GE-INTERNATIONAL JOURNAL OF MANAGEMENT RESEARCH
VOLUME - 3, ISSUE- 7 (JULY 2015) IF-4.316 ISSN: (2321-1709)

IMPLEMENTATION OF ACTIVITY BASED COSTING IN A SMALL MANUFACTURING FIRM – A TRIAL APPROACH

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ABSTRACT

Activity-based costing and activity-based management have been around for more than fifteen years. Most forward-thinking companies have implemented them, or are in the process of doing so. ABC is not a method of costing, but a technique for managing the organization better. It is a one-off exercise which measures the cost and performance of activities, resources and the objects which consume them in order to generate more accurate and meaningful information for decision-making. Activity-Based Costing measures the costs and profits of an organization based on the activities performed within that organization. By focusing on processes that contribute to revenues and business operations, ABC can accurately determine how each process relates back to specific products, customers, or services. This can make a big difference after considering warehouse, sales, customer service, administration and other costs that are often applied at a standard rate, if at all. Activity Based Costing helps managers' make better decisions about product design, pricing, marketing and mixes and encourages continual improvement.

INTRODUCTION

Activity Based Costing, or ABC for short, has been in use since the early 20th century. As the manufacturing industry became more complex, managers needed a way to keep a closer watch on manufacturing costs within the company. This in turn allowed them to more appropriately price their products, making them more competitive.

General Purpose

The purpose of ABC is to more accurately define the overhead and/or indirect costs associated with the manufacturing process and apply those costs to the product. In the past, cost

accountants would add a percentage of expenses into direct costs as an allowance for indirect costs. With the advent of ABC, expenses are now more accurately defined and added to product lines appropriately. Although the process to define these expenses is sometimes tedious and costly, for some companies it provides an invaluable tool with which to measure the profitability of a product.

Activity Based Costing (ABC) is an accounting technique that allows an organization to determine the actual cost associated with each product and service produced by the organization without regard to the organizational structure. It is developed to provide more-accurate ways of assigning the costs of indirect and support resources to activities, business processes, products, services, and customers. ABC systems recognize that many organizational resources are required not for physical production of units of product but to provide a broad array of support activities that enable a variety of products and services to be produced for a diverse group of customers. The goal of ABC is not to allocate common costs to products. The goal is to measure and then price out all the resources used for activities that support the production and delivery of products and services to customers.

OBJECTIVES OF THE STUDY

- To study the process of Activity Based Costing on a whole.
- To apply ABC approach in S&S Power Switchgear Equipment Limited.
- To demonstrate the financial performance of the S&S Power Equipment Limited through the application of ABC approach.
- To provide management with accurate information on financial operations to control cost.
- To compare the Traditional Costing System and Activity Based Costing and to find differences.
- To offer suggestions for the implementation of ABC in S&S Power Switchgear Equipment Limited.

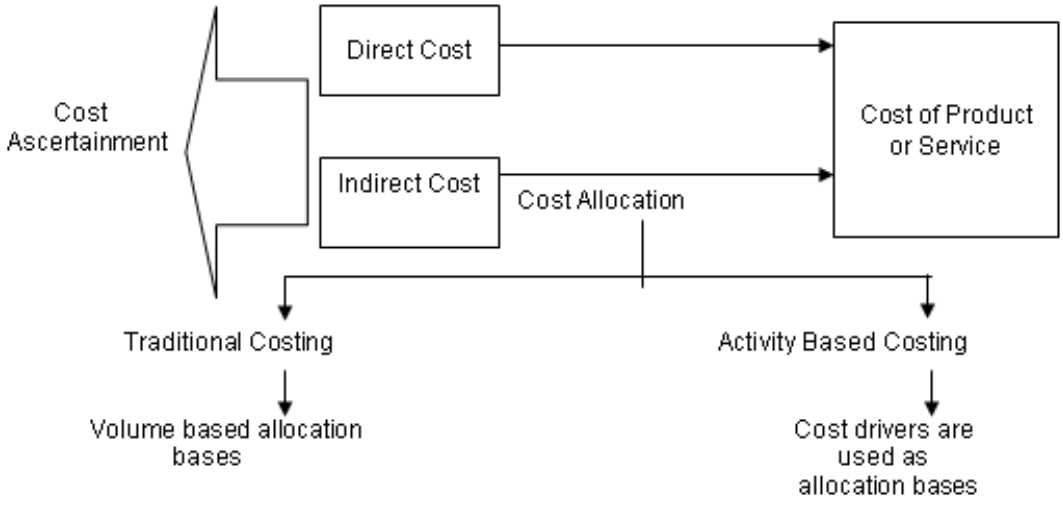
LIMITATIONS OF THE STUDY

- A peripheral understanding of the organizations departmental functioning can only be done within the quoted period.
- Company doesn't reveal any corporate secrets.
- The cost of obtaining and interpreting the new information may be considerable. ABC should not be introduced unless it can provide additional information for management to use in planning or controlling decisions.

