Chapter 1

The [Changing] **Role of Managerial Accounting**

Learning Objectives

1. Define managerial accounting and describe its role in the management process.
2. Explain four fundamental management processes that help organizations attain their goals.

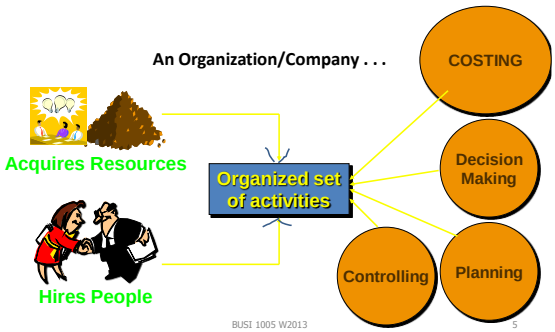
Learning Objectives (cont'd)

3. Explain the major differences between managerial and financial accounting.
4. Briefly describe some of the major contemporary themes in managerial acctg.
5. Understand and explain the concepts of strategic cost management and the value chain.
6. Understand the ethical responsibilities of a managerial accountant.

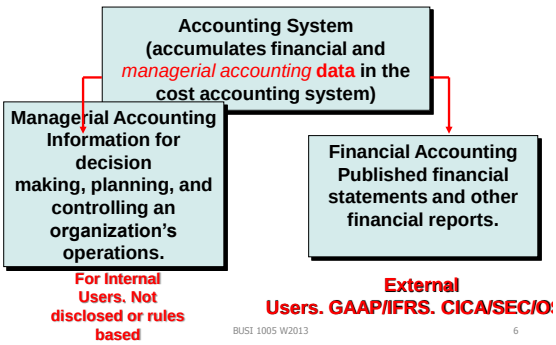
Define Managerial Accounting

"Management accounting is a profession that involves partnering in management decision making, devising planning and performance management systems, and providing expertise in financial reporting and control to assist management in the formulation and implementation of an organization's strategy."
Institute of Management Accountants

4 Broad Functions of Mgmt. Acctg. to attain Goals



Managerial ~~versus~~ Financial Accounting



Managerial versus Financial Accounting (Top pg. 8 of text)

	Managerial Accounting	Financial Accounting
Users of Information	Managers, within the organization.	Interested parties, outside the organization.
Regulation	Not required and unregulated, since it is intended only for management.	Required and must conform to generally accepted accounting principles. Regulated by the Accounting Standards Board of the Canadian Institute of Chartered Accountants(CICA), and, to a lesser degree, by Canada's provincial and territorial securities regulators.
Source of Data	The organization's basic accounting system, plus various other sources, such as rates of effective products manufactured, physical quantities of material and labour used in production, occupancy rates in hotels and hospitals, and average take-off delays in airlines.	Almost exclusively drawn from the organization's basic accounting system, which accumulates financial information.
Nature of Reports and Procedures	Reports often focus on subunits within the organization, such as departments, divisions, geographical regions, or product lines. Based on a combination of historical data, estimates, and projections of future events.	Reports focus on the enterprise in its entirety. Based almost exclusively on historical transaction data.

Line and Staff Positions

- A **line position** is directly involved in achieving the basic objectives of an organization.
  - **Example:** A production supervisor in a manufacturing plant.

- A staff position supports and assists line positions.
  - **Example:** A cost accountant in the manufacturing plant.

Controller [control freak?]

The Chief managerial AND financial accountant responsible for:

- Supervising accounting personnel
- Preparation of information and reports, managerial and financial
- Analysis of accounting information
- Planning and decision making
  - CFO is the same thing

Treasurer

Responsible for raising capital and safeguarding the organization's assets.

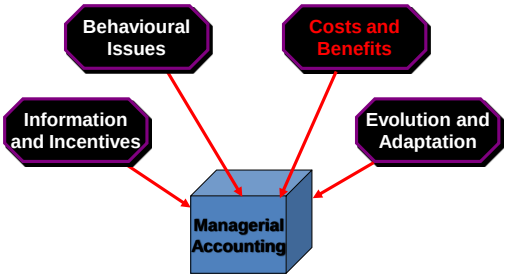
- Manages investments
- Establishes credit policies
- Manages insurance coverage

Internal Auditor

Responsible for reviewing accounting procedures, records, and reports in both the controller's and the treasurer's area of responsibility.

- Expresses an opinion to top mgmt. regarding the effectiveness of the organization's accounting system. Greater function due to SOX.

Major Themes in Managerial Accounting

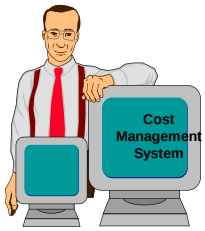


Evolution and Adaptation in Managerial Accounting

Cost Management Systems

Objectives

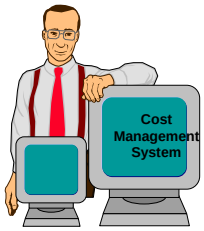
1. Measure the cost of resources consumed.
2. Identify and eliminate non-value-added costs.
2. E.g.



