

# Activity Based Costing and Activity Based Management

## P2 Chapter 1

A model to achieve and maintain cost competitiveness:

CGMA Cost transformational model:

6 suggested changes:

These changes are:

- a) Engendering a cost-conscious culture: The organisation should aim to be a cost leader so that its costs are lower than rivals and set a competitive benchmark. Everyone in the organisation should be motivated and enabled to reduce costs in whatever way possible. Technology can play a key role in reducing costs.
- b) Managing the risks that come from a cost-conscious culture: For example, reducing cost may result in reducing quality and customer satisfaction. The organisation should have a clear risk management process in place to identify, assess and manage such risks.
- c) Connecting products with profitability: It will be important that every product or service makes a positive contribution to overall organisational profits. This will involve understanding what drives costs for each individual product and allocating shared costs to products as accurately as possible.
- d) Generating maximum value through new products: The potential profitability of new products should be assessed before production begins. Also, as part of product design, the product or service should be made to be as flexible as possible so that it appeals or can adapt to as many customer segments as possible.

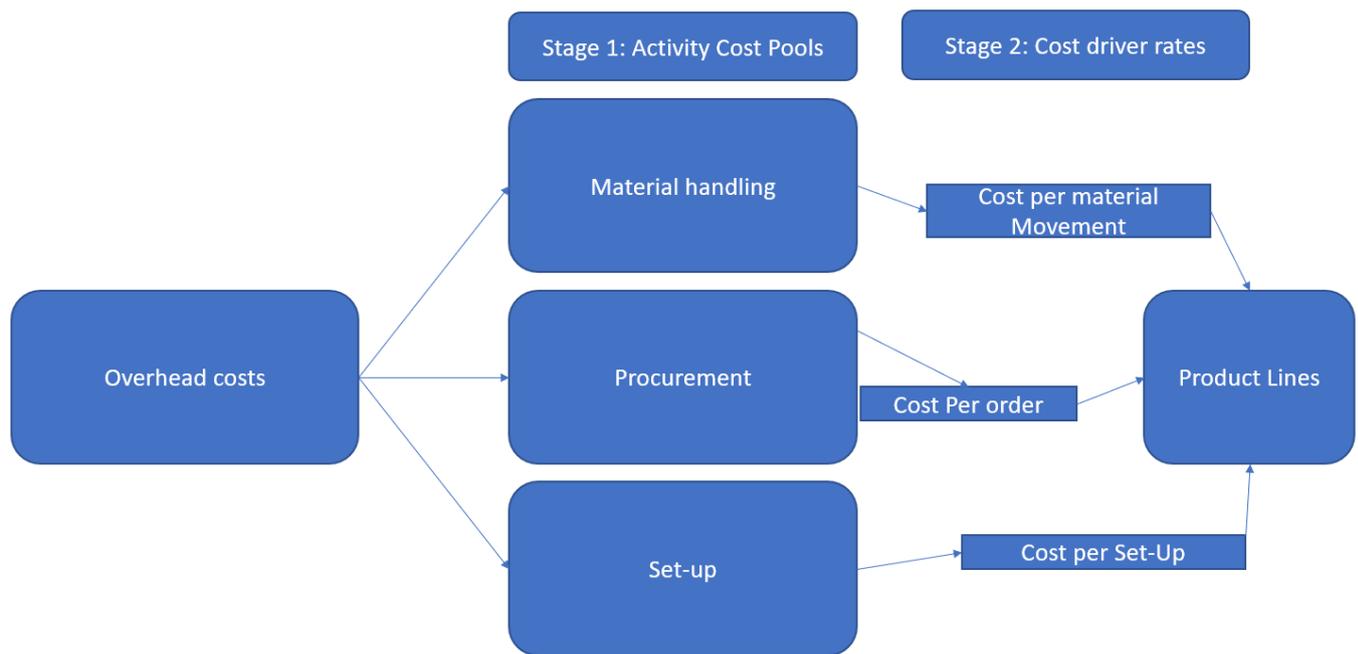
- e) **Incorporating sustainability to optimise profits:** Consider the environmental impact of products – negative impacts (such as creating unnecessary waste) can add costs as well as damaging reputation and sales.
  
- f) **Understanding cost drivers:** This involves investigating costs to determine why they change and how different variables impact on the cost. Plans should be put in place to reduce the drivers of costs as well as the costs themselves.

