

IV UNIT

Activity Based Costing

Better Costing for Better Decisions

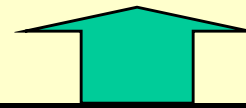
What?

Why?

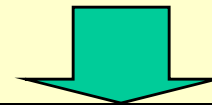
How?

Today's businesses are working in an increasingly complex environment.

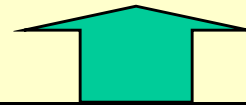
Use of Advanced Technology



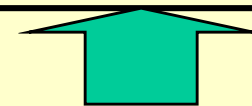
Product Life Cycle



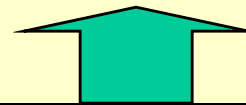
Product Complexity



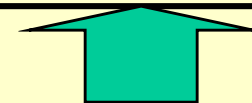
Channels of Distribution



Quality Requirements



Product Diversity



Requirement of Cost Systems

- Valuation of inventory and measurement of the cost of goods sold for financial reporting.
- Estimation of the costs of activities, products, services, and customers.
- Providing economic feedback to managers and operators about process efficiency.

COSTING PRODUCTS

- **Direct material cost and direct labour are easy to trace.**
- **Overhead costs cannot be traced easily and must be assigned with estimates**

Indirect Costs

- Not easily and conveniently traceable to cost objects
 - Cost element is shared among cost objects
 - Physically impossible to trace
 - Not cost effective to trace

Indirect Costs

- Need for allocation

- Estimate product or activity cost

What does it really cost?

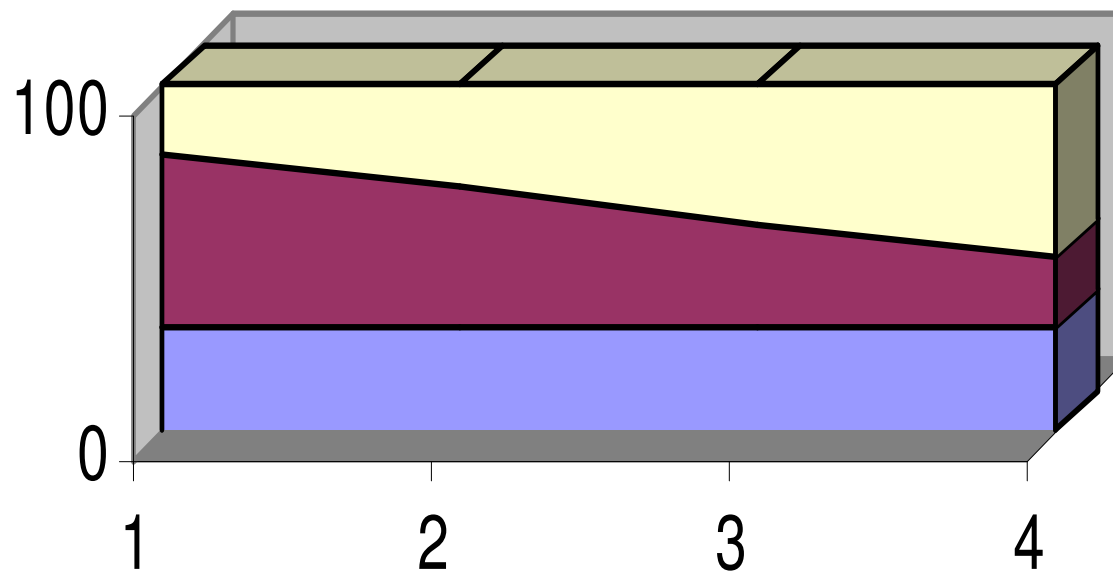
- Increase awareness of indirect costs

Activities are not free

- Plan more cost efficient operations

Now that we know what it costs, what should we do?

Composition of Cost



■ Direct Material ■ Labour ■ Overheads

Under costing and Over costing Example

EXAMPLE

Jose, Roberta, and Nancy order separate items for lunch.

Jose's order amounts to	14
Roberta consumed	30
Nancy's order is	<u>16</u>
Total	60

What is the average cost per lunch?

Cont...

$$60 \div 3 = 20$$

Jose and Nancy
are overcosted.

Roberta is
undercosted.

