Week 1: Accounting information & management

- **Cost management:** Short-run & long-run planning AND control of costs that **increase value** for customers **OR reduce cost** 性价比高／成本低
  - **Short run:** Some costs cannot be varied
  - **Planning**: Decide goals & the way to achieve them
  - **Control:** Implementation & Performance evaluation
    - **Variance:** Difference between actual AND budgeted amounts
- **Management accounting**: The measure of financial AND non-financial info that help managers to achieve organisational objectives
  - 4 differences between financial & management accounting:

Financial accounting	**Management accounting**
1. **WHO**: External users	Internal users
2. **WHAT**: Historical perspective	Future perspective
3. **HOW**: Follow GAAP	Does not follow GAAP
4. **CHARACTERISTIC**: Faithful representation & Verifiability	Relevance & Timeliness

- **Cost accounting:** The measure of financial AND non-financial info that relate to acquisition OR consumption of resources 用G/S
  - **Aim:** To provide cost info for financial & management accounting

7 steps in Decision-making framework:

1. Identify the decision objective (aim, eg. convenient / healthy)
2. Identify the decision criteria (requirement, eg. cheap, vegetarian)
3. Identify the alternatives (choices)
4. Collect relevant info (info about choices, eg. distance)
5. Compare Cost & Benefits of each alternative
6. Choose the alternative with highest net benefit(benefit - cost)
7. Evaluate the decision

3 rules to decide whether information is relevant:

1. **Sunk cost**: Cost that already incurred AND cannot be changed → NOT relevant
2. **Future cost** → Relevant
3. Similar info between alternatives = NOT relevant (other than cost)

Value chain analysis

- **Value chain:** A series of activities in which each organisational function adds utility to G/S **(organisational level)**
  - **Value-added activity:** An activity that is necessary AND **Customer** is willing to pay for
    - Eg. Value added = Direct labor cost; Non-value added = rework cost due to errors
  - **5 Primary activities** = Inbound logistics → Operations → Outbound logistics → Marketing & sales → After-sale service 运来，加工，运去储存
  - **4 Support activities** = Procurement + HR management + Infrastructure + Technology development 材料，人， 基础设施，科技
- **Supply chain:** An industry value chain, in which organisations add utility to G/S **(industry level)**
  - Supplier → Manufacturer → Distributor → Retailer → Final consumer
  - **Highly vertically integrated** = Involved in many segments in supply chain
    - 4 benefits:
      1. Control product quality (亲自监督, produce own raw materials)
      2. Control cost → Help to avoid markup (no need to buy, 不需任人宰割)
      3. Improve supply chain coordination 跟自己人要，配合你
      4. Respond quicker to changes in customer needs (more efficiently)

2 benefits of value chain analysis:

1. Provide a broader view of organisation (value chain)
2. Encourage external thinking by incorporating suppliers & customers in management decision making (supply chain)

Strategic cost management

2 types of strategic cost management: (planning in CM - decisions that influence cost)

1. **Structural cost management:** Manage decisions that affect cost
   - 4 decisions that affect cost: 生意做多大，produce什么，怎样做, external
     i. Operation scope
     ii. Product design
     iii. Process design
     iv. Relationship with other firms in the supply chain
2. **Executional cost management:** The use of analytical tools to evaluate value chain performance (Evaluation)
   - Eg. Product costing, Customer profitability analysis, Budgeting & Variance analysis

Tutorial:

1. When preparing variance report:
   a. **Favorable** means:
      - For revenue → Actual > Budgeted amount; For cost → Actual < Budgeted
   b. ALL numbers must be positive
   c. When summing numbers → Add favorable AND Subtract unfavorable amount

Week 2: Fundamental cost concepts

- **Cost object**: A thing that we want to measure cost from
  - Eg. Product/services, department, projects, customer
- **Cost item**: Cost itself

Cost classification - Direct VS indirect cost (how classify affect how to measure)

- 2 steps in cost measurement: (incur many cost daily → Accumulate, assign)
  1. **Cost accumulation:** Record **AND** organise costs into different categories
  2. **Cost assignment:** Assign cost to cost objects
     2 ways to assign cost:
     1. **Trace direct cost** Direct - no need effort - trace Q & P
        - **Direct cost**: Cost that can be physically **AND** economically traced to cost object 可不可以 + 要不要(quantifiable+easy)
          - **Economically traceable:** Benefit > Cost of tracing 值不值得
        - Traced by determining Exact quantities used by cost object x Price per quantity
     2. **Allocate indirect cost** Indirect - need effort - manually allocate
        - **Indirect cost**: Cost that cannot be physically **AND** economically traced to cost object
        - Allocated based on allocation base **OR** ability to bear
          如何分 = 不是自己喜欢 – 你有根据地分 + 他自己承受能力

