ACC 1701XA
Accounting for Decision Makers

LECTURE 09

Lecturer: Dr. Hanny Kusnadi

Accounting
The language of the business world

NUS National University of Singapore | NUS BUSINESS SCHOOL

Prior Lecture Refresher: Current Liabilities

- Known Liabilities
  - Accounts Payable
  - Sales Tax Payable (GST)
  - Payroll Liabilities (CPF)
  - Unearned Revenue
  - Short Term Notes Payable – how to calculate daily interest under Actual/360 convention
- Estimated Liabilities:
  - Warranties – use a provision account (liability)
- Contingent Liabilities – when to record as liability?

- FSA: Liquidity ratios
  - Current Ratio
  - Acid Test Ratio

Chapter 10

Property, Plant & Equipment (PPE) & Intangible Assets

Goals for Lecture 09

Property, Plant & Equipment (PPE)

- Long-term Operating Assets (LO1)
- Acquisition of PPE (LO2)
- Depreciation Methods (LO3)
  - Straight-line depreciation
  - Units of production depreciation
  - Declining-balance depreciation
- Changes in Depreciation Estimates (LO4)
- Capitalize or Expense? (LO5) + *(Chapter 9 - LO4)*
- Impairment of PPE (LO6)
- Disposal of PPE (LO8)
- How to report PPE on FS (LO7): Cathay Pacific Examples

We will NOT cover Exchanging PPE (LO11), Revaluation Model (LO12) and Assets Acquired by Leasing and/or construction (LO13) in this course.

Goals for Lecture 09

Intangibles

- Intangible Assets & Amortization (LO9)

Financial Analysis

- Fixed Assets Turnover ratio (LO10)
- Total Assets Turnover ratio

Long-term Operating Assets
How to classify them?

- Assets held and used to facilitate operating activities and generate revenues.
- Types of long-term assets:

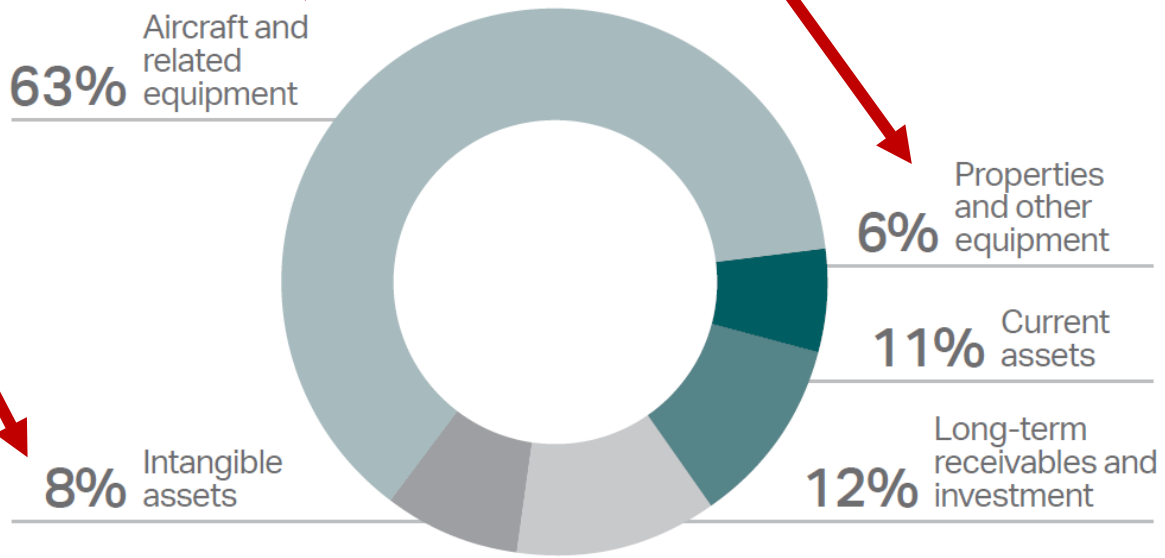
1) Tangible assets – with physical substance
  - ***Property, Plant & Equipment (PPE)*** – "Fixed Assets"
    - E.g. Land, buildings, fixtures & equipment
  - ***Natural resources***
    - E.g. mineral deposits, timber tracts, oil fields etc…

2) Intangible assets – no physical substance
  - Assets that give specific rights to the owners
    - E.g. patents, copyrights, franchises, licenses (Definite life)
    - E.g. trademarks, goodwill (Indefinite life)

Real FS – Cathay Pacific Airlines
PPE

PPE (67% of total assets)