Traditional Allocation Method

- **Indirect costs** allocated to cost object based on the cost object's consumption of some measure of activity, usually labor hours

$$\frac{10,000,000 \text{ total indirect cost}}{400,000 \text{ total labor hours}} = 25 \text{ per hour rate}$$

A product consuming 6 labor hours would be charged 150 of indirect costs

Criticisms of Traditional Overhead Allocation

- Assumes all overhead is volume-related
- Factory-wide or departmental rates
 - All related to single activity measure
- Departmental focus, not process focus
- Focus on costs incurred, not cause of costs

Traditional Costing Method

- Spreads overhead cost cover entire customer base
- Each order 'appears' to cost the same.
- Orders with high profit margins subsidize orders with low profit margins.

Cont..

- Job Order = Direct Labour Costs
- Process Cost = Machine Hours

Conventional Costing

- **Total Cost = Material + Labour+ Overheads**
- Overheads are allocated to the products on volume based measures e.g. labour hours, machine hours, units produced

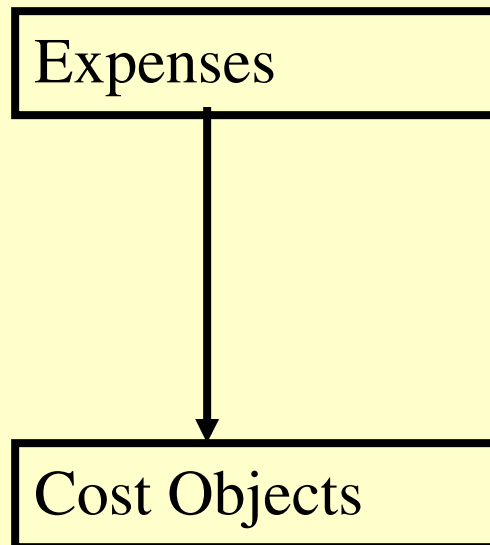
Will this not distort the costing in the new environment?

ABC provides an Alternative.