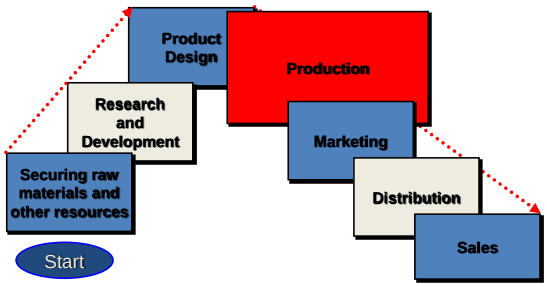
Cost Management Systems (cont'd)

Objectives

3. Determine efficiency and effectiveness of major activities.
4. Identify and evaluate new activities that can improve performance.



Strategic Cost Management and the Value Chain



Ethical Climate of Business

The corporate scandals experienced over the last few years have shown us that unethical behaviour in business is wrong in a moral sense and can be disastrous in the economy. There will likely be more reforms in corporate governance and accounting in the future.

Professional Ethics

- ✓**Competence**
- ✓**Independence**
- ✓**Confidentiality**
- ✓**Integrity**
- ✓**Credibility**

Managerial Accounting as a Career

Professional Organizations

Society of Management Accountants of Canada (CMA)

Canadian Institute of Chartered Accountants (CA)

Certified General Accountants Association of Canada (CGA)

Chartered Professional Accountant (CPA)

How to do well in this course:
COME TO CLASS *WITH TEXTBOOK CHAPTERS READ*, COME TO TUTORIALS AND PRACTICE, PRACTICE, PRACTICE…

To perform well in this course, you must spend time answering the ICPs before class and working on HWK exercises (Solutions to HWK **on cuLearn)** to test your understanding. To maximize your learning, you should make an honest attempt at the question before peeking at the solution. Simply reading a question and then turning to the solution right away is next to useless. You will likely find a high association between the number of problems **you** prepare, your attendance in class and your course grade.

Copied from Syllabus

Ch.2: Basic Cost Management Concepts

I USUALLY DO NOT DO SLIDES FOR THIS CHAPTER.
We will have handouts and group exercise, etc.

Chapter 3

Job Order Costing & Cost accumulation

Product and Service Costing

Our focus ranges from costs for financial statement to *costs for operations.*

[BUSI 1004]**Financial Accounting**

Product costs are used to value inventory and to compute cost of goods sold.

[BUSI 1005]**Managerial Accounting**

Product costs are used for 1. Costing, 2. Planning, 3. control & directing, and management decision making [affects all 3].

Types of Product-Costing Systems

- Used for production of large, unique, high-cost items.
- Built to order rather than mass produced.
- Many costs can be directly traced to each specific job.
- TWO TYPES:
  1. Products manufactured in very low volumes or one at a time.
  2. Batch-production operations: Multiple products in batches of relatively small quantity.
- Also used in service industry
  - Hospitals
  - Law firms
  - Acctg. Firms

Types of Product-Costing Systems (cont'd)

- Used for production of small, identical, low cost items.
- Mass produced in automated continuous production process.
- Costs cannot be directly traced to each unit of product.
- Typical process cost applications:
  - Petrochemical refinery, paint manufacturer, paper mill

Manufacturing Overhead Costs [MOH]

Overhead is applied/allocated to JOBS using a predetermined overhead rate (PDOHR) based on estimates made at the *beginning of the Period*.

$$PDOHR = \frac{\text{1 \$Budgeted manufacturing overhead cost}}{\text{2 \#Budgeted amount of cost driver (or activity base)}}$$

Overhead applied = PDOHR × Actual activity

- **Based on Estimates, and determined before the period begins**
- **Actual amount of the allocation base, such as direct labour hours incurred during the period**

Overhead Application Example

Estimated Total Overhead costs for the year: $5,050,000

Estimated Total direct labour hours for the year: 170,000

Applied Overhead = POHR × Actual Direct Labour Hours

Applied Overhead = $29.71 per DLH × 175,000 DLH = $5,199,250

Actual Overhead ending being $5,149,250. Applied overhead exceeds actual overhead by $50,000

This difference is called overapplied overhead.

Overapplied and Underapplied Manufacturing Overhead

$50,000 may be allocated to these accounts.