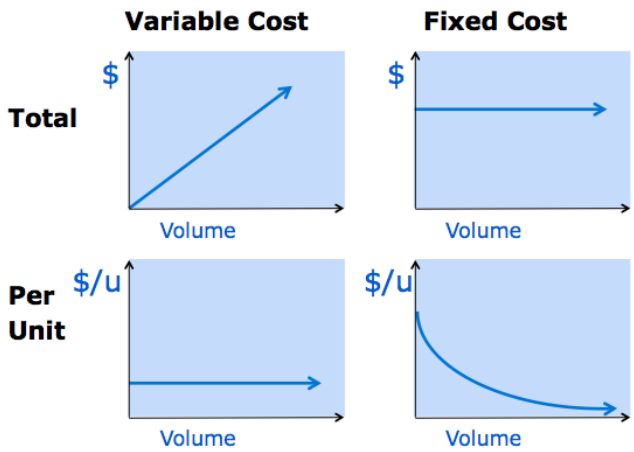
- Material and Labor costs can be direct OR indirect (follow this structure!!)
  1. **Direct material**: Material that usually becomes a physical part of product
  2. **Direct labor**: Labor work done to produce the product/service
  3. **2 Indirect material cost:** Eg. Water/glue, cleaning material cost (during, after product)
  4. **2 Indirect labor cost:** Eg. Supervisory cost, cleaning cost
  5. **5 other Indirect costs**: Eg. Rental, utility cost, depreciation of machinery, insurance cost, Support department cost (IF open store → location, 水电, machinery)

Why is important to classify cost into direct & indirect costs? (before operation)

- Organisations need to decide which direct costs to trace throughout the period **AND** which allocation base to use to allocate indirect costs
  - Allocation base chosen will affect type of info that need to be collected throughout period

Fixed VS Variable cost - Total cost behavior when volume changes

- **Fixed cost**: A cost that does not change **in total** BUT changes on **per-unit basis**, when volume changes (what is fixed - total cost)
  - IF volume increases, **total fixed cost** will not change
  - IF volume increases, **fixed cost per unit** will decrease (shared by more)
- **Variable cost**: A cost that does not in **per-unit basis** BUT changes **in total**, when volume changes
  - IF volume increases, **total variable cost** will increase
  - IF volume increases, **variable cost per unit** will not change
- **Summary:** Just ask yourself → IF volume increases, will total cost increase?
  - IF yes → Variable cost; IF no → Fixed cost

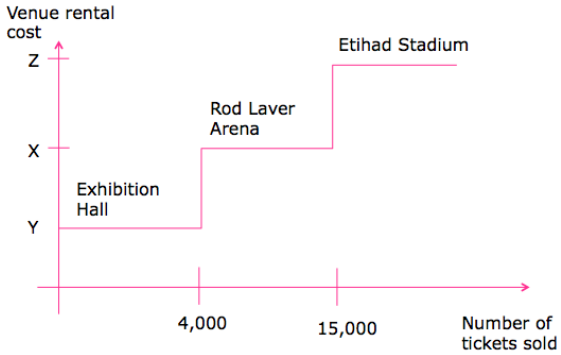


Why is it important to classify costs into fixed & variable costs? (what is fixed/variable -total cost)

- Help organisations to predict the changes in total costs when volume changes
  - Help to perform break-even analysis (why know total cost)

2 concepts of Relevance

1. **Relevant range:** Range of volume, in which expected cost behavior remains valid
   - Some costs will not be fixed over the entire range of volume
   - Eg. IF sell 4000 < x < 15000 tickets, need to rent arena → Fixed cost = $X
     - Fixed cost = $X IF **relevant range** is 4000 < x < 15000



2. **Relevant costs and revenues** when comparing alternatives: Costs and revenues that
   1. Will occur in the future **AND** 相关 = 不能是0
   2. Differ between alternatives (after happen, cannot be same)

Inventoriable VS Non-inventoriable cost

- **Inventoriable cost:** Cost that can be included in inventory cost
  - 3 types of inventoriable cost:
    1. Direct material cost — Direct
    2. Direct labor cost — Direct → 有了人 + 材料 = produce
    3. **Production overhead cost:** Indirect costs incurred in the conversion process
       - Eg. Indirect materials, indirect labor, rental, utility, depreciation of machinery, insurance
  - Full product cost $\neq$ Inventoriable cost
    - R&D, Design, Marketing & sales, administrative costs → NOT inventoriable cost
    - NOT indirect costs incurred in the conversion process

