



BANGLADESH
COST ACCOUNTING
STANDARDS
BCAS - 20

Activity Based
Management

BACS 20: Activity Based Management

20.1 Introduction

Activity Based Management (ABM) deals with the procedures or phases of implementing ABM system in organization. Each organization requires information to make decisions, set priorities, allocate resources and monitor the actions taken. Activity Based Costing (ABC) covers the accounting perspective to provide the accurate cost information and ABM undertakes a managerial perspective focusing on using information generated by ABC to manage activities and improve the business. The analysis done in ABC provides both financial and non-financial information which is the basis for ABM. It makes the cost and operational information (activity information) useful by providing a value analysis, cost and activity driver analysis, and performance measures to initiate and support various improvement efforts with an ultimate goal of improving the quality of decision.

20.2 Objectives

The standard focuses on the procedures of implementing Activity Based Management in organizations for operational growth as well as improved decision making. More specifically, it tries to propose standardized procedures of implementing the ABM for the management accountants and others who want to implement ABM system in their respective organizations.

20.3 Scope

20.3.1 The standard provides general guidelines for implementing ABM system in manufacturing as well as service organizations for improvement of operations and better decision making.

20.3.2 More particularly, the standard may be applied by the management accountants, as well as others who want to implement ABM in their organizations, among others, for the following purposes:

- a) **Attribute analysis:** Under attribute analysis costs and performance data are classified and combined into manageable and controllable clusters. ABM system can use different attributes or data tags for a specific cost. These data attributes help management of the companies to perform different dimensions of management problem using the same basic warehouse/ storage of data. Some common forms of attribute analysis are value analysis, time variability analysis, cost of quality analysis etc.
- b) **Strategic analysis:** ABM system supports strategic analysis by providing both strategic and operational information. Strategic analysis, using ABM, may include: strategic planning/budgeting, consolidation of operations analysis, acquisition analysis, and analysis of revenue and growth potential.
- c) **Benchmarking:** ABM supports different type of benchmarking e.g. internal benchmarking, industry/ competitive benchmarking, best-in-class benchmarking etc.
- d) **Operational analysis:** ABM may be used to perform operational analysis, including "what-if" analysis, project management, creation and use of activity based performance measures, capacity management, constraints analysis, process based costing etc.

- e) **Profitability/ pricing analysis:** Organizations may use ABM in analyzing costs and benefits of products/ services and processes both in the present scenario and post-improvement scenario. ABM can also be used in pre-launch analysis and improvement of product/ service profitability. ABM facilitates other analysis including product/ service profitability analysis, distribution channel profitability analysis, market segment profitability analysis, target and life-cycle costing etc.
- f) **Improvement of operating process:** ABM may be used for improvement of operating process identifying causes of variation, waste, inefficiency and then taking incremental or quantum change efforts to increase the value per resources consumed by an organization. Process improvement may include business process modeling, business process reengineering, total quality initiatives, analysis of outsourcing, shared services opportunities etc.
- g) **Product mix:** ABM may help to take decision regarding the product mix- which products to produce/ sale and at what proportion.

20.3.3 This standard may be followed by companies and other business or non-business organizations where cost and management accounting is in practice either as a statutory obligation or to support management decision making process.

20.4 Key Features

The key features of this standard are pointed below -

- a) Presenting activity based management system;
- b) Identifying different steps in implementing ABM system;
- c) Analyzing both value added and non-value added activities for improving performance;
- d) Applying benchmarking technique to ensure continuous improvement; and
- e) Listing some ratios, values and measures to trace the improvements caused by ABM.

20.5 Definitions

The following terms are used in this standard with the meanings specified -

20.5.1 Activity Based Costing: As defined in BCAS 14.5.1.

20.5.2 Cost driver or activity driver: As defined in BCAS 3.5.6.

20.5.3 Value added activities: An activity of the process for which the perceived value to the customers will be reduced if it is eliminated.

20.5.4 Non-value added activities: An activity which has the potential to be eliminated without impairing or reducing the perceived value to the customers.