**The model suggests a number of tools and models which can be used in order to achieve these changes. Activity based costing is one of those tools.**

### **Activity-Based Costing: Basics revisited:**

In traditional absorption costing, overheads are charged to products using a predetermined overhead recovery rate. This overhead absorption rate (OAR) is based upon the volume of activity. A full unit cost is computed in order to satisfy financial accounting requirements.

***Activity-Based Costing is 'an approach to the costing and monitoring of activities which involves tracing resource consumption and costing final outputs. Resources are assigned to activities, and activities to cost objects based on consumption estimates. The latter utilise cost drivers to attach activity costs to outputs.***



Traditional systems accurately measure volume-related resources that are consumed in proportion to the number of units produced of the individual products. Such resources include direct labour, materials, energy and machine-related costs.

However, many organisational resources exist for activities that are unrelated to physical volume. Non-volume related activities consist of support activities such as:

- a) materials handling
- b) material procurement
- c) set-ups
- d) production scheduling
- e) first-item inspection activities

## ABC- Method

### Follow the steps



Identify the organizations major activities. Ideally about 30 to 50 activities in a ug organisation should be identified. A suitable rule is to find 20% of activities that generate 80% of overheads and analyse these in details



Estimate costs associated with performing each activity- collected into COST POOLS



Identify factors that influence the cost pools. They are known as COST DRIVERS. For example: No. of set-ups, no. of inspections

Calculate a cost driver rate = Cost pool/Level of cost drivers

Charge the overheads to the products by applying the cost driver rates to the activity usage. For example: If cost driver rate is 5 and product X uses 10 inspections, overhead charged will be  $5 * 10 = 50\$$

## **ABC Calculation:**

**Step 1: Group the production overheads into activities**

**Step 2: Identify cost drivers for each activity. I.e. what causes these activity costs to be incurred?**

**Step 3: Calculate cost driver rate. (Same OAR calculation)**

**Step 4: Absorb activity costs into products. (Cost driver rate that we found in step 3 should be applied to the individual products)**

**Step 5: Add all the costs that you found to give the full production cost or profit or loss whatever has been asked in the question.**

**ILLUSTRATION:**

	<b>Model Amora</b>	<b>Model Alpha</b>
<b>Annual Sales</b>	8000 Units	8000 Units
<b>Number of sales orders</b>	60	250
<b>Sales price per unit</b>	\$50	\$70
<b>Direct material cost per unit</b>	\$10	\$20
<b>Direct labour hours per unit</b>	2 Hours	3 Hours
<b>Direct labour rate per hour</b>	\$8	\$8
<b>Special parts per unit</b>	Two	Eight
<b>Production batch size</b>	2000 Units	1000 Units
<b>Set-ups per batch</b>	1	3
<b>Additional Information:</b>		
<b><u>Cost Pools:</u></b>		<b><u>Cost driver:</u></b>
Set up Costs	\$97,600	<b>Number of set-ups</b>
Material handling costs	\$42,000	<b>Number of batches</b>
Special parts handling costs	\$50,000	<b>Number of special parts</b>
Invoicing	\$31,000	<b>Number of sales orders</b>
Other overheads	\$108,000	<b>Direct labour hours</b>
<b>Total Overheads</b>	<b>\$328,600</b>	

Find Profit per unit for each model and which product should the manager try to sell more on the basis of this ABC calculation.

Solution: FOLLOW THE STEPS ALWAYS:

**Step 1:** Group the production overheads into activities.

**ALREADY DONE FOR YOU IN THE QUESTION HERE.**

**Step 2:** Identify cost drivers for each activity. I.e. what causes these activity costs to be incurred?

**ALREADY DONE FOR YOU IN THE QUESTION HERE**

**Step 3:** Calculate cost driver rate. (Same OAR calculation)

**WE WILL HAVE TO CALCULATE FOR EACH COST POOL RIGHT?**

	<b>Model Amora</b>	<b>Model Alpha</b>	<b>Total</b>
<b>Number of set-ups</b>	4	240	<b>244</b>

