

## Activity Based Costing System and Model Application in a Marble Business

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**Abstract :** As well as being the key of economic development, the growth of national economies is the most important factor that pollutes environment, because it increases the consumption. Companies are the biggest producer and consumer in economy. Businesses manufacture their products in multiple countries and remove borders because of today's economic and competitive conditions. Protection and development of resources is the basis of sustainable development. Today, most businesses face difficulties about rival businesses' competitive power and price politics. But, for well established firms "crises are temporary, competitiveness is permanent", so the target of businesses is to obtain this competitive power and sustain it. ABC system is a more accurate cost calculation method. ABC system focuses on activities instead of traditional volume based costing. ABC system focuses on what causes the formation of costs and how to make contact with costs and products. Application is made by taking a marble company as an example, and results have been evaluated.

**Keywords :** Activity based costing system, Marble Industry, Cost

### Introduction

The technological advances experienced in our day is not only affected the production systems but also these advances have necessitated changes in accounting structures. Because of these interactions, businesses were forced to move to the new costing system in order to adapt economic development. Companies had to use new production technologies because of the acceleration of communication and international competition (Kaygusuz & Dokur, 2009).

With 1980s completely aggravated new environment and global competitive conditions, were the reasons why companies tried to develop management. The other reasons for his efforts were (Öker, 2003):

- Rapid transformation of computer use in the production process
- Innovations in production technology and quality control.
- Developments in the field of communication and logistics

In accordance with the above-mentioned reasons, new methods and approaches that applied in production management, provided the companies to improve quality, to reduce the level of stock and losses (Hacıüstemoğlu & Şakrak, 2002)

In this study, the concepts of cost and accounting are analysed separately. The advantages and disadvantages of activity-based costing system are revealed. It is tried to be understood whether this design is appropriate for the companies by an application for marble companies.

## **The concept of Cost**

The goal of all companies is to create a new value at the end of their activities. General meaning of cost is the monetary expression of sacrifices incurred for reaching the goal (Uragun, 1993).

## **Activity-Based Cost System**

Activity-Based Cost System has emerged as a result of inadequacy of traditional methods. Cost elements, make distribution costs, moving from the fact that activity uses resources. Cooper and Kaplan (1988) first introduced the activity-based cost system and increased its popularity. According to Cooper and Kaplan, Activity-based cost is a strategy aimed tool not a formal accounting method.

In today's increasingly competitive conditions, cost factors which used for production has to be determined exactly. Besides determining the production costs, ABC makes a database about activities and gives important information about the functions of the company. Here the concept of activity, is defined as work made in an organization (Şakrak, 1997).

ABC method is based on certain assumptions. These are (Holmen, 1995):

- Activities use resources,
- Product/services use activities
- In the method of ABC, using approach is dominant instead of spending.

These assumptions reveals the structure of the model and gives the direction for operation. There is a cost pool for each activity.

## **Process value analysis**

Process value analysis is a systematical analysis that is required for service fulfillment. This analysis determines all the activities that consumes the sources for producing or serving. It defines activities as creating add value and not (Arzova, 2001).

## **The selection of distribution key**

ABC system provides more reliable information about cost by using multiple distribution switches instead of traditional cost methods while loading costs to products;/ services. According to this there have to be a distribution key for all activities made by the company.

The key of ABC system which represents the activity best must be determined and overall production costs of the organization should be distributed with this key. Inappropriate selection of keywords can lead all efforts in vain. Therefore keys have to be determined completely. ABC system focuses on activities instead of chapters. While loading costs on products, the activities are undertaken. Products are manufactured as a result of activities. Activities consists of several subactivities. Production preparation activities can be shown as an example for sub-activities.

## **Monitoring costs for activity headquarters**

ABC first installs resource costs to activity centers. Also it performs a two stage action by loading these costs to products/services. Cost carriers reflect the causation relations between activities and cost group.

To avoid any distortion in product costs, they should be distributed directly to cost centers (Erdoğan, 1995).

## **Cost Carrier Selection**

One of the most important stage in the design process is the selection of carrier operations. According to Cooper the selection of activity carriers requires two important decisions that are separated but related (Cooper,

1993: 34). How many activity carriers will be used? Which activity carriers will be used? These two decisions are related because the quality of selected activity carrier affects the number of required activity carrier.

### **The limits of Activity Based Cost**

There are certain issues that must be emphasized about activity based costing method. The following two conditions must be considered to avoid false results. First, excess capacity costs must not be loaded to product costs, because this situation causes the reduction of demand. Secondly, all research and development costs related to new products and product lines. The companies which prepare a wide R & D program for short life circled products, have to measure costs and incomes, according to the life time of the products.