Work in Process

Finished Goods

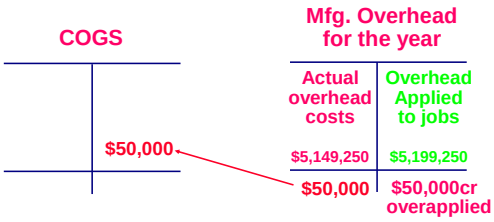
Cost of Goods Sold

OR

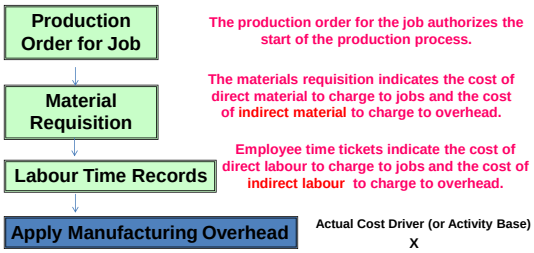
$50,000 may be closed directly to cost of goods sold.

LO-5

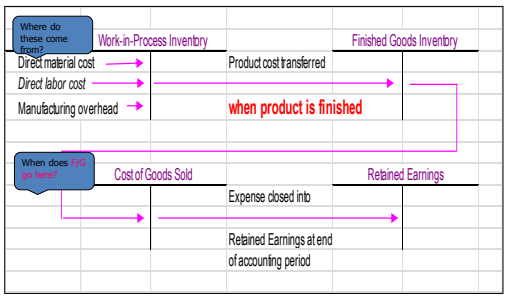
Closing Directly to COGS Example



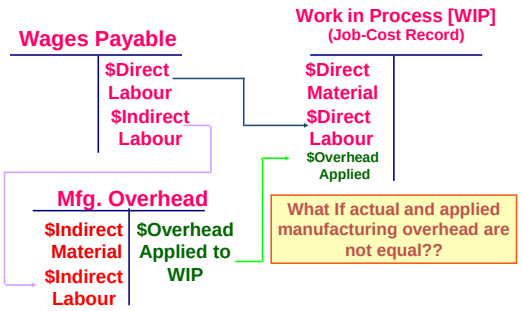
Job-Order Costing Document Flow



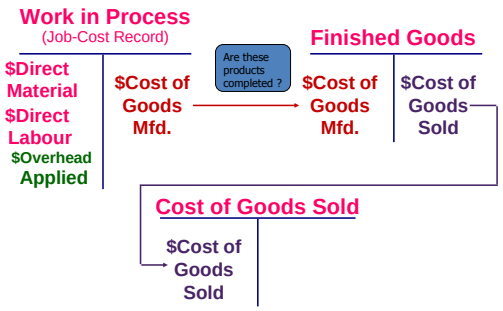
Flow of Costs & Journal Entries



Job-Order Journal Entries to WIP



Job-Order System Journal entries out of WIP



If overhead is under-applied, then what happens to operating income when MOH account is closed?

Schedule of Cost of Goods Manufactured

Direct labour		xxx
Manufacturing overhead applied	$xxx	
Add: Underapplied overhead	xxx	
or Deduct: Overapplied overhead	xxx	
Adjusted Overhead to work-in-process		xxx
Total manufacturing costs		$xxx
Add: Work-in-process inventory, beginning		xxx
Subtotal		$xxx
Deduct: Work-in-process inventory, ending		xxx
Cost of goods manufactured (COGM)		$xxx

Q. What about Raw materials?

Q. Is Under/over applied O/H pro-rated to WIP, F/G, & COGS in this exaample?

Note: Exhbit 3-8 is using actual MOH and then bringing it back to applied O/H. We w ill use applied MOH in COGM and only adjust applied MOH in COGM statement if the pro-ration method is used.

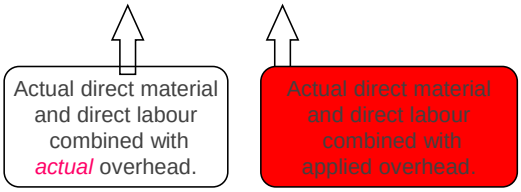
Schedule of Cost of Goods Sold

Schedule of Cost of Goods Sold		
Finished goods inventory, beginning		$xxx
Add: Cost of goods manufactured*		xxx
Cost of goods available for sale		$xxx
Deduct: Finished goods inventory, ending		xxx
Cost of goods sold		$xxx
Add: Underapplied overhead		
or Deduct: Overapplied overhead		xxx
Cost of goods sold (adjusted)		$xxx
* From Cost of Goods Manufactured Schedule		

Income Statement

Sales revenue	$xxx
Less: Cost of goods sold	**xxx***
Gross margin	xxx
Selling and administrative expenses [S&A]	xxx
Income before taxes	xxx
Income tax expense	xxx
Net income	$xxx

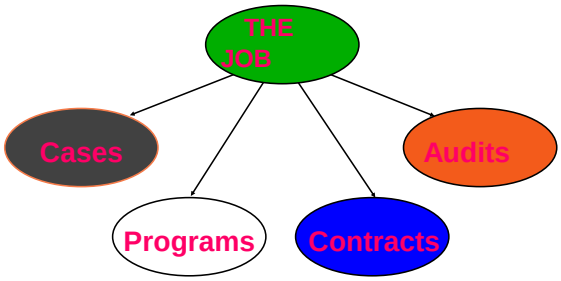
Actual and Normal Costing



Using a predetermined rate makes it possible to estimate total job costs sooner.