20.5.5 Value added time: The time required to complete all the value-added activities of the process.

20.5.6 Total cycle time: Total time required for all the activities of the process (i.e. total time required to complete a particular process).

20.5.7 Value added cost: Total costs added by all the value added activities of a process.

- 20.5.8 Value analysis: The process of utilizing information collected about business process and examining various attributes of the process (e.g. diversity, complexity, capacity etc.) to identify candidates for improvement efforts.
- 20.5.9 Time variability analysis: Analysis of the variances in the time needed to complete an activity or provide a service with standard time allowed for the same and to develop ways to reduce these variances.
- 20.5.10 Cost of quality: A management reporting technique where quality costs within an organization are identified and measured using four basic categories- prevention, detection, internal failure, and external failure.
- 20.5.11 Benchmarking: A methodology, where an activity is identified as standard, or a benchmark, by which a similar activity will be judged.
- 20.5.12 Operational analysis: An analysis which seeks to identify, measure, and improve current performance of key processes or operations within an organization or firm.

20.6 Standard

- 20.6.1 An overall assessment of key business processes and activities should be conducted in a way that all activities in that processes are identified. Each activity should be quantified to reflect its contribution to the achievement of process objectives, where the process objectives will reflect customers' requirements in terms of costs, quality and service and achievement of overall strategic objectives of the organization. Activity Based Management should be considered as a tool to continuously increasing the value addition to customers and improve the overall strategic performance of the organization.
- 20.6.2 The below mentioned stages may be followed in implementing the ABM in an organization to manage and improve activities:
 - a) Identification of process objectives
 - b) Mapping the process
 - c) Quantification of the activities in the process
 - d) Identification of value-added and non-value-added activities
 - e) Analysis of critical activities
 - f) Benchmarking the activities
 - g) Continuous improvement of the activities
- 20.6.3 The starting point of the activity management should be with specifying the process objectives due to the fact that individual activities to be performed under a process will be evaluated considering the process objectives.
- 20.6.4 The process objectives, in turn, would reflect the requirements of target customers for the product produced or service rendered. Process objectives, therefore, would reflect the results of strategic planning chosen to meet the customers' requirements, to increase the value addition to customers and generally include cost, quality and service considerations.
- 20.6.5 Process mapping includes sequentially identifying each of the activities in a process i.e.

visually representing each of the steps of a process. Process map will provide a common understanding of the entire process and what specific roles played in and contributions made to the achievement of process objective by process participants (process activities).

- 20.6.6 Operating personnel having the experience of managing and running the processes directly need to be involved in process mapping job to ensure that all the process activities are included.
- 20.6.7 Each of the activities under a process will be assigned measures for particular process objective and these measures will involve quantifying not only the costs but also the time and quality associated with a process activity. It involves finding what cost and/or time is required per unit of cost driver of that particular activity. The techniques of Activity Based Costing (ABC) will be used for the purpose.
- 20.6.8 It will not be appropriate to confine process measurements to cost only. The failure to consider strategic variables other than costs will limit the ability of the activity-based management to identify the improvements on strategic management process other than cost, and hence the objective of the activity-based management will not be achieved.
- 20.6.9 Quantifying each activity of the process will provide information about how each activity contributes to the organization's overall performance on its key strategic variables and also the process improvement efforts can be prioritized.
- 20.6.10 A thorough analysis of each of the process activities will have to be conducted to classify it as value added or non-value added. If it is found that the activity can be eliminated with no deterioration of the product attributes- performance, functionality, quality, perceived value - it will be classified as non-value added activities. If not, the activity should be classified as value added activities.
- 20.6.11 Necessary care should be taken to classify value-added and non-value-added activities because reporting an activity as non-value-added can become a sensitive issue having human factor on it. Nobody wants to be labeled as performing non-value-added activities. Focus should be given on activities, not on the people who perform the activities.
- 20.6.12 Practically it may not be possible to analyze all of the activities at once because time and resources are limited. Therefore, it is required to focus on the most critical activities which all add value to customers or help the business to operate effectively and efficiently.**
- 20.6.13 To identify critical activities, major activities of the process may be listed with the time and cost associated against each of the activities. The activities consuming maximum time may be termed as the time-critical and with the maximum costs may be considered as cost-critical. For this purpose time weight and cost weight of each of the activities may be determined as follows:
- Time weight of the activity A (W_{tA})= $T_A \div T_{Total}$, where T_A is the time required by activity A and T_{Total} is the total time of the process
- Cost weight of the activity A (W_{cA})= $C_A \div C_{Total}$, where C_A is the cost of activity A and C_{Total} is the total cost of the process.
- Total weight, then, may be calculated by summing up time-weight and cost-weight of each of the activities under the process.