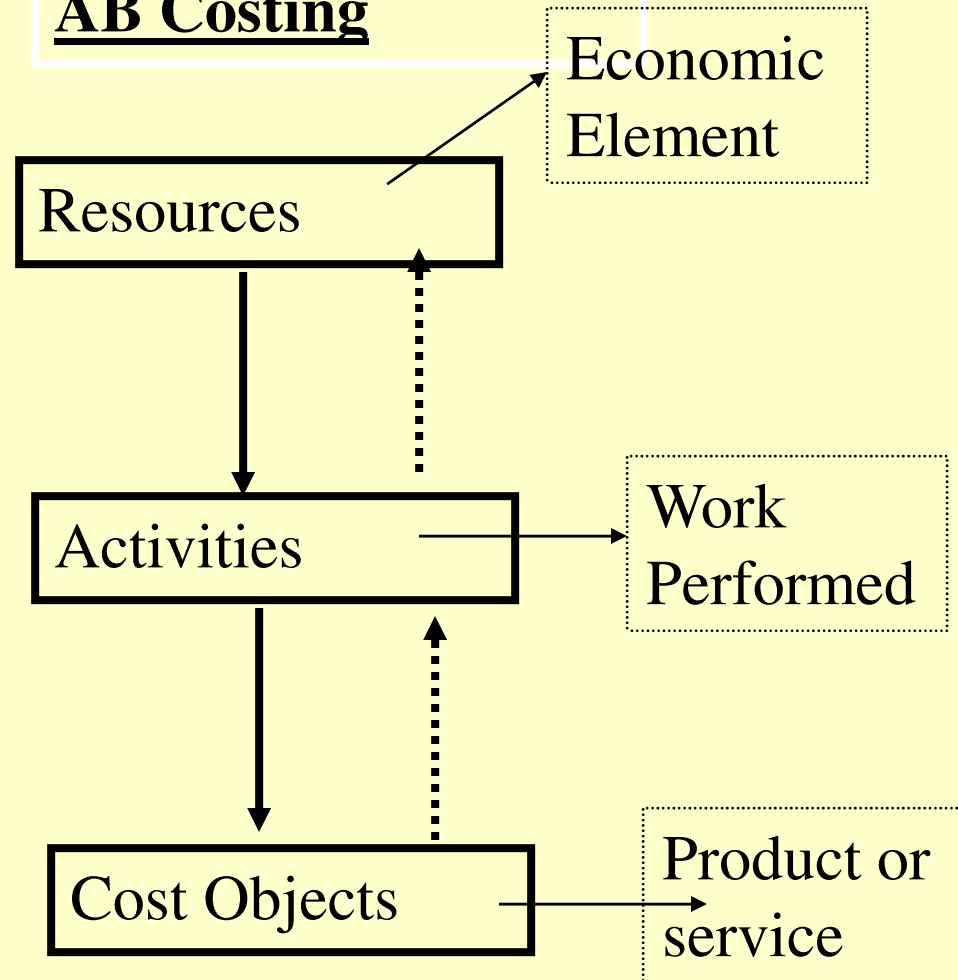
Need for New System

- Amount of direct labour cost used in many Industries has decreased
- Total overhead from depreciation on equipment utilities repairs maintenance has incurred .

Conventional Costing

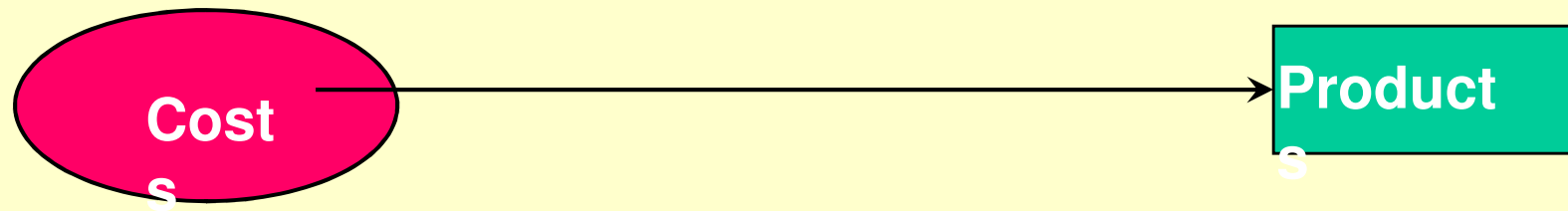


AB Costing

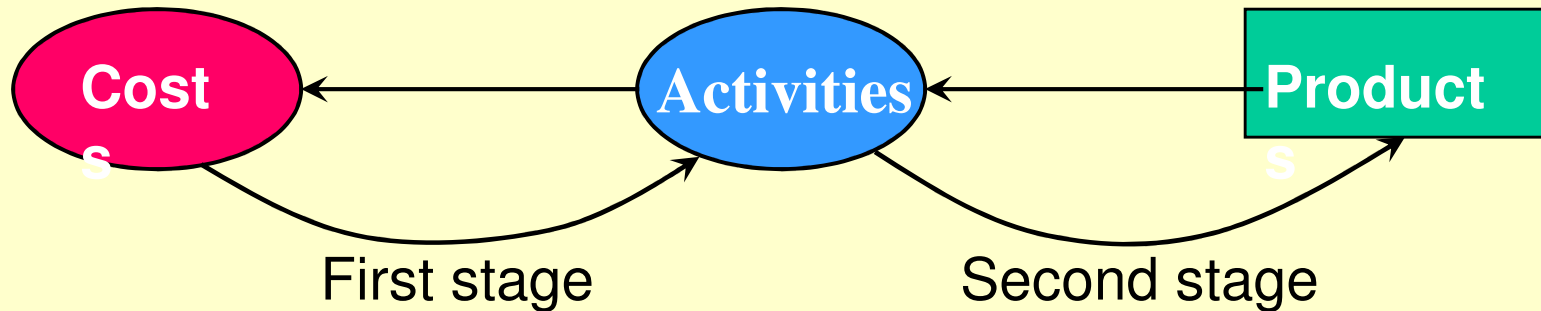


Activity-Based Costing

- Traditional allocation method



- Activity-based allocation method



Activity Based Costing (ABC)

- An overhead Cost allocation system that allocates overhead to multiple activity cost pools and assigns the activity cost pools to product or services by means of Cost Drivers that represents the activities used.

Activity

- Any Event, Action, Transaction. Or work sequence that causes a Cost to be incurred in producing a product or providing a service.