Low intangibles



CATHAY PACIFIC
國泰航空公司

(Source: Cathay 2024 Annual Report)

Real FS – Pfizer Intangibles

(MILLIONS, EXCEPT PER SHARE DATA)	As of December 31, 2023	2022
Assets		
Cash and cash equivalents	$ 2,853	$ 416
Short-term investments	9,837	22,316
Trade accounts receivable, less allowance for doubtful accounts: 2023—$470; 2022—$449	11,177	10,952
Inventories	10,189	8,981
Current tax assets	3,978	3,577
Other current assets	5,299	5,017
Total current assets	43,333	51,259
Equity-method investments	11,637	11,033
Long-term investments	3,731	4,036
Property, plant and equipment	18,940	16,274
Identifiable intangible assets	64,900	43,370
Goodwill	67,783	51,375
Noncurrent deferred tax assets and other noncurrent tax assets	3,706	6,693
Other noncurrent assets	12,471	13,163
Total assets	$ 226,501	$ 197,205

Low PPE (8%)

Intangibles (58.6% of total assets)

(Source: Pfizer 2023 Annual Report)

Acquiring PPE

How to measure acquisition cost?

- PPE (tangible assets actively used in operations that will give future benefits) are initially recorded at **COST**.
- Acquisition cost:
  - Including the purchase price and all expenditures needed to prepare the asset for its intended use.
  - Does NOT include financing charges

Buildings

- Purchase/ construction price
- Renovation and repair costs
- Brokerage fees
- Legal & title fees
- Taxes

Equipment

- Purchase price
- Installation costs
- Building modifications needed for installation
- Transportation costs & insurance
- Taxes

Land ***NOT Depreciable***

- Purchase price
- Real estate commissions
- Title insurance premiums
- Delinquent taxes
- Surveying fees
- Title search & transfer fees
- Legal & escrow fees

Land Improvements

- Improvement cost (include materials, labor & overhead)
- E.g. Parking lots, driveways, fences, walks, shrubs, lighting systems, landscaping

Acquiring PPE (RECAP)
How to record acquisition?

1) Acquisition for Cash

- E.g. Cathay Pacific purchased aircraft for $75,000,000 cash.

Aircraft Equipment	75,000,000	
Cash		75,000,000

2) Acquisition for Debt

- E.g. Cathay Pacific purchased aircraft for $1,000,000 cash and a $74,000,000 note payable.

Aircraft Equipment	75,000,000	
Notes Payable		74,000,000
Cash		1,000,000

Acquiring PPE
Lump-Sum (Basket) Purchase

- Lump-sum (basket): purchasing multiple assets for a lump-sum combined cost.
- The total cost of a combined purchase is separated on the basis of the ***relative fair market values*** of each asset component.
- E.g. Cathay Pacific paid $90,000 to acquire a land which already has a building and land improvements on it. Based on the appraisal value of each items, the $90,000 cost will be allocated on the basis of the appraised values as follow:

	Appraised Value	Percent of Total	Apportioned Cost
Land	$ 30,000	30% ($30,000/$100,000)	$27,000 ($90,000 × 30%)
Land improvements	10,000	10 ($10,000/$100,000)	9,000 ($90,000 × 10%)
Building	60,000	60 ($60,000/$100,000)	54,000 ($90,000 × 60%)
Totals	$100,000	100%	$ 90,000

DEPRECIATION

- **Depreciation is a cost allocation process that systematically and rationally matches acquisition costs of operational assets with the periods benefited by their use (the matching principle).**
- Recording depreciation: (RECAP)

Depreciation Expense	$XX	
Accumulated Depreciation		$XX

  - Depreciation expense is taken over the useful lifetime of the asset → Income Statement item
  - Accumulated Depreciation is contra-asset account linked to the PPE asset account. It tracks the total depreciation taken to date of an asset
- **Net Book Value = Acquisition cost – Accumulated Depreciation**
  - Net book value is also known as the "**carrying amount**", which is the undepreciated cost.

