FM is strategically significant as it translates the needs of senior decision-makers into a day-to-day situation affecting people at work or where they live. Finally, facility management aims are to decrease the costs, a better quality of products and services, an efficient company, client satisfaction and competitive advantage. Hence, the attribute-based cost is one of the most ways arisen to achieve these goals due to the ABC II helps the economic units to put good planning and strategies for the product costs and achieves the target cost and target quality. Therefore, the ABC II reduce costs and increase profits, as well as identifying attributes that met customer needs and desires in the product which achieve their satisfaction and lastly the ABC II will achieve competitive advantage and efficiency for the overall company. Through the case study, the researcher was found that many companies possess the basic requirements for implementing the ABC II system and this system is a new method that contributes to strengthening control over activities, in addition to contributing to restructuring the costs of products, and thus provides the administration with setting prices for each product and achieving the advantage Competitiveness. It has also been shown that traditional methods do not achieve high accuracy in allocating indirect costs on products, and thus the difficulty in determining the value of profit or loss, while ABC II achieves high accuracy in calculating indirect costs on products. In spite of this, however, there are many obstacles that limit the application of the ABC II system, the most important

of which is the companies' lack of knowledge of this system and the fear of converting to this system, as these companies depend on the integrity of traditional systems, besides that the implementation of the ABC II system requires a high cost compared to traditional systems.

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