**How do we get this?**

**In the question they say: Set-ups per batch for Amora is 1. So first we will have to find number of batches right?**

**So... 1 Batch= 2000 Units**

**We made 8000 Units so we have 4 Batches for model Amora. Each batch is 1 set-up. So 4 batches= 4Set-ups.**

**Same we will do for Alpha and get 240.**

	Model Amora	Model Alpha	Total
<b>Number of Batches</b>	4	80	84

**So... 1 Batch= 2000 Units**

**We made 8000 Units so we have 4 Batches for model Amora.**

**Same we will do for Alpha and get 80.**

	Model Amora	Model Alpha	Total
<b>Number of Special Parts</b>	16000	64000	80000

**For model Amora its 2 special parts per unit, so  $8000*2 = 16000$**

**Same for alpha and we will get 64000**

	Model Amora	Model Alpha	Total
<b>Number of Sales orders</b>	60	250	310

**Directly given in the question.**

	<b>Model Amora</b>	<b>Model Alpha</b>	<b>Total</b>
<b>Number of Direct Labour hours</b>	16000	24000	40000

**Directly given in the question.**

Step 4: Absorb activity costs into products. (Cost driver rate that we found in step 3 should be applied to the individual products)

<b>Activity</b>	<b>Cost</b>	<b>Cost per set-up</b>	<b>Model Amora</b>	<b>Model Alpha</b>
<b>Set-ups</b>	97600	$97600/244=400$	1600	96000
<b>Materials Handling</b>	42000	$42000/84=500$	2000	40000
<b>Special Parts</b>	50000	$50000/80000=0.625$	10000	40000
<b>Invoicing</b>	31000	$31000/310=100$	6000	25000
<b>Other overheads</b>	108000	$108000/40000=2.7$	43200	64800
<b>Total</b>	<b>328600</b>		<b>62800</b>	<b>265800</b>

**Step 5:** Add all the costs that you found to give the full production cost or profit or loss whatever has been asked in the question.

	<b>Model Amora</b>	<b>Model Alpha</b>
<b>Sales</b>	400000	560000
<b>Direct Materials</b>	-80000	-160000
<b>Direct Labour</b>	-128000	-192000
<b>Overheads (as calculated above)</b>	-62800	-265800
<b>Profit</b>	<b>129200</b>	<b>57800</b>

Hence Model Amora is more profitable and hence efforts must be focused to sell model Amora first.

Always follow the steps and you will never falter.

### **Conditions for ABC:**

The purpose of moving from a traditional costing system to an activity-based system should be based on the premise that the new information provided will lead to action that will increase the overall profitability of the business.

This is most likely to occur when the analysis provided under the ABC system differs significantly from that which was provided under the traditional system, which is most likely to occur under the following conditions:

- a) when production overheads are high relative to direct costs, particularly direct labour
- b) where there is great diversity in the product range
- c) where there is considerable diversity of overhead resource input to products
- d) when consumption of overhead resources is not driven primarily by volume

Information from an ABC analysis may indicate opportunities to increase profitability in a variety of ways, many of which are long-term. For example, an activity-based analysis may reveal that small-batch items are relatively expensive to produce, and are therefore unprofitable at current prices.

A number of responses to this information could be adopted. The first response might be to consider stopping production of such items, and concentrate on the apparently more profitable high-volume lines.

Another approach would be to investigate how the production process could be organised in such a way as to bring the cost of producing small-batch items closer to that of producing high-volume goods.

## **Activity based cost hierarchy:**

**Unit-level activities: are performed each time a unit of product is produced.**

They are consumed in direct proportion to the number of units produced.

Expenses in this category include:

- a) direct labour
- b) direct materials
- c) energy costs
- d) machine maintenance

**Batch-related activities: are performed each time a batch is produced.**

The cost of batch-related activities varies with the number of batches made, but is common (or fixed) for all the units within the batch.

For example, set-up resources are consumed when a machine is changed from one product to another. As more batches are produced, more set-up resources are consumed. It costs the same to set-up a machine for a run of 10 or 5,000 units.

Similarly, purchasing resources are consumed each time a purchasing order is processed, but the resources consumed are independent of the number of units included in the purchase order.

**Product-sustaining activities: are performed to support different products in the product line.** They are performed to enable different products to be produced and sold, but the resources consumed are independent of how many units or batches are being produced.

**Facility-sustaining activities:** Some costs cannot be related to a particular product line, instead they are related to maintaining building and facilities. Examples would be maintenance of the building, plant security and business rates.