Depreciation Method

- To calculate depreciation expense, three values are required for each asset:
  1) Acquisition cost
  2) Estimated useful life of asset to the company
  3) Estimated residual value (salvage value)

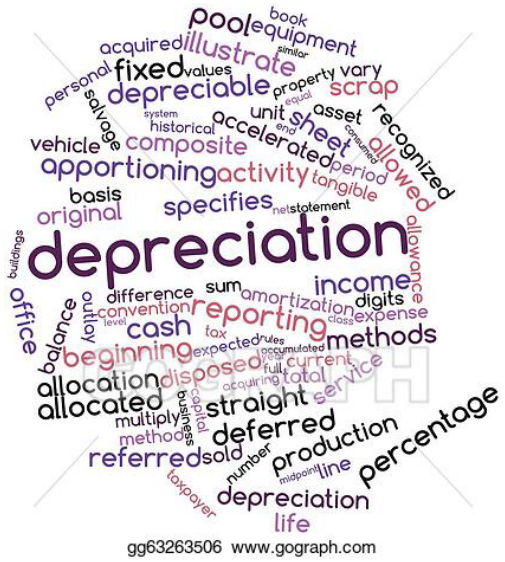
     (residual value is the recoverable amount at the end of the asset's useful life)

- **Type of depreciation methods:**

  1) Straight-line method

  2) Units-of-production method

  3) Declining-balance method



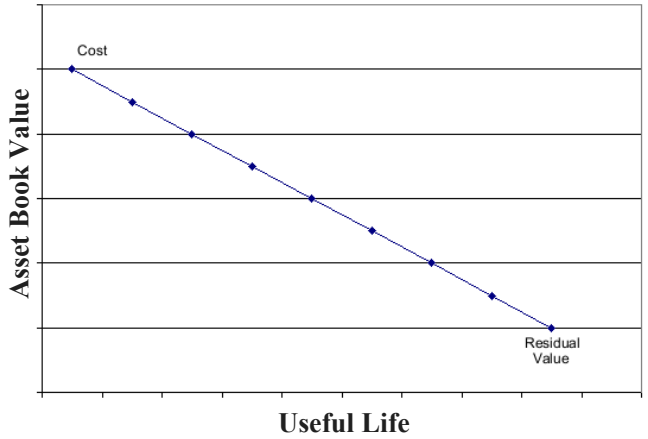
1) Straight-line Method

- The most common depreciation method.
- Equal portion recognized over asset's useful life.

$$\text{Annual Depreciation Expense} = \frac{\text{Cost - Residual Value}}{\text{Useful Life in Years}}$$

- E.g. At the beginning of the year, Cathay purchased ground equipment for $62,500 cash. The equipment has an estimated useful life of 3 years and an estimated residual value of $2,500.

$$\text{Depreciation Expense per Year} = \frac{\$62,500 - \$2,500}{3 \text{ years}} = \$20,000 \text{ per year}$$



1) Straight line method
Effect on FS

- **Income Statement**: Depreciation expense each period for length of useful life
  - E.g. At the beginning of the year, Cathay purchased ground equipment for $62,500 cash. The equipment has an estimated useful life of 3 years and an estimated residual value of $2,500.

    Year 1 Depreciation expense $20,000

    Year 2 Depreciation expense $20,000

    Year 3 Depreciation expense $20,000

- **Statement of Financial Position**: Net Book Value (cost – accumulated depr.)
  - E.g. Cathay example above

    Year 1 NBV = $42,500 (Equipment cost $62,500 – Accum. Depr $20,000)

    Year 2 NBV = $22,500 (Equipment cost $62,500 – Accum. Depr $40,000)

    Year 3 NBV = $ 2,500* (Equipment cost $62,500 – Accum. Depr $60,000)

    *At the end of the asset's life, its NBV = residual value

1) Straight line method
Depreciation Schedule

- Depreciation schedule shows the amount of depreciation, accumulated depreciation and net book value of an asset:
- A typical depreciation schedule may look like this:

Year	Depreciation Expense (debit)	Accumulated Depreciation (credit)	Accumulated Depreciation Balance	Undepreciated Balance (book value)
				$ 62,500
1	$ 20,000	$ 20,000	$ 20,000	42,500
2	20,000	20,000	40,000	22,500
3	20,000	20,000	60,000	2,500
	$ 60,000	$ 60,000		

Residual Value

2) Units-of-Production Method

- Allocates depreciable costs based on total estimated productive output.
- How to calculate depreciation expense under this method:
  - ***Step 1:*** Calculate the depreciation rate

$$\text{Depreciation Rate per unit} = \frac{\text{Cost - Residual Value}}{\text{Total Estimated Units of Production}}$$

  - ***Step 2***: Calculate depreciation expense based on actual production

$$\text{Depreciation Expense} = \text{Depreciation Rate per unit} \times \text{Actual Units Produced}$$