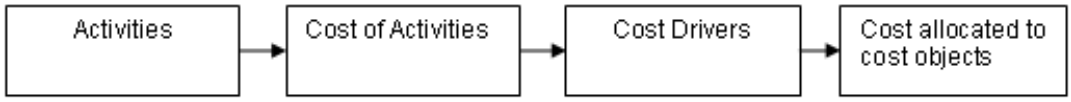
RESEARCH DESIGN

For this study five year data has been taken. (2010 to 2014). With the help of taken data a comparison is made between the cost per unit as per traditional cost accounting and activity based costing cost per unit. The scientific tools used to prove the hypothesis is Correlation. To prove the study the products used are A, B, and C. Various cost drivers are identified and applied for this study.

DIAGRAMATIC VIEW OF TRADITIONAL COSTING AND ACTIVITY BASED COSTING



The following figure explains the entire process of cost allocation under ABC.



REVIEW OF LITERATURE

Introduced by **Robin Cooper and Robert S. Kaplan (1991)** Activity Based Costing (ABC) was described as a potential approach to solve traditional costing problems. It soon claimed its major advantages and overcame limitations of TCA despite of a rising number of questions concerned with adoption and implementation ABC. However, Ittner ET all (2002) stated that ABC would only have indirect effect on financial efficiency. Since then various studies have been conducted on the real benefits and the actual influences of ABC on performance of accounting system.

From the view of **Stewart, G.B (1991)**, "Activity Based Costing provides complete data on business activities in "financial metric form" It can be applied to business according to variable factors – thus it is more innovative compared with TCA, ABC has three main objectives: A tool to guide strategic decision making; insights in process of business to allowed resources to be efficiently allocated and minimize costs; an allocation technique in determining internal cost prices and selling prices" production of a company in order to see whether or not applying ABC was the right solution.

SOFTWARE PACKAGES USED FOR ABC CONTROL

ABC Focus

It is tool for costing products and services and improving efficiencies. "ABC Focus is a tool which makes ABC concepts simple to understand and use. It is a very attractive package because its flexible costing model, consolidated reporting and a very competitive pricing regime make it suitable for large and small business in virtually any industry." ABC Focus provides a structured approach to cost products, services, processes, activities and unused capacity. It provides a platform on which to confidently adjust pricing and activities for competitive advantage.

QPR Cost Control

The user-friendly QPR Cost Control system helps to understand the real cost structure of the company and identify how the business really works. Using the proven approach Activity Based Costing / Management, the software identifies exactly what costs are linked to each individual

customer, product, service or activity. QPR Cost Control gives the information to make decisions about the most profitable path for the business. QPR Cost Control is used successfully by all types of organizations, from large international corporations to universities, hospitals and government agencies.

Why is ABC needed?

ABC is a costing system which is applied in many manufacturing firms. Many researchers noticed ABC method and considered ABC as an innovation in cost management accounting. Many ideas stated that ABC method is necessary to trace overhead costs to cost objects and thus properly account for batch and product- level costs (Cooper 1990). Moreover, Robin Cooper, Robert Kaplan and Thomas Johnson reported that ABC method is a costing method employed to assign direct costs to the general audience costs (Cooper, 1998a; 1998b; 1990; Cooper and Kaplan, 1998; Johnson 1990). Thus, ABC method is designed to devise the limitations of TCA. ABC also enables managers to make right decisions, corresponding with product structure and competitive strategy of a company. Although ABC system is applied widely in manufacturing firms, according to Rotch (1990); according to Tanju and Helmi (1991), Activity Based Costing can be used in all forms of business firm. Many writers recommend using ABC method to support improvement in Work - in - process (Turney 199Ib) and develop designs of product cost efficiently (Cooper and Turney, 1990).