### **Benefits:**

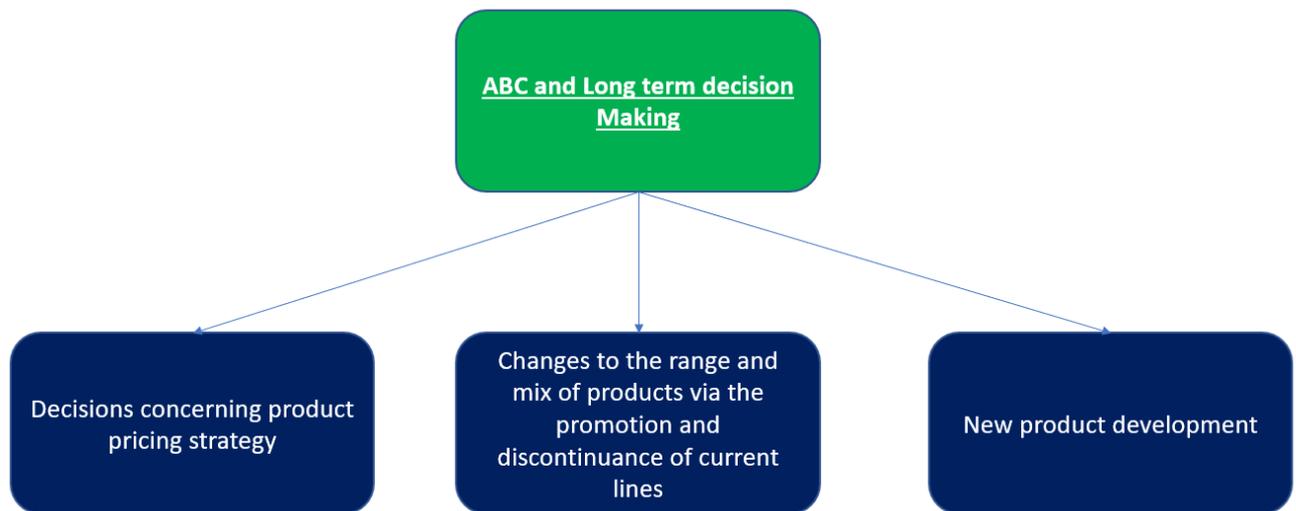
1. Provides more accurate product-line costings particularly where non volume-related overheads are significant and a diverse product line is manufactured.
2. Is flexible enough to analyse costs by cost objects other than products such as processes, areas of managerial responsibility and customers.
3. Provides a reliable indication of long-run variable product cost which is particularly relevant to managerial decision making at a strategic level.
4. Provides meaningful financial (periodic cost driver rates) and non-financial (periodic cost driver volumes) measures which are relevant for cost management and performance assessment at an operational level.
5. Aids identification and understanding of cost behaviour and thus has the potential to improve cost estimation.
6. Provides a more logical, acceptable and comprehensible basis for costing work

### **Limitations:**

1. Little evidence to date that ABC improves corporate profitability.
2. ABC information is historic and internally orientated and therefore lacks direct relevance for future strategic decisions.
3. Practical problems such as cost driver selection.
4. Its novelty is questionable. It may be viewed as simply a rigorous application of conventional costing procedures.

## ABC and decision making:

Activity-Based Costing has a role in longer-term decision-making:



Advocates of the use of ABC for strategic decision making maintain that its values lie in greater accuracy attaching to product costing, which in turn increases the degree of reliability of cost information used for the above purposes.

They further maintain that the use of ABC may give an indication for the long-term variable cost of products, which arguably is the most relevant cost information for use in decisions of the above type. Given the inherent uncertainty involved in strategic decision making, management may use ABC information in decision-modelling and sensitivity analysis to assist in the making of such decisions.