2) Units-of-Production Method

Cathay Pacific Example

- E.g. At the beginning of the year, Cathay purchased ground equipment for $62,500 cash. The equipment has an estimated 100,000 miles useful life and an estimated residual value of $2,500. If the equipment is used 30,000 miles in the first year, what is the amount of depreciation expense in the first year?

$$\text{Depreciation Rate} = \frac{\$62{,}500 - \$2{,}500}{100{,}000 \text{ miles}} = \$.60 \text{ per mile}$$

$$\text{Depreciation Expense} = \$.60 \text{ per mile} \times 30{,}000 \text{ miles} = \$18{,}000$$

- The asset's depreciation schedule may look like this (based on actual miles usage):

Actual Miles Usage

Year	Miles	Depreciation Expense	Accumulated Depreciation Balance	Undepreciated Balance (book value)
				$ 62,500
1	30,000	$ 18,000	$ 18,000	44,500
2	50,000	30,000	48,000	14,500
3	20,000	12,000	60,000	2,500
	100,000	$ 60,000		

Residual Value

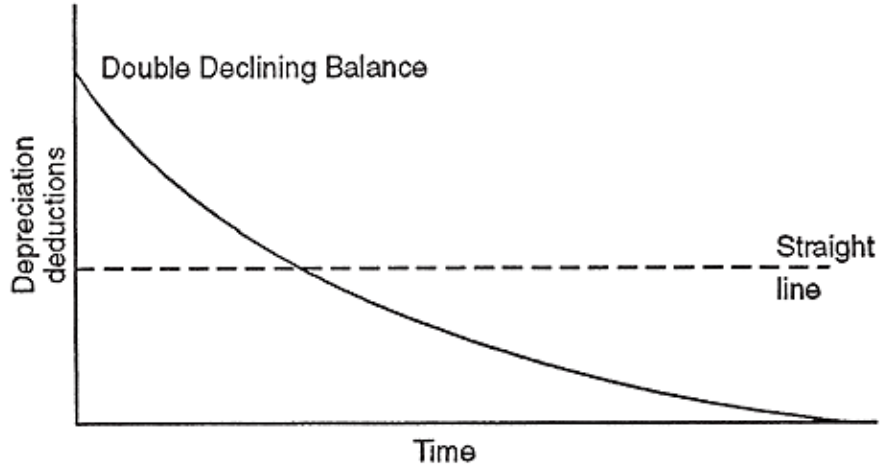
2) Units-of-Production Method
Natural Resources: Depletion

- Natural resources are assets that occur in nature (e.g. mineral deposits, timber tracts, oil, gas etc…)
- Total cost of asset is the cost of acquisition, exploration, and development.
- Total cost is allocated over periods benefited by means of **depletion** (same as depreciation conceptually).
- Depletion expense is calculated using units of production method.
- Natural resources are reported at their cost less accumulated depletion in the noncurrent assets portion of the balance sheet.




3) Declining-Balance Method

- Matches higher depreciation expense with higher revenues in the early years of an asset's useful life when the asset is more efficient.
  - Also known as "Accelerated Depreciation"
  - More depreciation taken in the beginning of an asset's useful life, less depreciation taken at the end.
- Apply a rate exceeding the straight-line rate (e.g. 2x, 1.5x)
  - **Double-declining-balance (DDB):**
    - When the rate applied is double (2x) the straight line rate.
    - Most commonly used rate for declining-balance method.



3) Declining-Balance Method
Calculating Annual Depreciation

- How to calculate depreciation expense under this method:
  - ***Step 1:*** Calculate the straight line rate

    E.g. Useful life is 4 years → straight line rate = 100%/4 = 25%
  - ***Step 2:*** Calculate the declining-balance rate at x times. (e.g. 1.5x, 2x)

    E.g. Assume double (2x) declining → DDB rate = 2 x 25% = 50%
  - ***Step 3:*** Calculate annual depreciation expense using the declining-balance rate

    E.g. Assume net book value of asset is $10,000
    → depreciation expense = $10k x 50% = $5,000 (for that period)

- Annual Depreciation can also be calculated using this quick formula:

(e.g. x = 2 for double-declining-balance (DDB) rate.)

$$\textbf{Annual Depreciation expense} = \textbf{Net Book Value} \times \left(\frac{\textbf{x}}{\textbf{Useful Life in Years}} \right)$$

  - Note that the residual value is ignored in declining-balance method!

Double-declining-balance (DDB)

Cathay Pacific Example

- At the beginning of the year, Cathay purchased equipment for $62,500 cash. The equipment has an estimated useful life of 3 years and an estimated residual value of $2,500. Calculate the depreciation expense for the first two years using DDB (double-declining-balance) method.