Implementation of ABC:

Cost classification in ABC:

- **Activity levels**

To determine costs of resources to activity, according to Blocher (1991), a business must classify levels of costs, resources and activities. ABC system often uses a four-level system:

+ **Output unit level costs**

Output unit level costs are costs of activities performed on each individual unit of products and services which are assigned directly to products (Blocher, 1991). For example, production costs to

turn raw materials into units of product. These activities must be performed on each unit such as direct labor costs that are related to activities of running automated machinery.

+ **Batch Level costs**

Batch level costs of activities are related to a group of products and services, which help to produce a batch of product rather than each individual unit of products (Blocher, 1991). A good example is production planning for a batch of product or service, when a business purchases a variety of raw materials, purchasing costs account for a considerable proportion in overhead. Purchasing cost involves costs of order planning, raw material receiving, and payment to suppliers.

+ **Product Sustaining Costs**

Product sustaining costs are costs of activities undertaken to support individual products or services regardless of the number of units or batches in which units are produced and consumed, such as product design, marketing, advertising, research, etc (Blocher, 1991).

+ **Facility Sustaining Costs**

Facility sustaining costs are costs of activities performed at each facility that can be seen as periodical costs (Blocher, 1991). They are traced to all activities performed at every stage to support the organization as a whole, such as management costs, facility sustaining cost, taxes and asset assurance. Most activities of facility sustaining costs are assigned to all products and cannot be traced to each individual product because they support the business as a whole.

APPLICABILITY OF ABC IN THE COMPANY

S&S PSE has state of art modern manufacturing facility at Pondicherry, India equipped with testing facilities which are vital to meet the specific requirements for the manufacture of High Technology Power Protection Equipment's for Transmission and Distribution. Careful selection of automatic and semi-automatic machines enables S&S Power to manufacture quality products to meet the stringent customer requirements.

S&S PSE had rapid growth in sales, which has been mainly due to the Customer patronage in buying our products repeatedly and favoring us with large quantity orders. This was supported by S&S Power with the introduction of new products to meet the customer's changing needs.

TRADITIONAL COSTING

YEAR	MACHINE HOURS- $\frac{\text{Total driect labour}}{\text{Hourly labour rate}}$	LABOUR HOURS - $\frac{\text{Total Overheads}}{\text{Total Hours}}$
2014	127907854/ 6686 = 19131	459437621 / 19131 = 24015
2013	115232299/3956 = 29136	414064323/29136 = 14211
2012	105524084 / 4830 = 21848	414064324 / 21848 = 18952
2011	99363543 / 3721 = 26703	441042164 / 26703 = 16517
2010	79174138 / 2718 = 29130	351033513 / 29130 = 12051

Table showing Traditional costing Cost per unit and ABC cost per unit from 2010 to 2014

Year	COST PER UNIT					
	A(TC)	A (ABC)	B (TC)	B (ABC)	C (TC)	C(ABC)
2014	4208	4234	4193	4225	4211	4233
2013	4032	4075	4017	4065	4082	4085
2012	4035	4050	4060	4075	4074	4090
2011	4048	4071	3975	4045	3986	4070
2010	4049	4059	3951	3978	3874	3896

The Table shows the cost per unit calculation from the year 2010 to 2014. It clearly shows in the long run by using the ABC definitely reduces the cost per unit. Moreover the ABC helps to remove the unnecessary expenditure. Using cost drivers improves the efficiency of the organization.

Hypothesis applied for this study

H0 – There is a positive relationship between Traditional Cost Accounting and Activity Based Costing.

Ha – There is no positive relationship between Traditional Cost Accounting and ABC.

PRODUCT - A

x	y	X-x-mean	Y-y-mean	X^2	Y^2	XY
4208	4234	134	136	17956	18496	18224
4032	4075	-42	-23	1764	529	966
4035	4050	-39	-48	1521	2304	1872
4048	4071	-26	-27	676	729	702
4049	4059	-25	-39	625	1521	975
				$\sum X^2$- 22542	$\sum Y^2$ -23579	$\sum XY$ =22739

r-22739/$\sqrt{(22542 * 23579)}$, r - $\pm$0.98.

The coefficient relationship between TCA and ABC cost per unit 0.98. It states that there is a highly positive correlation between Traditional cost and Activity Based costing.