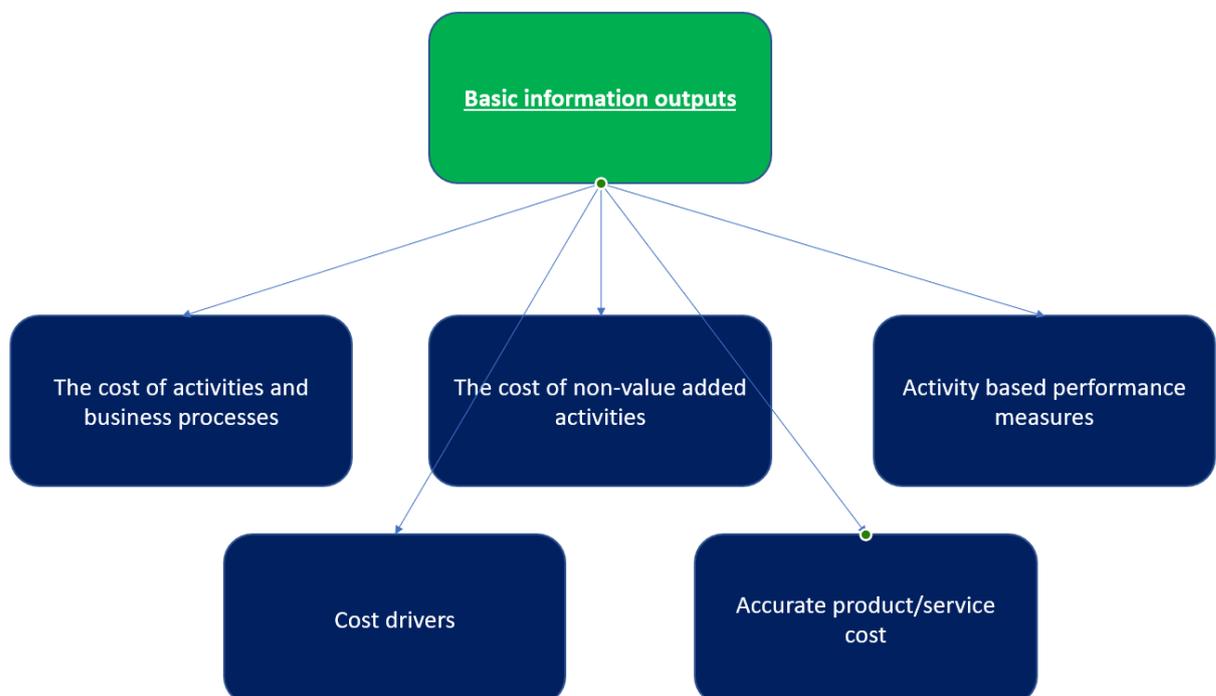
## Activity Based Management:

Activity-Based Management is a 'System of management which uses activity-based cost information for a variety of purposes including cost reduction, cost modelling and customer profitability analysis.

ABM is simply using the information derived from an ABC analysis for cost management. ABM seeks to classify each activity within a process as a value-added or non-value-added activity:

Non-value-added activities are unnecessary and represent waste. The aim should be to eliminate them.

ABM focuses on activities within a process, decision making and planning relative to those activities and the need for continuous improvement of all organisational activity. Management and staff must determine which activities are critical to success and decide how these are to be clearly defined across all function.



Clearly ABM and employee empowerment take a critical step forward beyond ABC by recognising the contribution that people make as the key resource in any organisation's success.

- a) It nurtures good communication and team work.
- b) It develops quality decision making.
- c) It leads to quality control and continuous improvement.

ABC information can be used in an ABM system to assist strategic decisions, such as:

- a) The value chain is simply a large activity map for the organisation and its position in the industry chain.
- b) Whether to continue with a particular activity.
- c) The effect on cost structure of a change in strategy, e.g. from mass production to smaller production runs.
- d) How changes in activities and components affect the suppliers and the value chain.

### **Problems with implementing ABC/ABM:**

1. Where it was devised for a single project that was not taken up the system got dropped as well. As communication between business units in a large organisation is often not very good, the work was not developed further by another unit.
2. Finance department opposed its implementation. Often finance staff appear less than dynamic and unable to perceive the needs of the production staff.
3. General ledger information too poor to provide reliable ABC information. The resulting figures would have been no better than traditional absorption methods
4. Of course, if organisations do not have reliable ABC information then they also forgo the cost management advantages of an ABM system. Since ABC provides the basic building blocks of activities, without ABC there can be no ABM.

## **TIPS FOR ABM:**

- a) Get the support of senior management
- b) Recognise that ABM requires a major investment in time and resource
- c) Know what ABM can achieve and what information you want from the system
- d) Decide which model to use
- e) Choose the model approach that emphasises the operational understanding of all activities in the business
- f) Involve people in the field
- g) Transfer ownership of cost management from the accounts department to the departments and processes where costs are incurred
- h) Don't underestimate the need to manage the change process
- i) Link ABM to corporate objectives in the form of increased product profitability and added value for customer.