- 20.6.14 The activities may be ranked considering the time weight or cost weight or total weight as per requirement. If the objective is to reduce cost, rank may be done based on cost weight and so on. The activities may be ranked in descending order with the highest time weight/ cost weight/ total weight comes first. The activity with the highest cost/ time/ total weight will be considered as the most critical activity and may be chosen for improvement first. Depending on the time and resources availability other critical activities may be identified accordingly considering the weight of that particular activity.
- 20.6.15 Activities under the process should be benchmarked to determine the standards for performance. Benchmarking can be done within the organization (comparing with the similar activities of other departments/ units), within the industry (comparing with best practice in the industry for performing the similar activities), with the competitors (comparing with how the competitors do in the performance of similar activities). Benchmarking can focus on the ideal way to design a particular activity under a process or an entire process. It is suggested that the benchmarking should focus on the critical activities as identified in the previous step, which can be expanded gradually.
- 20.6.16 In the benchmarking process the activities may be measured based on factors like quality, lead-time, flexibility, cost, customer satisfaction or other factors which the organization may choose to improve. After the activities are measured those can be rated against an identified best practice and can find the areas where there is scope for improvement.
- 20.6.17 Although the objective of the ABM is to eliminate the non-value activities, in the case they are not practically possible to be eliminated in the short run the non-value-added activities can be a target for continuous improvement.
- 20.6.18 Continuous efforts should be there to continuously improve the performance of value-added activities or critical activities. Continuous efforts include documenting, understanding and improving the existing activities so that their performance meets the process objective.
- 20.6.19 Some of the strategies or methods to improve the performance of the activities may include, among others, the following:
- a) Reduction in the time or effort required to perform an activity under the process - This reduction may be made through process or product improvement.
 - b) Elimination of unnecessary activities - If an activity is not valued by customer or not essential for running the organization can be subjected for elimination.
 - c) Selection of low-cost activities - Designers of products and processes may have the choices among competing activities. This offers a means for reduction of cost by picking the lowest cost activity.
 - d) Sharing of activities - In the case customer has common needs it is wasteful not to serve those needs with the same activities. Product designers can use common parts- one which is used in several products to perform the same function- in new product designs. The activities associated with the common part- part number maintenance, scheduling, vendor relations etc. can be shared by all products that use them.

20.7 Recording and Reporting

20.7.1 Documentation is an important part of ABM system. The ABM documentation may include the following:

- a) Business process relationship map;
- b) List of key and significant activities including possible performance measures and cost drivers for each of key and significant activities;
- c) The information about benchmarking of processes/ activities;
- d) Requirements of ABM implementation and available resources; and
- e) The activities taken, results, conclusions and recommendations for future in a documented forms.

20.7.2 There should be a continuous system for reporting the performance measurements. The performance measurements may be linked with the objective/ target for improvement. The performance measures may include the following:

$$\text{Manufacturing cycle efficiency} = \frac{\text{Value added time}}{\text{Total cycle time of process}}$$

$$\text{Manufacturing cycle efficiency} = \frac{\text{Value added costs}}{\text{Total process costs}}$$

20.7.3 Performance measurement can be done for each of the key/ significant activity of the process. For example, the time and/or cost required to complete the activity earlier may be compared to that is required after taking the necessary efforts for reducing the same.