PRODUCT – B

x	y	X-x-mean	Y-y-mean	X^2	Y^2	XY
4193	4225	154	147	23716	21609	22638
4017	4065	-22	-13	484	169	286
4060	4075	21	-3	441	9	-63
3975	4045	-64	-33	4096	1089	2112

3951	3978	-88	-100	7744	10000	8800
				$\sum X^2$- 36481	$\sum Y^2$ - 32876	$\sum XY$ - 33773

$r - 33773 / \sqrt{(36481 * 32876)}$, r- ± 0.97.

The coefficient relationship between TCA and ABC cost per unit 0.97. It states that there is a highly positive correlation between Traditional cost and Activity Based costing.

PRODUCT C

x	y	X= x-mean	Y= y-mean	X^2	Y^2	XY
4211	4233	166	158	27556	24964	26228
4082	4085	37	10	1369	100	370
4074	4090	29	15	841	225	435
3986	4070	-59	-5	3481	25	295
3874	3896	-171	-179	29241	32041	30609
20227	20374			$\sum X^2$= 62488	$\sum Y^2$ = 57355	$\sum XY$ =57937

$r - 57937\sqrt{(62488 * 57355)}$, $r - \pm 0.96$

The coefficient relationship between TCA and ABC cost per unit 0.96. It states that there is a highly positive correlation between Traditional cost and Activity Based costing.

FINDINGS

1. It is found that by comparing the Traditional Costing Method and Activity Based Costing method it is observed that the Traditional cost per unit value for product A, B, C in the year 2014, are 26%,32%,22% respectively. Therefore, there exist high differences in cost per unit value of Activity Based Costing when compared to Traditional Costing.

2. It is found that by comparing the Traditional Costing Method and Activity Based Costing method it is observed that the Traditional cost per unit value for product A, B, C in the year 2013 are 43%,48%,3% respectively. Therefore, there exist high differences in cost per unit value of Activity Based Costing when compared to Traditional Costing.

3. It is found that by comparing the Traditional Costing Method and Activity Based Costing method it is observed that the Traditional cost per unit value for product A, B, C in the year 2012 15%,15%,16% respectively. Therefore, there exist high differences in cost per unit value of Activity Based Costing when compared to Traditional Costing.

4. It is found that by comparing the Traditional Costing Method and Activity Based Costing method it is observed that the Traditional cost per unit value for product A, B, C in the year 2011 are 23%,70%,84% respectively. Therefore, there exist high differences in cost per unit value of Activity Based Costing when compared to Traditional Costing.

5. It is found that by comparing the Traditional Costing Method and Activity Based Costing method it is observed that the Traditional cost per unit value for product A, B, C in the year 2010 are 10%,27%,22% respectively. Therefore, there exist high differences in cost per unit value of Activity Based Costing when compared to Traditional Costing.

6. It is observed that in the year 2014 the ABC Cost change of product A is 0.61, Product B is 0.76 and Product C is 0.52.

7. It is observed that in the year 2013 the ABC Cost change of product A is 1.06, Product B is 1.19 and Product C is 0.07.

8. It is observed that in the year 2012 the ABC Cost change of product A is 0.37, Product B is 0.37 and Product C is 0.40.

9. It is observed that in the year 2011 the ABC Cost change of product A is 0.57, Product B is 1.76 and Product C is 2.10.

10. It is observed that in the year 2010 the ABC Cost change of product A is 0.25, Product B is 0.68 and Product C is 0.57.

SUGGESTIONS

Implementation of Activity Based costing helps to control activities. Therefore a better control of activities can be derived through cost drivers. Activity Based Costing will enhance a process to more realistic view and background of the incurred cost, without disturbing the accumulation procedures. Implementation of Activity Based Costing improves the product cost to aid decision making in management in performance measurement. The process of Activity Based Costing liberates management to detect and eliminate the wastages. Activity Based costing does not allocate the cost simply by using a single allocation base such as labor and machine hours. Instead, it uses different allocation bases for particular activity.

CONCLUSION

Activity based costing is a practical tool that can be used by companies of all sizes not only to better determine the cost of their products, but also to better understand why they cost and what they do. The organization can acquire more profitable mix of products, identify those activities that are prime candidates for improvement, better use their limited capital funds and generally make better business decisions.

In competitive environments, managers require better information, not only about their products and service costs but also about the cost of the different activities needed to create these products and services. Traditional costing system does not provide this information. The activity based management approach allows everyone in the organization to understand where costs are being incurred, why they are being incurred and how these activities contribute to higher value added to customers.

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