### **Direct product profitability:**

Direct Product Profitability is 'used primarily within the retail sector...DPP involves the attribution of both the purchase price and other indirect costs (for example distribution, warehousing and retailing) to each product line. Thus, a net profit, as opposed to a gross profit, can be identified for each product. The cost attribution process utilises a variety of measures (for example warehousing space and transport time) to reflect the resource consumption of individual products'

<b><u>Direct product profit for Product X</u></b>		
Selling Price	\$	\$2.50
Less: Bought in price		\$1.80
Gross Margin		\$0.70
<b>Less: Direct product costs:</b>		
Warehouse cost	\$0.15	
Transportation costs	\$0.18	
Store costs	\$0.22	\$(0.55)
<b>Direct Product Profit</b>		<b>\$0.14</b>

**The benefits of DPP may be summarised as:**

- a) Better cost analysis
- b) Better pricing decisions
- c) Better management of store and warehouse space
- d) The rationalisation of product ranges
- e) Better merchandising decisions

DPP software systems can be purchased to model costs. They require a number of key variables to analyse different situations.

The variables are:

- a) Buying and selling prices
- b) Rate of sale
- c) Inventory
- d) Product size
- e) Pallet configuration
- f) Ordering costs
- g) Distribution routes

### **Customer profitability analysis:**

Customer Profitability Analysis is 'the analysis of revenue streams and service costs associated with specific customers or customer groups'.

Different customers or categories of customers will each use different amounts of these activities and so customer profitability profiles can be built up, and customers can be charged according to the cost to serve them.

### **Customer profitability curve:**

When an organisation analyses the profitability of its customers it is not unusual to find that a Pareto curve exists. That is 20 per cent of customers provide 80 per cent of the profit.

### **Distribution channel profitability:**

Distribution channels are in simple terms the means of transacting with customers. The channel is the point of purchase which need not necessarily be the point of communication, payment, delivery and after sales support.

Companies may transact with their customers through direct channels e.g. sales teams, telephone, shops, Internet or through indirect channels e.g. retailers, wholesalers, resellers, agents

The channel a company selects is therefore a critical driver to business profitability. A company should not only aim to satisfy the needs of the customer but must also ensure that the products and services that they are

providing are profitable. The method of channel distribution chosen can account for a significant proportion of total cost and choosing the wrong channel can result in significant losses for that particular product or service.

Key aspects that the company needs to consider in relation to their distribution channels include; access to the customer base, brand awareness, competitiveness, achieving sales and market targets, speed of payment, customer retention rates and most importantly of all profitability.

### **Activity based budgeting:**

ABB is 'a method of budgeting based on an activity framework and utilising cost driver data in the budget-setting and variance feedback processes'

Whereas Zero-Based Budgeting (ZBB) is based on budgets (decision packages) prepared by responsibility centre managers, ABB is based on budgeting for activities.

The basic approach of ABB is to budget the costs for each cost pool or activity.

There will also be some general overhead costs that are not activity-related, such as factory rental costs and the salary cost of the factory manager.

### **General overhead costs are budgeted separately.**

- a) The cost driver for each activity is identified. A forecast is made of the number of units of the cost driver that will occur in the budget period.
- b) Given the estimate of the activity level for the cost driver, the activity cost is estimated. Where appropriate, a cost per unit of activity is calculated

**Advantages:**

1. It draws attention to the costs of 'overhead activities'. This can be important where overhead costs are a large proportion of total operating costs.
2. It provides a useful basis for monitoring and controlling overhead costs, by drawing management attention to the actual costs of activities and comparing actual costs with what the activities were expected to cost.
3. It also provides useful control information by emphasising that activity costs might be controllable if the activity volume can be controlled.
4. ABB can provide useful information for a total quality management (TQM) programme, by relating the cost of an activity to the level of service provided (for example, stores requisitions processed) –Do the user departments feel they are getting a cost-effective service.

**Dis-advantages:**

1. A considerable amount of time and effort might be needed to establish an ABB system, for example to identify the key activities and their cost drivers.
2. Activity-based budgeting might not be appropriate for the organisation and its activities and cost structures.
3. Budget should be prepared on the basis of responsibility centres, with identifiable budget holders made responsible for the performance of their budget centre. A problem with ABB could be to identify clear individual responsibilities for activities.