20.7.4 Performance measurement may also be qualitative ones.

20.8 Effective Date

This standard will be effective from January 1, 2017 onwards.

Appendix 20A

Steps in Activity Based Management

It is very important to follow discipline while applying ABM to get maximum benefit out of the implementation of ABM. The ABM implementation team must work on it before starting any such activities. Following steps are provided to guide the team for smooth implementation of ABM which is a part of this standard.



Appendix 20B

Example on application of Activity Based Management in a small company

ABC Limited ("The Company") is a small company, operates in the picture framing industry. It produces four types of machines (viz. sander, splitter, shaper and foiler) for the purpose of picture framing. Machines are produced in standard specifications and as per customers' requirements. The parts/ materials required to manufacture those machines are purchased from sub-contractors and suppliers. The assembly of all of these parts is the main activity of the company. The company works in a traditional way and does not employ Activity Based Management (ABM) practice presently.

In the following sections it is shown how ABM can be implemented in the ABC Limited.

Step 1: Identification of process objectives

Let us identify the process objective be providing more value to customers by giving products with reduced cost

Step 2: Mapping the process

Using ABC technique it is found the following are the major activities done regarding four-head foiler production before the point of marketing and distribution:

- a) Purchasing
- b) Assembling
- c) Inventorying
- d) Inspection
- e) Engineering support
- f) Personnel support
- g) Material handling (movements among the processes)
- h) Miscellaneous activities

Step 3: Quantification of the activities in the process

ABC also provides the following information regarding the quantification of the above activities for a month:

Name of activity	Cost of the activity (Taka)	Cost driver	Volume of cost driver	Cost driver rate (Taka)
Purchasing	39,648.0	No. of orders	16	2,478.0
Assembling	106,370.4	Labor hours	82	1,297.2
Inventorying	58,944.0	Stock value	192,000	0.3
Inspection	22,140.0	No. of inspection	450	49.2
Engineering support	177,600.0	Staff hours	80	2,220.0
Personnel support	36,096.0	Labor hours	470	76.8
Material handling	24,480.0	No. of movements	1020	24.0
Miscellaneous activities	99,840.0	Labor hours	520	192.0
Total manufacturing overhead	565,118.4			

Step 4: Identification of value-added and non-value-added activities

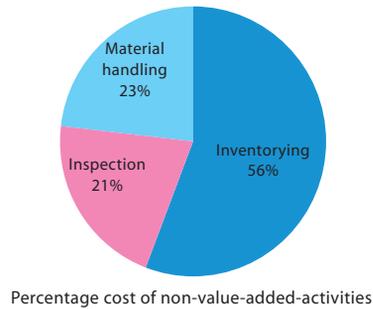
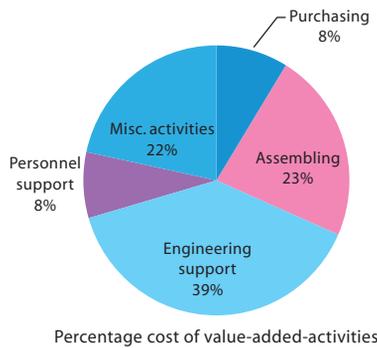
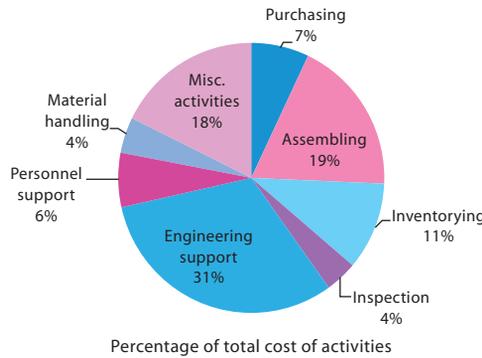
The above mentioned activities can be grouped into value-added and non-value-added activities as follows:

Valued added activities _____
 Purchasing
 Assembling
 Engineering support
 Personnel support
 Misc. activities