First year: $\$62{,}500 \times \frac{2}{3 \text{ years}} = \$41{,}667$

Second year: $(\$62{,}500 - \$41{,}667) \times \frac{2}{3 \text{ years}} = \$13{,}889$

Third year?? $(\$62{,}500 - \$41{,}667 - \$13{,}889) \times \frac{2}{3 \text{ years}} = \$4{,}629$

- The asset's depreciation schedule will look like this:

Year	Depreciation Expense (debit)	Accumulated Depreciation Balance	Undepreciated Balance (book value)
			$ 62,500
1	$ 41,667	$ 41,667	20,833
2	13,889	55,556	6,944
3	4,629	60,185	2,315
	$ 60,185		

Below residual value of $2,500! What to do? (refer to next slide)

Double-declining-balance (DDB)

Cathay Pacific Example (continued)

- In order to get the book value equals to the residual value at the end of the 3rd year, companies typically "force" it by limiting depreciation expense to the amount that will reduce the book value to the estimated residual value of $2,500.
- Therefore for the third year, we will record depreciation expense of $4,444. We determine this amount by subtracting the residual value of $2,500 from the book value at the end of the second year, $6,944.
- An updated depreciation schedule for the asset will look like this:

Year	Depreciation Expense (debit)	Accumulated Depreciation Balance	Undepreciated Balance (book value)
			$ 62,500
1	$ 41,667	$ 41,667	20,833
2	13,889	55,556	6,944
3	4,444	60,000	2,500
	$ 60,000		

Residual Value

3rd year depreciation expense is limited to the amount that reduces book value to the estimated residual value.

Comparing Depreciation Methods
Cathay Pacific Example

- Depreciation Expense under the 3 different methods:

Year	Straight Line	Units of Production	Double- Declining Balance
1	$ 20,000	$ 18,000	$ 41,667
2	$ 20,000	$ 30,000	$ 13,889
3	$ 20,000	$ 12,000	$ 4,444
Total	**$ 60,000**	**$ 60,000**	**$ 60,000**

- Each method starts with cost of $62,500 and ends with a residual value of $2,500.
- Different depreciation methods yield different depreciation expense taken in each period over the life of the asset → impact on profitability

Summary of Depreciation Methods

1) Straight-line method
   - Equal depreciation expense each year

$$\text{Depreciation Expense} = \frac{\text{Cost - Residual Value}}{\text{Useful Life in Years}}$$

2) Units-of-Production method
   - Varying amounts of depreciation expense each year based on production

$$\text{Depreciation Expense} = \frac{\text{Cost - Residual Value}}{\text{Life in Units of Production}} \times \text{Actual Units Produced}$$

3) Double-declining-balance (DDB) method
   - Declining amount of depreciation expense over time (accelerated depreciation)

$$\text{Depreciation Expense} = \text{Net Book Value} \times \frac{2}{\text{Useful Life in Years}}$$

Real FS – Cathay Pacific
Depreciation Method

5. PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment is stated at cost less accumulated depreciation and impairment.

The cost of an item of property, plant and equipment comprises its purchase price and any directly attributable costs of bringing the asset to working condition for its intended use. The cost relating to an acquired (owned or leased) aircraft reflects all components in its full service potential excluding the maintenance condition of its landing gear, airframe and engines. The cost relating to the maintenance element is identified on acquisition as a separate component and depreciated until its next major maintenance event occurs. Expenditure for heavy maintenance visits on aircraft, engine overhauls and landing gear overhauls, is capitalised at cost and depreciated over the average expected life between major overhauls, estimated to be 4 to 10 years. Expenditure for engine overhaul costs covered by power-by-hour (fixed rate charged per hour) maintenance agreements is expensed by hours flown. Expenditure for other maintenance and repairs is charged to profit or loss.

Depreciation of owned property, plant and equipment is calculated on a straight line basis to write down cost over their anticipated useful lives to their estimated residual values as follows:

Aircraft	over 23-29 years to residual value of either nil or the lower of 1% of cost or expected realisable value
Aircraft product	over 5-10 years to a residual value of nil
Other equipment	over 3-25 years to a residual value of nil
Buildings	over the lease term of the leasehold land to nil residual value

In-class Activity: CATERPILLAR Inc.