Actual overhead for the period is not known until the end of the period.

Project Costing: Job-Order Costing in Nonmanufacturing Organizations

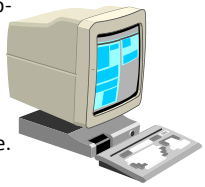


Project Costing: Job-Order Costing in Nonmanufacturing Organizations (cont'd)

The need for cost accumulation in nonmanufacturing organizations exists for the same reasons found in manufacturing firms: the need to assign a **cost** for the purposes of planning, cost control, and *pricing.*

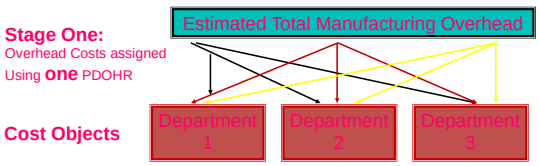
Changing Technology in Manufacturing Operations

- Computerized data interchange has eliminated much of the paperwork associated with job-order cost systems.
- Scanning devices (bar codes) have simplified data entry to record material and labour use.

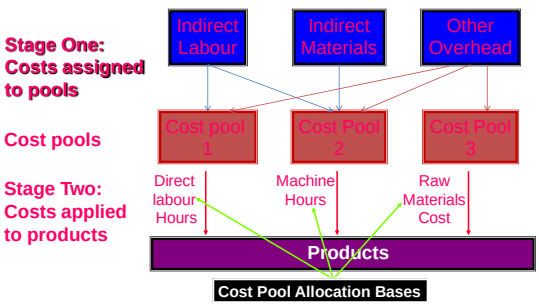


One Stage Cost Allocation

[aka traditional]



Two-Stage Cost Allocation-*lead into **ABC***



Different Overhead Rates Under Company-wide and Departmental Costing Systems

The accuracy of a product-costing system is affected by the number of cost drivers and overhead rates. A single compnay-wide rate is the least accurate. A two-stage allocation process with multiple departmental rates will *typically improve accuracy.*

Ch.4: WE DO NOT DO THIS CHAPTER IN THIS COURSE

Chapter 5

Activity-Based Costing [ABC]
and
Activity-Based Management

Learning Objectives

1. Be able to Explain undercosting and overcosting of products or services
2. Contrast traditional costing with ABC
3. Assign costs using activity-based costing (ABC)
4. Use ABC systems for activity-based management (ABM)

Definitions

- **Activity:** an event, task or unit or work with a specified purpose
- Indirect costs of activity become a **COST POOL** – the basis for activity-based costing (ABC)
- **Activity-Based Management (ABM)** – a strategy to eliminate non-value-added activities
- **Traditional Costing**-Also called cost smoothing or peanut butter costing
  - Spread the costs of MOH uniformly among products and services
  - Appropriate if:
    - Indirect costs are a small proportion of total costs
    - Activities are consumed uniformly in the production process
  - Inappropriate otherwise: leads to overcosting and undercosting of products and services

Undercosting and Overcosting

w. Traditional costing

- Output level undercosting
  - A unit, batch or product consumes a high level of conversion activities but is reported to have a low total cost
    - Can lead to underpricing and low operating margins
- Output level overcosting
  - A unit, batch or product consumes a low level of conversion activities but is reported to have a high total cost
    - Can lead to overpricing of products in marketplace

Cost Cross-Subsidization

w. Traditional costing

- The result of spreading indirect costs evenly despite different sets of activities that cause them
  - The overcosted product absorbs too much cost, making it seem less profitable than it really is
  - The undercosted product is left with too little cost, making it seem more profitable than it really is

➢ The overcosted products are ***subsidizing*** the undercosted products

From Traditional Costing to ABC

- Traditional overhead allocation:

$$\text{OH Allocation Rate} = \frac{\text{Budgeted Total overhead cost pool}}{\text{Budgeted Total cost pool units}}$$

  - Allocates total overhead (one cost pool) over one allocation rate
- ABC systems follow a *two-stage* procedure to assign overhead costs to products.

Stage One

Identify significant activities and assign overhead costs to each activity in proportion to resources used.

Stage Two

Identify cost drivers appropriate to each activity and allocate overhead to the products.