Non-value-added activities _____
 Inventorying
 Inspection
 Material handling

Step 5: Analysis of critical activities

To understand the critical activities we have to know the cost weight of the activities at first, because the objective is to reduce the cost. The cost weight of each the activities among all activities, cost weight of each of the value-added activities among value-added activities only and cost weight of each of the activities among non-value-added activities only are shown in various charts as follows:



To find out the critical activities the activities may be ranked taking first the activities, which have got the highest percentage of cost weight. Top ranked activities will be called the most critical activities and so on. Based on the cost weight the ranking is shown below:

Ranking among all activities		Ranking among value-added activities		Ranking among non-value added activities	
Activities	Ranking	Activities	Ranking	Activities	Ranking
Engineering support	1	Engineering support	1	Inventorying	1
Assembling	2	Assembling	2	Material handling	2
Misc. activities	3	Misc. activities	3	Inspection	3
Inventorying	4	Purchasing	4		
Purchasing	5	Personnel support	5		
Personnel support	6				
Material handling	7				
Inspection	8				

It is found here in the above table engineering support is the no. 1 ranked activities among all the activities, including both value-added and non-value-added activities. Therefore, it is the most critical among all activities followed by assembling. Within the value-added activities the scenario is same. Within the non-value-added activities inventorying is the most critical, followed by material handling and inspection.

Although it is ideal to eliminate all the non-value-added activities, it may not be practically possible to do so. Similarly it may not be practically possible to focus on all the value-added activities for improvement. In this case only top two critical non-value-added activities and top two critical value added activities have been focused for elimination or improvement as the case may be.

Step 6: Benchmarking the activities

Benchmarking includes comparing the activities of the company with the best practices followed by other companies in the industry/ competitors/ within the organization to perform the similar activities. In this case we are comparing four activities as selected in the previous step with one of the competitors ("The Competitor"), which is assumed to follow best practices in the industry. The comparisons are mentioned below:

Top two critical non-value-added activities

i. Inventorying:

Analyzing the inventory level and inventory related activities it is observed that presently the company is maintaining stock at a high level and there is no specifically assigned person for monitoring the stock related activities resulting in huge amount of inventory and inventory carrying cost.

The Competitor is following Just-In-Time (JIT) principle for inventory purchasing using EDI (Electronic Data Interchange) system for giving purchase order and for other related communications with the vendor so that it can get the desired inventory at the desired time. They have selected vendors with proven quality. They have also specifically designed staff for properly monitoring the inventory related activities.

ii. Material handling:

As per present practice of the company, material is moved from warehouse to various processing stations e.g. from warehouse to drilling station, drilling station to milling station, milling station to turning station. And the material is moved manually by laborer. It is also observed the layout of the processing stations is distant from one to another and in a straight line shape; therefore, materials need to be moved over much longer routes within the factory premises.

The competitor is using multi-purpose robotic machines for carrying the materials from one processing stations to the next. Also the layout of the processing stations has been designed in a round shape, so that robotic machines can carry the material quickly moving around small distance.

Top two critical value-added activities

i. Engineering support:

The machines used by ABC for drilling, milling, turning etc. are very old, which are labor intensive. To perform activities using these machines require huge amount of staff hours.

The competitor is using the latest model of the machines, operations of which require 1/4th of the staff hours consumed by the model presently used by ABC.

ii. Assembling:

Presently the assembly activity, the main function of ABC, is done totally by manually.

For assembling purpose the competitor is using semi-automatic procedures, which can increase the capacity many times and also require very minimum quantity of labor hours.

Step 7: Continuous improvement of the activities

For non-value-added activities the aim is to eliminate totally. However, it may not be practically possible to eliminate totally. In that case the target is to continuously improve the same. For value added activities the target is continuously improve the performance.

Inventorying:

ABC can eliminate maintaining any inventory by implanting JIT system. But to implement a perfect JIT system they need to establish a quick system of ordering and other communication like EDI system. They need to develop a vendors' base that have got the ability to supply required quantity, with required quality, immediately after providing the order. All these has got time and cost involvement. Therefore, ABC can plan to implement the same gradually and reduce the inventory related cost gradually on a continuous basis.