Activity Cost Pool

- The Overhead Cost allocated to a distinct type of activity or related activities.
- Examples
 - Painting cost Pool
 - Setting Up of machines
 - Inspecting and testing

Cost Driver

- Any factor or activity that has a direct cause- effect relationship with the resources consumed
- In ABC Cost Drivers are used to assign activity cost pools to product or service
- Examples
 - Number of Parts
 - Number of Set Ups
 - Number of Tests

Activity-Based Costing System

**Activity
Indirect Cost
Pool**

Design

Setup

Shipping

**Cost
Allocation
Base**

**Parts-
Square
feet**

**No. of
Setup
Hours**

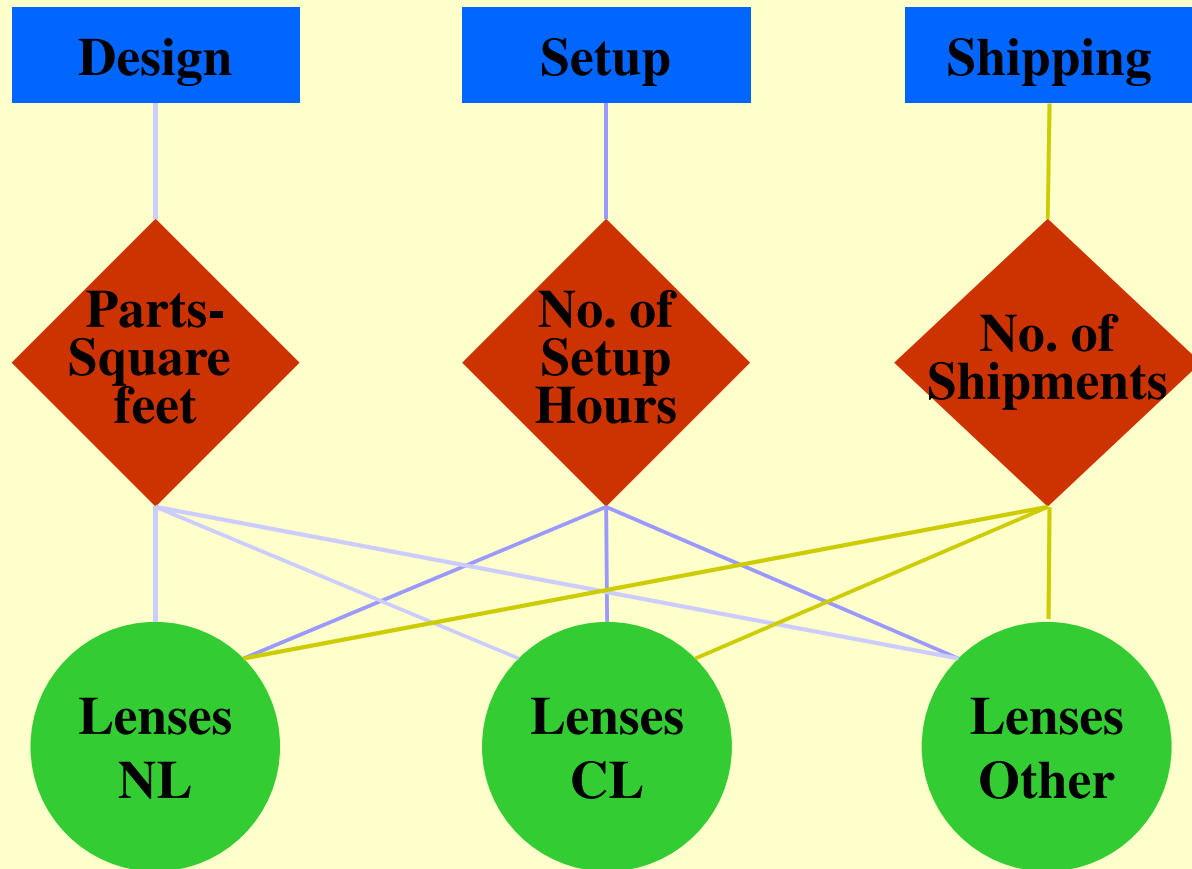
**No. of
Shipments**

**Product
Cost
Objects**

**Lenses
NL**

**Lenses
CL**

**Lenses
Other**



Basics of A B C

- Cost of a product is the sum of the costs of all activities required to manufacture and deliver the product.
- Products do not consume costs directly
- Money is spent on activities
- Activities are consumed by product/services

Basics of A B C (contd.)

- ABC assigns Costs to Products by tracing expenses to “activities”. Each Product is charged based on the extent to which it used an activity
- The primary objective of ABC is to assign costs that reflect/mirror the physical dynamics of the business

Basics of A B C (contd.)