Cost Hierarchy

The separation of one indirect cost pool into four possible cost pools according to the level at which activities contribute to producing output:

- Unit-level (output-level)
  - Costs relating to individual units of output, such as material costs
- Batch-level
  - Costs relating to batches of output, such as set-up charges
- Product-sustaining-level
  - Costs relating to the support of a particular product, such as product design costs
- Facility-sustaining-level
  - Costs relating to the organization as a whole

➢ This hierarchy is useful for identifying the activity cost drivers for each activity cost pool

Activity-Based Costing Systems

Three things to consider to improve an existing costing system:

1. Direct-cost tracing
   - Reduce indirect costs by classifying more costs as direct
2. Indirect-cost pools
   - Expand the number of indirect-cost pools until the costs in each pool are homogeneous – the amount varies directly as activity varies
3. Activity-cost drivers
   - A measure of the activity performed for each cost driver
   - The denominator that is divided into the indirect cost pool to calculate the activity cost rate

ABC Design Flowchart
Done in Class

Comparing Alternative Costing Systems

- ABC System requires a large amount of information
  - Financial and non-financial
- ABC generally results in:
  - Better product and pricing decisions
  - Reduced costs
  - Performing activities more efficiently
  - Eliminating activities that do not add value
  - Improving product design
  - Satisfying and retaining customers

Bellring, Inc. Example

Belring, Inc. produces two telephones: a cordless and a regular model. The company has the following estimated and actual data:

Budgeted overhead	$360,000
Expected activity (DLH)	100,000
Actual overhead	$380,000
Actual activity (DLH)	100,000

Bellring, Inc.

Predetermined Overhead Rate =
Budgeted overhead ÷ Expected activity

= $360,000 ÷ 100,000 DLH

= $3.60 per DLH

Bellring, Inc.

	Cordless	Regular
Units produced	10,000	100,000
Prime costs (DM + DL)	$78,000	$738,000
Direct labour hours	10,000	90,000

Bellring, Inc. – Unit Cost Computation: Plantwide Rate (DLH)

	Cordless	Regular
Prime costs	$ 78,000	$ 738,000
Overhead costs: (DLH)		
$3.60 x 10,000	36,000	---
$3.60 x 90,000	---	324,000
Total mfg. costs	$114,000	$1,062,000
Units produced	÷ 10,000	÷ 100,000
Unit cost	$ 11.40	$ 10.62

Bellring, Inc. – Departmental Data

	Fabrication	Assembly
Budgeted OH	$252,000	$108,000
Expected and actual usage **(DLH):**		
Cordless	7,000	3,000
Regular	13,000	77,000
	20,000	80,000
Expected and actual usage **(MH):**		
Cordless	9,000	1,000
Regular	36,000	4,000
	45,000	5,000

Charge Fabrication based on MH and Assembly based on DLH ← mgmt. decison

Bellring, Inc. – Departmental Rates

Overhead Pool Rates:

Fabrication Rate (MH)= Budgeted OH / Expected MH

= $252,000/45,000

= $5.60 per fabrication MH

Assembly Rate (DLH) = Budgeted OH / Expected DLH

= $108,000/80,000

= $1.35 per assembly DLH

Bellring, Inc. – Unit Cost Computation: Departmental Rate

	Cordless	Regular
Prime costs	$ 78,000	$738,000
Overhead costs:		
($5.60 x 9,000) + ($1.35 x 3,000)	54,450	---
($5.60 x 36,000) + ($1.35 x 77,000)	---	305,500
Total mfg. costs	$132,450	$1,043,550
Units produced	÷ 10,000	÷ 100,000
Unit cost	$ 13.25	$ 10.44

Can you see a difference between the two methods?

Bellring, Inc. – Activity Usage

	Cordless	Regular	Total
Units produced per year	10,000	100,000	110,000
Prime costs	$78,000	$738,000	$816,000
Direct labour hours	10,000	90,000	100,000
Machine hours	10,000	40,000	50,000
Production runs	20	10	30
Number of moves	60	30	90

Bellring, Inc. – Additional OH Cost Data

Activity	Activity Cost
Setups	$120,000
Material handling	60,000
Machining	100,000
Testing	80,000
Total	$360,000

Is total O/H the same as before?

Bellring, Inc. – Activity Rates

Activity rates are computed below:

Setup rate:	$120,000/30 = $4,000 per run
Material-handling rate:	$60,000/90 = $666.67 per move
Machining rate:	$100,000/50,000 = $2 per MH
Testing rate:	$80,000/100,000 = $0.80 per DLH

Bellring, Inc. – Activity-Based Costing Unit Cost Computation

	Cordless	Regular
Prime costs	$ 78,000	$ 738,000
Overhead costs:		
Setups (runs 20/10 x $4,000)	80,000	40,000
Material handling (moves 60/30 x $667)	40,000	20,000
Machining (MH 10,000/40,000 x $2)	20,000	80,000
Testing (DLH 10,000/90,000 x $0.80)	8,000	72,000
Total mfg. costs	$226,000	$ 950,000
Units produced	÷ 10,000	÷ 100,000
Unit cost	$ 22.60	$ 9.50

Comparison of Unit Costs

	Cordless	Regular
Activity based unit cost	**22.60**	**9.50**
Plantwide rate	$11.40	$10.62
Departmental rate	13.25	10.44

Note: Bellring is not a difficult example

Symptoms of an Outdated Functional Cost System

- Competitors' prices appear unrealistically low or high.
- Products that are difficult to produce show high profits.
- Operational managers want to drop products that appear profitable.
- Profit margins are difficult to explain.
- Dysfunctional decisions