Alternatively, if ABC does not have sufficient resources and capacity, at this moment, to implement a perfect JIT system, it can assign the responsibility of monitoring the inventory related activities to one (or more) staff, so that inventory level can be maintained at minimum level whilst the chance of stock out is kept at an acceptable level.

Material handling:

Material handling can't be eliminated totally. So the target is to continuously improve the performance. ABC can purchase a robotic machine, instead of human being, for carrying the materials from one processing station to the next. At the same time the layout of processing stations may be changed in a way so that one robotic machine can move all the materials from one station/ operation to the next just moving around there. The cost of the robotic machine should be justified i.e. cost of robot should be less than cost of the labor hours saved.

Engineering support:

ABC can use upgraded version of machines for its drilling, milling and turning operations instead of old aged versions. However, it needs to check whether the benefits received from upgraded

versions of machines in terms of reduced staff hours and reduced cost exceed the cost of installing new-upgraded version of machines.

Assembling:

For assembling functions also ABC Ltd. can go for automation/ semi-automation instead of present manual system. In this case also cost-benefit analysis should be made to ensure that benefit is more than cost.

Reporting

For reporting purpose we can calculate the progress of the ABM implementation. Let us calculate the performance measurements, in terms of cost, before and after taking the initiatives for continuous improvement under ABM. For the purpose of reporting the progress on implementation status of ABM let us assume that at the date of reporting initiatives for elimination/ continuous improvement on two most critical non-value-added activities have been taken. The initiatives on the value-added activities are yet to be taken.

Before the report is made let us also assume the following:

ABC has implemented near-to-perfect JIT inventory system and the level of average inventory has been reduced to Tk. 10,000 from Tk. 192,000. Therefore, the carrying cost will be reduced to Tk. 3,000 (Tk. 10,000 X 0.3 per month) per month from Tk. 58,944.0 per month. However, to implement the JIT system ABC had to invest Tk. 180,000 for electronics equipment (for EDI), which is to be depreciated in five years and Tk. 24,000 per year (i.e. Tk. 2,000 per month) other fixed expenses. Therefore, the net inventorying cost after implementing JIT is as follows:

Carrying cost	Tk. 3,000
Other fixed incremental cost per month (3,000+2,000)	<u>5,000</u>
Total	<u>Tk. 8,000</u>

For material handling ABC procured a multi-purpose robot with Tk. 108,000, which reduced the number of material movements to 1/4th (i.e. from 1020 to 255 movements). The net cost of material handling after the robot is used as follows:

Material handling (Tk. 255 X 24)	Tk. 6,120
Depreciation of the robot per month	<u>1,800</u>
Total	<u>Tk. 7,920</u>

The report on the progress on implementation of ABC may be prepared as follows:

Particulars	Previous measurement	Present measurement	Remarks
Inventorying cost (Taka/ month)	58,944	8,000	Cost reduced by 86%
Material handling cost (Taka/ month)	24,480	7,920	Cost reduced by 68%
Manufacturing cycle efficiency (MCE)*	81.3%	92.3%	MCE improved



*Calculation of MCE:

a) □ Before implementation of ABM:

$$\begin{aligned} \square &= \text{Cost of value-added activities/ Total cost} \\ \square &= (39,648.0+106,340.4+177,600+36,096.0+99,840.0)/ 565,118.4 \\ \square &= 81.3\% \end{aligned}$$

b) □ After implementation of ABM:

$$\begin{aligned} \square &= \text{Cost of value-added activities/ Total cost} \\ \square &= (39,648.0+106,340.4+177,600+36,096.0+99,840.0)/ 497,614.4 \\ \square &= 92.3\% \end{aligned}$$

The same report may be generated after taking more initiatives on the same activities or taking other initiatives on other critical activities and progress may be assessed on the benefits received from implementation of ABM gradually.