- Provides ways of assigning the costs of indirect support resources to activities, business processes, customers, products.
- It recognises that many organisational resources are required not for physical production of units of product but to provide a broad array of support activities.

ABC systems addresses the following Questions:

- What activities are being performed by the organisational resources?
- How much does it cost to perform activities?
- Why does the organisation need to perform those activities?
- How much of each activity is required for the organisation's products, services, and customers?

Cost Hierarchies

ABC systems commonly use a four-part cost hierarchy to identify cost-allocation bases:

- 1. Output unit-level costs**
- 2. Batch-level costs**
- 3. Product-sustaining costs**
- 4. Facility-sustaining costs**

Unit-Level Costs

These are resources sacrificed on activities performed on each individual unit of product or service.

Energy

Machine depreciation

Repairs

Batch-Level Costs

These are resources sacrificed on activities that are related to a group of units of product(s) or service(s) rather than to each individual unit of product or service.

Setup-hours

Procurement costs

Product-Sustaining Costs

These are often called service-sustaining costs and are resources sacrificed on activities undertaken to support individual products or services.

Design costs

Engineering costs

Facility-Sustaining Costs

These are resources sacrificed on activities that cannot be traced to individual products or services but support the organization as a whole.

General administration

– rent

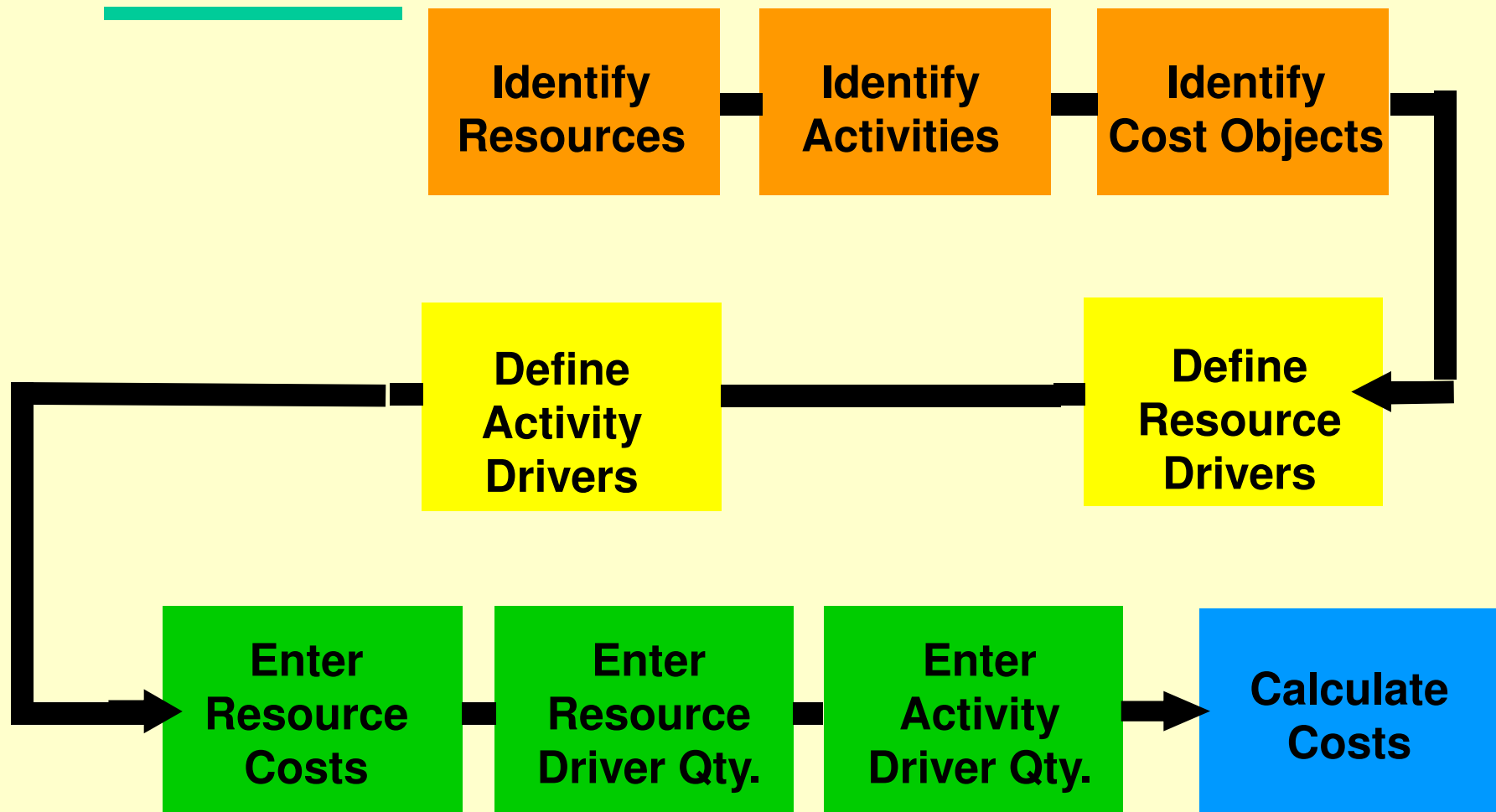
– building security

Activities: Types

- Unit level: Performed each time a unit is produced
- Batch level: Performed each time a batch is produced
- Product level: Performed to support production of different type of product
- Customer Level: Performed to support servicing customers
- Facility level: Residuary head

Activities	Drivers
Unit Level	
Acquire and Use material for containers	No. of Containers
Acquire and Use material for baby-care products	No. of products
Batch Level	
Set up manually controlled machines	No. of batches of containers
Set up computer controlled machines	No. of batches of B. Products
Product Level	
Design and manufacture moulds	No. of moulds required
Use manually controlled machines	Product type (containers)
Use computer controlled machines	Product type (B. Products)
Customer Level	
Consult customers	No. of consultations
Provide warehousing for customers	No. of cubic feet
Facility Level	
Manage workers	Salaries

Building an ABC Model

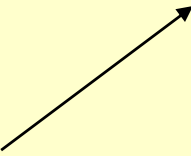


Basics of A B C : How?

Steps:

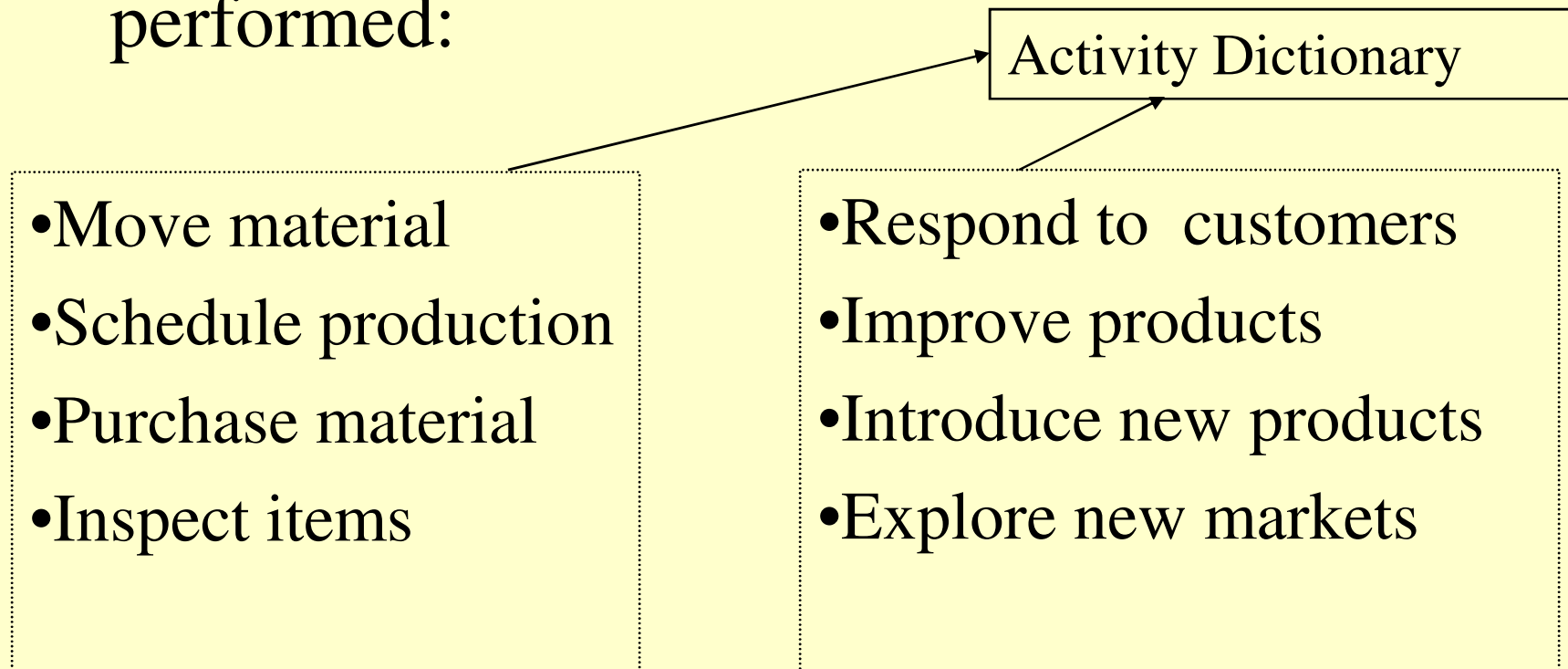
1. *Form cost pools*
2. *Identify activities*
3. *Map resource costs to activities*
4. *Define activity cost drivers*
5. *Calculate cost*