Using ABC to Improve Profits Activity Based Management [ABM]

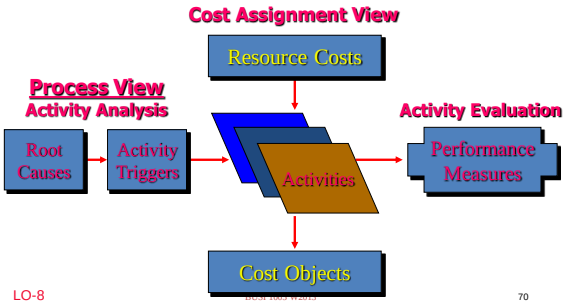
- More accurate information provides a sounder basis for both operating and strategic decisions:
  - Product and pricing decisions
  - Cost reduction decisions
  - Process decisions
  - Design decisions
  - Planning and managing activities

Activity-Based Management

Activity-based costing establishes relationships between overhead costs and activities so that we can better allocate overhead costs.

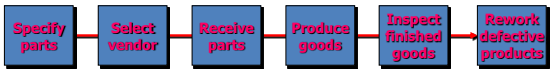
Activity-based management focuses on managing activities to reduce costs.

Two-Dimensional ABC and Activity-Based Management



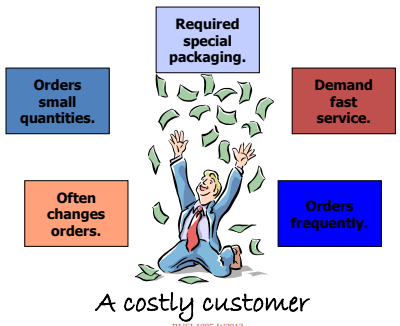
Using ABM to Eliminate Non-Value-Added Activities and Costs

1. Identify Activities.
2. Identify Non-Value-Added Activities.
3. Understand Activity Linkages, Root Causes, and Triggers.



4. Establish Performance Measures.
5. Report Non-Value-Added Costs.

Customer Profitability Analysis



Customer Profitability Analysis

Customer-Related Activities	Cost Driver Base	Cost Driver Rate
Order processing	Purchase orders	$ 150
Sales contacts (phone calls, faxes, etc.)	Contacts	100
Sales visits	Visits	1,000
Shipment processing	Shipments	200
Billing and collection	Invoices	160
Design/engineering change orders	Design changes	4,000
Special packaging	Units packaged	40
Special handling	Units handled	60

A company may use these customer-related costs to help determine the profitability of each customer.

LO-9

ABC Customer Costing

Use Customer as Cost Object

(Identify profitability of each – How much resources are consumed by each customer)

Diversity Issues:

- *Order Frequency*
- *Delivery Frequency*
- *Geographic Distances*
- *Sales and Promotional Support*
- *Engineering Support*
- *Used For:*
  - *Pricing*
  - *Customer Mix*
  - *Improving profitability*

ABC Supplier Costing

Use Supplier as Cost Object

(Same process as customer)

Relating To:

- *Purchase Cost*
- *Quality*
- *Supplier Reliability*
- *Delivery Performance*

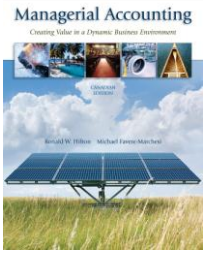
Just-in-Time Inventory and Production Management

No materials are purchased and no products are manufactured until they are needed.

The primary goal of a JIT production system is to reduce or eliminate inventories at every stage of production.

What could be possible problems with JIT?

Chapter 6- If you find what we do in class is fine, then skip slides for chapter 6



Activity Analysis, Cost Behaviour, and Cost Estimation

Learning Objectives

1. Explain the relationships between cost estimation, cost behaviour, and cost prediction.
2. Define and describe the behaviour of the following types of costs: variable, step-variable, fixed, step-fixed, mixed, and curvilinear.
3. Explain the importance of the relevant range in using a cost behaviour pattern for cost prediction.

Learning Objectives (con'd)

4. Describe and use the following cost-estimation methods: account classification, visual fit, high-low, and least-squares regression.
5. Describe the multiple regression and engineering approaches to cost estimation.
6. Describe some problems often encountered in collecting data for cost estimation.

Learning Objectives (con'd)

7. Define and give examples of engineered costs, committed costs, and discretionary costs.
8. Describe the effect of learning on cost behaviour.
9. Perform and interpret a least-squares regression analysis with a single independent variable (appendix).