3 Types of organisations and inventory:

1. **Manufacturing firm** → Raw materials + Work-in-progress + Finished goods inventory
2. **Merchandising firm** → Only finished goods inventory — 卖已经做好的商品
3. **Service firm** → NO inventory

Engineered VS Discretionary cost — (can be measured easily VS hard to determine)

- **Engineered cost**: Input cost per output unit that can be measured with high certainty (engineering = science + math = high certainty)
  - Eg. Direct material cost, Direct labor cost
- **Discretionary cost**: Input cost of which spending level is hard to be determined
  自由决定 = 不知多少才是够
  - Eg. R&D cost, Marketing cost

Opportunity cost

- ***Opportunity cost**: Value of best alternative given up to get something — 放弃了的机会价值
  - Eg. A company spends $100 to buy Machine A. They could have spent $100 to buy Machine B, which will bring NPV of future cash inflow = $130.
    - For accountant → Cost of Machine A = $100
    - For finance analyst → Cost of Machine A = $130
  - *Accountants do not consider OC
    - BUT OC is very important in decision-making

Indirect cost allocation

- **Indirect cost:** Cost that cannot be physically AND economically traced to cost object
- 2 ways to allocate indirect cost: 不是自己喜欢 – 你有根据地分 + 他自己承受能力
  1. Allocated based on **allocation base** (that you choose)
     **2 requirements of allocation base: powerful - influence
     1. Main **Cost driver**: A factor that influences cost
        - **Reflect cause-and-effect relationship between cost driver **AND** cost items
     2. Quantifiable AND Traceable to cost object 不能又是indirect
  2. Allocated based on cost object's **ability to bear** (BRIEFLY)
     - A product with higher sales have higher ability to bear cost 不会亏
       - Can use sales to allocate indirect cost
       - Eg. Want to allocate **CEO salary(**Indirect labor cost) to **Cost object**(1 unit of Product X) → **Product X's sales** = 50% of total sales
         1. Allocate CEO salary to Product X, based on sales
         2. Divide 'Indirect cost allocated to Product X' by 'Total units of Product X produced' = **CEO salary per unit of Product X produced**

Exercise of allocating indirect cost based on allocation base

- **Cost item =** Electricity expense; **Cost object** = Each unit of Product A and B produced
- **Chosen Allocation base =** Machine hours (cost driver + can be quantifiable & traced)
  - **Electricity expense** = $100,000
  - **Machine hours** → Product A = 5,000; Product B = 8,000
  - **Units produced** → Product A = 2,000; Product B = 8,000
- ****2 Steps to calculate indirect cost per cost object: (just follow actual costing**)
  1. Allocate Electricity expense to Product A and B, based on allocation base(machine hours)
     - **Product A** → ($100,000/13000) x 5000 = 38461.54
  2. Calc Indirect cost allocated to cost object(Each unit of Product A/B produced)
     - **Product A** → 38461.54 / 2000 = **$19.23 per unit**
- Although Units of output can also be an allocation base(cost driver + Quantifiable & traceable)
  - IF produce 2 products → Electricity used to produce each product will be different
  - Machine hour is more accurate allocation base

Indirect cost allocation using cost pools

- In reality, organisations do not choose different allocation base for each indirect cost item
  - **Cost pool:** A group of cost items that uses the same allocation base

Tutorial

1. ALWAYS apply theory to the case
2. **For cost classification → MUST first identify **cost object**!!
3. ****2 steps to determine allocation base:**
   1. Identify 3 cost drivers + Choose the one that is main + quantifiable & traceable
4. To think Fixed OR Variable → As Volume increases, Total cost will…

Week 3: Cost assignment & Job costing

Terminology

- **Indirect manufacturing cost** = Manufacturing overhead cost = Factory overhead cost = Production overhead cost
- **Indirect cost =** Overhead cost
  - Indirect manufacturing cost + Indirect non-manufacturing cost = Factory overhead cost + Non-factory overhead cost

Why do we need to assign costs to cost objects?