Cost pools are groups
or categories of
individual expense
items



Identify Activities

In developing an ABC system, the organisation identifies the activities being performed:

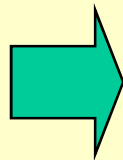


Map resource costs to activities

- Financial accounting categorises expenses by spending code; salaries, fringe benefits, utilities, travel, communication, computing, depreciation etc.
- ABC collects expenses from this financial system and drive them to the activities performed.

Mapping

Accounting Records	
Salaries	313,000
Depreciation	155,000
Electricity	132,000
Supplies	25,000
Travel	100,000
Total	725,000



ABC Records						
Activities	Salaries	Depreciation	Electricity	Supplies	Travel	Total
Business Development	20,000	25,000	5,000		5,000	55,000
Maintaining Present Business	80,000	60,000	50,000	5,000	10,000	205,000
Purchasing Material	125,000	50,000	20,000	20,000	60,000	275,000
Set up Machines	25,000	10,000	2,000			37,000
Running Machines	50,000	10,000	50,000			110,000
Resolve Quality Problems	13,000		5,000		25,000	43,000
Total	313,000	155,000	132,000	25,000	100,000	725,000

Define activity drivers

- The linkage between activities and cost objects, such as products, customers,, is accomplished by using activity drivers.
- An activity driver is a quantitative measure of the output of an activity.
- The selection of an activity driver reflects a subjective trade-off between accuracy and cost of measurement.

Activities	Drivers	Activity Cost	Activity Volume	Activity Rate
Unit Level				
Acquire and Use material for containers	No. of Containers	40,000	1,000,000	0.04
Acquire and Use material for baby-care products	No. of products	80,000	8,000	10
Batch Level				
Set up manually controlled machines	No. of batches of containers	3,000	10	300
Set up computer controlled machines	No. of batches of B. Product	12,000	20	600
Product Level				
Design and manufacture moulds	No. of moulds required	5,000	5	1000
Use manually controlled machines	Product type (containers)	15,000	1	15000
Use computer controlled machines	Product type (B. Products)	40,000	1	40000
Customer Level				
Consult customers	No. of consultations	4,000	40	100
Provide warehousing for customers	No. of cubic feet	2,000	10,000	0.2
Facility Level				
Manage workers	Salaries	3,000	15,000	0.2
Use main building	Square feet	48,000	16,000	3

Ascertaining Cost

Activities	A. Rate	A. Volume	Containers	Baby Product
Unit Level				
Acquire and Use material for containers	0.04	1,200,000	48,000	
Acquire and Use material for baby-care products	10	7,000		70000
Batch Level				
Set up manually controlled machines	300	12	3,600	
Set up computer controlled machines	600	16		9600
Product Level				
Design and manufacture moulds	1000			
		1	1,000	
		4		4000
Use manually controlled machines	15000	1	15,000	
Use computer controlled machines	40000	1		40000
Customer Level				
Consult customers	100			
Containers		2	200	
B.products		40		4000
Provide warehousing for customers	0.2			
Containers		8,000	1,600	
B.products		2,000		400
Facility Level				
Manage workers	0.2			
Containers		4,000	800	
B.products		10,000		2000
Use main building	3			
Containers		5,000	15,000	
B.products		7,000		21000
Total Cost			85,200	151,000

ABC: Where to Use?

- High Overheads
- Product Diversity or Multiple Products
- Customer Diversity
- Service Diversity
- Stiff Competition