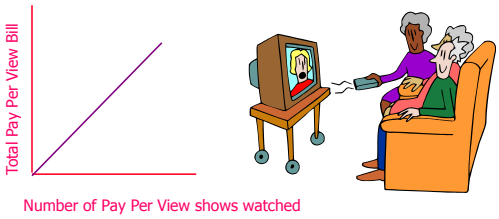
Learning Objective 1
Introduction

Cost estimation	Cost behaviour	Cost prediction
Process of determining cost behaviour, often focusing on historical data.	Relationship between cost and activity.	Using knowledge of cost behaviour to forecast level of cost at a particular activity. Focus is on the future.

Learning Objective 2

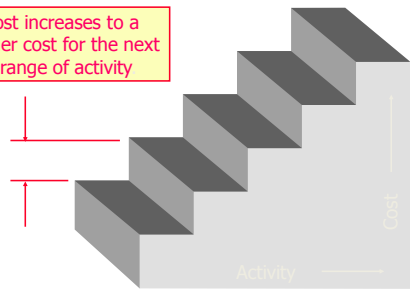
Total Variable Cost Example

Your total Pay Per View bill is based on how many Pay Per View shows that you watch.



Step-Variable Costs

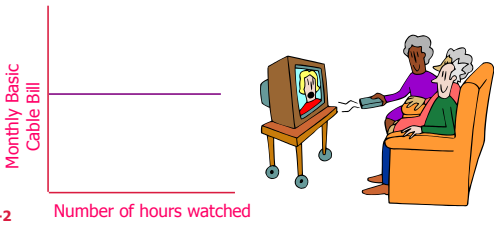
Total cost increases to a new higher cost for the next higher range of activity



LO-2

Total Fixed Cost Example

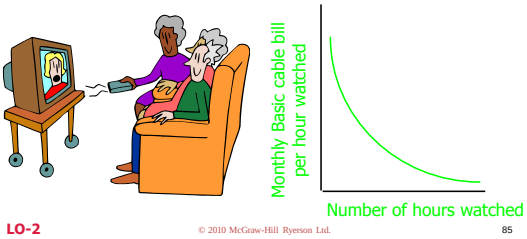
Your monthly basic cable TV bill probably does not change no matter how many hours you watch.



LO-2

Fixed Cost Per Unit Example

The average cost per hour decreases as more hours are spent watching cable television.



LO-2

Step-Fixed Costs

Example: Office space is available at a rental rate of $30,000 per year in increments of 1,000 square feet. As the business grows, more space is rented, increasing the total cost.

Continue

LO-2

Step-Fixed Costs

Total cost doesn't change for a wide range of activity, and then jumps to a new higher cost for the next higher range of activity.

LO-2

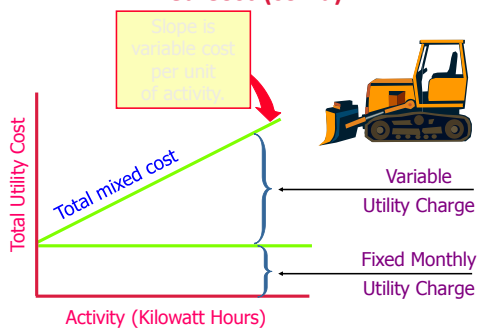
Mixed Cost

A mixed cost is partly fixed and partly variable.

Consider the following example

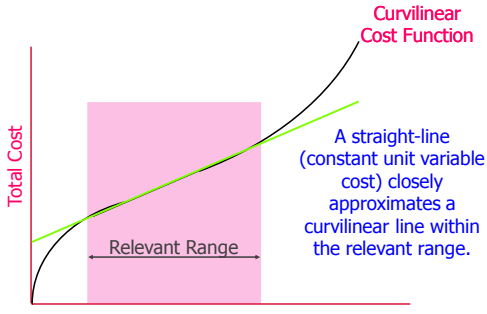
LO-2

Mixed Cost (con'd)



LO-2

Curvilinear Cost



LO-2

Learning Objective 3

The Relevant Range

Management is interested in cost behaviour within a company's relevant range, the range of activity within which management expects the company to operate. Within this range, established cost behaviour patterns can be expected to continue.

Learning Objective 4

Cost Estimation

Account-Classification Method

Visual-Fit Method

High-Low Method

Least-Squares Regression Method

Account-Classification Method

Cost estimates are based on a review of each account making up the total cost being analyzed.

Visual-Fit Method

A scatter diagram of past cost behaviour may be helpful in analyzing mixed costs.

The High-Low Method

OwlCo recorded the following production activity and maintenance costs for two months:

	Units	Cost
High activity level	9,000	$9,700
Low activity level	5,000	6,100

Using these two levels of activity, compute:

1. the variable cost per unit.
2. the total fixed cost.