5 goals to assign costs: (why trace AND allocate)

1. To understand total costs incurred by each cost object — direct + indirect
2. To understand the major cost item AND their cost drivers — analyse 最多+what causes
3. To help management decision making — analyse - decisions
4. To evaluate employee performance — decision - internal
5. To measure profits AND assets for external reporting — decision - external

Assigning cost to cost objects

1. **Direct cost**: Cost that can be physically AND economically traced to cost object
   - Traced by determining Exact quantity used by cost object x Price per quantity
2. **Indirect cost:** Cost that cannot be physically AND economically traced to cost object
   - Allocated based on allocation base
   - 2 requirements of allocation base:
     1. Main **Cost driver**: A factor that affects the cost
        - Reflect cause-and-effect relationship between cost driver & cost items
     2. Quantifiable AND Traceable to cost object

- Eg. X wants to assign machine repair cost to Product A and B
  **2 steps to determine allocation base:
  1. **Identify 3 cost drivers**
     - Complexity, Size of machine, *Machine Hours (damage condition)
  2. **Choose Main cost driver that is quantifiable AND traceable to cost object as allocation base**
     - Machine Hours

Actual costing method (when to allocate indirect cost)

- **Actual costing**: When indirect cost is allocated to cost object at the end of period

5 steps to allocate indirect costs to cost object:

1. Accumulate Actual total indirect cost — B4 assign cost - accumulate
2. Determine Allocation base for cost pool — Indirect - allocate
3. Measure Actual total units of allocation base — After determine, measure
4. Calculate Actual allocation rate — Calculate - rate - divide
   - **Actual allocation rate** = Total indirect cost ÷ Total units of Allocation base
5. Calculate Indirect cost allocated to cost object
   - **Indirect cost allocated to cost object** = Actual allocation rate x Actual units of allocation base used by cost object

Cost pools AND allocation rates:

- Companies can use ONE single indirect cost pool with ONE single allocation base & rate
  - BUT the more cost pools, the more important cost drivers can be chosen for each cost pool, the more accurate cost allocation
  - Eg. **Plant-wide Manufacturing overhead rate(**MOHR**)**
    = Total Manufacturing overhead ÷ Total units of allocation base

Example - Manufacturing cost per unit of Product X:

- Produced 100 Units of Product 'X'; required:
  10 Kg of Direct Material @ $55/Kg
  12 Hours of Direct Labour (DLH) @ $30/Hour;

  Total Mfg OC incurred in the period = $600k [Step 1 of slide 11]
  Alloc. base: DLH = 10k hrs 'incurred' this period [Step 2 & 3]
  MOHR (allocation rate) = $600k / 10k = $60 per DLH [Step 4]

- Manufacturing Cost Per Unit of X?

Direct Materials	10 kg * $55/kg	= $550
Direct Labour	12 hrs * $30/hr	= $360
Mfg. Overhead	12 hrs * $60/hr	= $720 [Step 5]
Total for 100 units		= 1,630

⇒ **$16.30 per unit**

(Allocation rate ≠ %)

Timeliness issue in Actual costing method

- Indirect manufacturing cost is hard to be predicted → Does not increase evenly when volume increases — No pattern
  - **Can only be allocated at the end of period using actual costing(AC) method
  - BUT create **timeliness issue** → Managers may need to know total manufacturing costs before the end of period

Normal costing method — Normal = do it everyday, not end of period

- **Normal costing**: When indirect cost is allocated to cost object throughout the period
  - Use **Predetermined** allocation rate **BUT** **Actual** units of allocation base used
    - **Predetermined MOHR =** Budgeted total manufacturing overhead ÷ Budgeted total units of allocation base
  - **BUT at the end of period → MUST adjust cost allocation based on Actual MOHR
  - **Under Normal costing → Way to calc Direct cost is the **same** as Actual costing
    - Only difference = Allocation rate AND Indirect cost allocated

Costing systems (how to record cost)

2 types of costing system: Job = 分工合作 VS 过程当中一样的**cost**合在一起

- **Job costing:** When cost of each job is accumulated separately know exact cost of each job
- **Process costing**: When cost of **identical** units of outputs produced over Period X is combined together
  - Then calc unit cost using averaging

Job costing system

- **Job costing:** When the cost of each job is accumulated separately
  - **Job =** A task that produces product **OR** service 一段工
  - **Only suitable for organisations that produce low-volume AND unique products OR service 分开 = 必须少 + 特别
    - Can be manufacturing OR service firms
- Eg. Audit firm
  - **Job =** Each audit project = Cost object (want to measure cost of each job)
    - Direct costs are traced directly to each job
    - Indirect costs are allocated to each job based on allocation base
- **Job cost record**: A source document that records unit cost AND accumulated cost for each job

Example: Job Cost Record

Job Number	A-201	**Date Initiated**	14-MAR-13
Department	306	**Date Completed**	16-MAR-13
Item	Picture Frames	**Units Completed**	2 (identical)