### **Marble Supply and Usage in Turkey**

Rock formations which can be used as marble are found in many parts of our country., Different organizations and their studies indicate that Turkey's marble reserves are around 14 billion tonnes. There are about 550 marble quarries. The working field is about %8. In other words, 92% of known fields are not operational.

Uses of marble is construction industry, cemeteries, sculpture, jewelry making and decoration. The correct choice of marble is possible by complying with qualification standards of marble.

Many factors influence to determine using places of marble.

### **Cost Calculation of Marble**

At the end of each production process, production loss should be estimated and its impact on costs should be measured. While making the process of calculating, production cost is accepted for production cut. The costs of products and semi products are calculated separately. Costs which are created in help service locations, should be loaded to products which are produced at appropriate measures.

It is important to calculate the costs, correctly, in time and reliable. Therefore it is necessary to be careful about determining methods.

### **Information about the company which ABCS application will be applied to**

X marble industry and Trade Company operates since 1984 in Afyon district. Its subsidiary, X Marble Industry Trade Limited company operates since 1998. Business manager and his assistant undertakes the administrative staff and some jobs in the department of production. There are 28 staff workers, 9 administrative staff in total 37 staff in may 2009.

They produce 12000 cubic meters of marble per year.

X marble industry and Trade Company exports to United States, Canada, Germany, Italy, Middle East and Gulf Countries such as Israel, Saudi Arabia, United Arab Emirates where its a large part of exports.

### **Existing Cost Analysis Method**

Businesses have a wide range of production. Production quantities and production techniques of these products differ. These differences, hardens to calculate the product costs exactly.

Direct first material and tool costs are loaded directly to products and labour and general production costs are loaded indirectly.

### **Activity Based Costing Application**

Activity Based Costing System based on activities in which the costs of activities consists of the resources consumed. These informations are measured from the balance of three months, january-march 2009.

Direct labour costs	90.944,25 TL
Business material costs	7.533,545 TL
Spare parts costs	8.143,336 TL
Other indirect material costs	1.403,690 TL
Meal expenses	4.856,647 TL

Electricity expenses	2.537,226 TL
Water expenses	3.870.433 TL
Fuel expenses	13.230,575 TL
Repair and maintenance labor costs	8.000,000 TL
Vehicles expenses	1.104,267 TL
Communication expenses	874,359 TL
Depreciation of fixed asset management department	122,152 TL
Stationery expenses	125,901 TL
Cleaning materials expenses	432,863 TL
Photocopying costs	27,669 TL
Computer equipment expenses	223,933 TL
Photocopying material costs	55,203 TL
Fax material costs	42,000 TL
Drinking water expenses	487,500 TL
Comprehensive business insurance	1,895 TL

Above expenses are given from balance of business.

Traditional Costing System		Activity Based costing System	
<b>1) Lilac Beige Marble</b>		<b>1) Lilac Beige Marble</b>	
Unit Cost = 20,14 TL		Unit Cost = 14,804 TL	
Unit Sales Price = 27 TL		Unit Sales Price = 27 TL	
Unit Profit = 6,86TL	%25,4	Unit Profit = 12,196TL	%45,7
<b>2) Afyon White Marble</b>		<b>2) Afyon White Marble</b>	
Unit Cost = 18,97 TL		Unit Cost = 12,207 TL	
Unit Sales Price = 24,5 TL		Unit Sales Price = 24,5 TL	
Unit Profit = 5,53TL	%22,5	Unit Profit = 12,293	%50,17

## Conclusions

According to the results of the traditional cost system, unit cost of lilac beige marble is 20.14TL and the unit cost of Afyon marble is 18.97TL. According to the result of this method, the price of lilac beige marble is 27 TL/M2 and Afyon white marble is 24.5 TL/M2 .

According to results of activity based costing system, unit cost of lilac beige marble is 14.804TL and Afyon marble is 12.207 TL. Unit sales price of lilac beige marble is 27 TL/M2 and afyon white marble is 24.5 TL/M2.

The unit profit in traditional method is 5.53 TL. In activity based costing system unit profit is 12.293 TL. According to ABC system unit profit rate is 50.17% and in traditional costing system unit profit rate is 22.5%.

ABC system gives more accurate and reliable information than traditional costing system. Besides all well designed and developed an activity based costing system gives positive results in both production business and service business.

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