The High-Low Method (con'd)

	Units	Cost
High activity level	9,000	$9,700
Low activity level	5,000	6,100
Change	4,000	$3,600

▲ in cost
▲ in units

1. Unit variable cost =

The High-Low Method (con'd)

	Units	Cost
High activity level	9,000	$9,700
Low activity level	5,000	6,100
Change	4,000	$3,600

❶ Unit variable cost = $3,600 ÷ 4,000 units = $0.90 per unit

The High-Low Method (con'd)

	Units	Cost
High activity level	9,000	$9,700
Low activity level	5,000	6,100
Change	4,000	$3,600

❶ Unit variable cost = $3,600 ÷ 4,000 units = $0.90 per unit
❷ Fixed cost = Total cost – Total variable cost

The High-Low Method (con'd)

	Units	Cost
High activity level	9,000	$9,700
Low activity level	5,000	6,100
Change	4,000	$3,600

❶ Unit variable cost = $3,600 ÷ 4,000 units = $0.90 per unit
❷ Fixed cost = Total cost – Total variable cost
Fixed cost = $9,700 – ($0.90 per unit × 9,000 units)

The High-Low Method (con'd)

	Units	Cost
High activity level	9,000	$9,700
Low activity level	5,000	6,100
Change	4,000	$3,600

❶ Unit variable cost = $3,600 ÷ 4,000 units = $.90 per unit
❷ Fixed cost = Total cost – Total variable cost
Fixed cost = $9,700 – ($.90 per unit × 9,000 units)
Fixed cost = $9,700 – $8,100 = $1,600

The High-Low Method Question 1

If sales commissions are $10,000 when 80,000 units are sold and $14,000 when 120,000 units are sold, what is the variable portion of sales commission per unit sold?

a. $.08 per unit
b. $.10 per unit
c. $.12 per unit
d. $.125 per unit

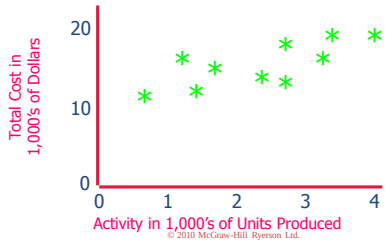
The High-Low Method Question 2

If sales commissions are $10,000 when 80,000 units are sold and $14,000 when 120,000 units are sold, what is the fixed portion of the sales commission?

a. $ 2,000
b. $ 4,000
c. $10,000
d. $12,000

Visual-Fit Method (con'd)

Plot the data points on a graph (total cost vs. activity).



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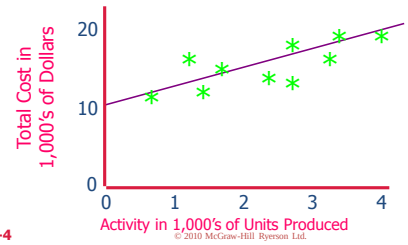
Visual-Fit Method (con'd)

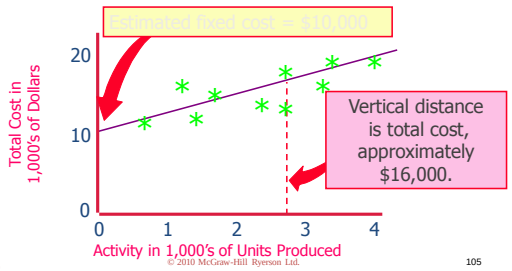
Draw a line through the plotted data points so that about equal numbers of points fall above and below the line.



LO-4

Visual-Fit Method (con'd)

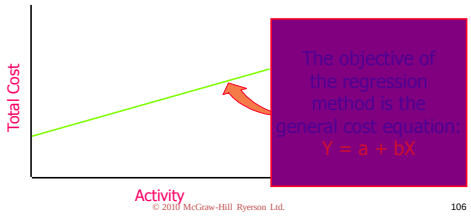
Estimated fixed cost = $10,000



LO-4

Least-Squares Regression Method

Regression is a statistical procedure used to determine the relationship between variables such as activity and cost.



LO-4

Learning Objective 5

Multiple Regression

Multiple regression includes two or more independent variables:

$$Y = a + b_1X_1 + b_2X_2$$

Terms in the equation have the same meaning as in simple regression with only one independent variable.

Engineering Method of Cost Estimation

Cost estimates are based on measurement and pricing of the work involved.

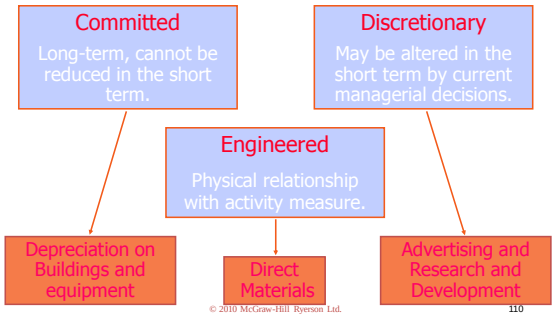
LO-5

Learning Objective 6

Data Collection Problems

1. Missing data.
2. Outlier data points.
3. Mismatched time periods costs.
4. Trade-offs in choosing the time period.
5. Allocated and discretionary costs.
6. Inflation.

Learning Objective 7
Engineered, Committed and Discretionary Costs



Learning Objective 8

Learning Curve