Direct Materials		Direct Labor			Manufacturing Overhead		
Req. No.	Amount	Ticket	Hours	Amount	Hours	Rate	Amount
X7-6890	$ 116	M13056	4	$ 88	4 Using DL hours as Allocation base	$ 8 Predetermined MOHR	$ 32

Cost Summary		Units Shipped		
Product Costs	Amount	Date	Number	Balance
Direct Materials	$ 116			
Direct Labor	$ 88			
Manufacturing Overhead	$ 32			
Total Cost	$ 236			
Unit Cost	$ 118			

Shipping Summary				
Date	Customer	Shipped	Remaining	Cost

Work-in-progress account: **(journalise & post job cost record)**

- **Each job has its own Work-in-progress account
  - **Work-in-progress**(WIP**) account**: A ledger account that accumulates Total manufacturing costs of each job
    - **Aim:** Help inventory valuation (when calc finished goods invt, just transfer)

***WIP account for a particular job
Mfg overhead is only **allocated amount!!!

Work-in-process/progress account

Opening balance	**Finished goods**
Direct materials	
Direct labour	**Closing balance**
Manufacturing overhead	

Lecture illustration summary (NO need to redo, in tut)

2 factors that affect total cost of each job: Total - direct & indirect, indirect - allocation base

1. Cost classification of direct and indirect cost
   - ➢ The more direct cost can be traced, the more accurate the cost assignment
2. Choice of allocation base
   - ➢ The more representative the cost driver, the better it reflects cause-and-effect relationship between cost driver & cost items, the more accurate the cost allocation

2 Risks in Job costing Record cost

1. Inaccurate recording of costs AND units of allocation base Inaccurate
2. Allocation base chosen is not the main cost driver Accurate BUT base is inappropriate

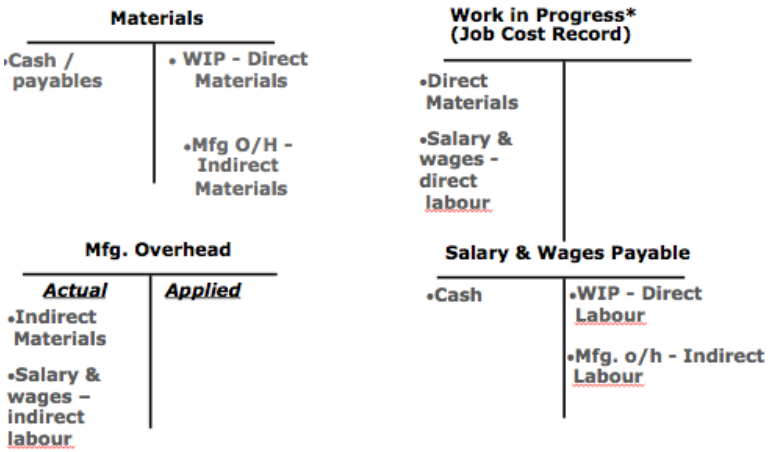
Resource flow & T-accounts in manufacturing firms

4 stages in Manufacturing direct materials flow:

1. Purchase raw materials → Net purchase cost + Freight in cost where come from
   - ➢ DR **Raw materials**, CR Cash
2. Requisite direct materials → DR **Work-in-progress**, CR **Raw materials** before use, ask
3. Complete the job → DR **Finished goods**, CR **Work-in-progress** after ask & use
4. Sell the goods → DR **Cost of goods sold**, CR **Finished goods**

5 Steps to assign cost in Manufacturing Direct AND Indirect resource flow:

1. Assign material cost as Direct **OR** Indirect raw materials
   - ➢ **Direct materials** → **DR** Work-in-progress, **CR** Raw materials
   - ➢ **Indirect materials** → **DR** Manufacturing overhead, **CR** Raw materials
2. Assign labor cost as Direct OR Indirect labor
   - ➢ **Direct labor** → **DR** Work-in-progress, **CR** Wages payable
   - ➢ **Indirect labor** → **DR** Manufacturing overhead, **CR** Wages payable



3. Allocate Manufacturing overhead to Work-in-Progress(WIP) for the particular job
   - ➢ **Manufacturing overhead allocated** = Actual/Predetermined MOHR x Actual units of allocation base used
   - ➢ **DR** Work-in-progress(allocated), **CR** Manufacturing overhead(allocated)
4. Transfer completed job from WIP to Finished goods
   - ➢ **DR** Finished goods, **CR** Work-in-Progress
5. Transfer the sales of goods from Finished goods to Cost of goods sold
   - ➢ **DR** Cost of goods sold, **CR** Finished goods