Caterpillar Inc. is a construction company. The following information relates to one of its truck:

- A truck was purchased for cash on July 1, 2023. The cost of truck is:

Invoice cost (before sales tax)	$140,000
Paint job to change to company colors and insert logo	$5,000
Sales tax	$12,000

- Estimated useful life is 120,000 miles, and the estimated salvage value is $25,000

Q1 : Compute the annual depreciation expense under straight line method, assuming estimated useful life in years is 5 years.

Q2 : Compute depreciation expense for 2023 & 2024 under the units-of-production depreciation method. Miles driven is 11k in 2023 and 24k in 2024.

Real FS –Cathay Pacific
Reporting PPE on Statement of Financial Position

	Note	2024 HK$M	2023 HK$M
ASSETS AND LIABILITIES			
Non-current assets and liabilities			
Property, plant and equipment	7	**116,457**	116,088
Intangible assets	8	**14,420**	14,539
Investments in associates	9	**16,371**	16,046
Other long-term receivables and investments	10	**3,598**	3,608
Deferred tax assets	14	**1,152**	1,085
		151,998	151,366

PPE is presented at **net book value** in the SFP.
For details on the acquisition cost and accumulated depreciation, you must always refer to the notes.

CATHAY PACIFIC
國泰航空公司

Real FS –Cathay Pacific
PPE Acquisition Cost

7. PROPERTY, PLANT AND EQUIPMENT

	Aircraft and related equipment		Other equipment		Land and buildings		
	Owned HK$M	Right-of-use assets HK$M	Owned HK$M	Right-of-use assets HK$M	Owned HK$M	Right-of-use assets HK$M	Total HK$M
Cost							
At 1st January 2024	**158,388**	**45,519**	**5,383**	**245**	**15,295**	**7,738**	**232,568**
Additions	**7,806**	**1,421**	**271**	**29**	**253**	**137**	**9,917**
Disposals	**(843)**	**(1,988)**	**(90)**	**(46)**	**(22)**	**(111)**	**(3,100)**
Transfers	**2,394**	**(2,394)**	**4**	**–**	**2**	**–**	**6**
Other right-of-use asset adjustments	**–**	**275**	**–**	**4**	**–**	**1,791**	**2,070**
At 31st December 2024	**167,745**	**42,833**	**5,568**	**232**	**15,528**	**9,555**	**241,461**

Acquisition Cost

Real FS –Cathay Pacific
PPE Accumulated Depreciation

	Aircraft and related equipment		Other equipment		Land and buildings		
	Owned HK$M	Right-of-use assets HK$M	Owned HK$M	Right-of-use assets HK$M	Owned HK$M	Right-of-use assets HK$M	Total HK$M
Accumulated depreciation and impairment							
At 1st January 2024	**81,331**	**16,457**	**4,313**	**173**	**9,608**	**4,598**	**116,480**
Charge for the year	**6,873**	**3,034**	**198**	**33**	**605**	**720**	**11,463**
Disposals	**(648)**	**(1,988)**	**(82)**	**(46)**	**(21)**	**(108)**	**(2,893)**
Reversal of impairment	**(46)**	**–**	**–**	**–**	**–**	**–**	**(46)**
Transfers	**1,398**	**(1,398)**	**–**	**–**	**–**	**–**	**–**
At 31st December 2024	**88,908**	**16,105**	**4,429**	**160**	**10,192**	**5,210**	**125,004**
Net book value							
At 31st December 2024	**78,837**	**26,728**	**1,139**	**72**	**5,336**	**4,345**	**116,457**
At 31st December 2023	77,057	29,062	1,070	72	5,687	3,140	116,088

Total Depreciation Expense taken for the year: **$11,463**

Accum. Depr.

Net Book Value = Acquisition Cost – Accum Depr

Real FS – Cathay Pacific Income Statement

Total = $12,510
Note that these amounts include expenses other than depreciation, so the figures do not tie exactly to Note 7's total depreciation expense of $11,463.

Companies may also disclose depreciation information in other notes (e.g. Operating Profit's note 3)

	Note	2024 HK$M	2023 HK$M
Revenue			
Passenger services		**68,589**	61,437
Cargo services		**27,417**	25,606
Other services and recoveries		**8,365**	7,442
Total revenue		**104,371**	94,485
Expenses			
Staff		**(16,840)**	(14,785)
Inflight service and passenger expenses		**(4,175)**	(3,026)
Landing, parking and route expenses		**(14,023)**	(11,190)
Fuel, including hedging gains		**(28,260)**	(24,989)
Aircraft maintenance		**(8,498)**	(7,357)
Aircraft depreciation and rentals		**(9,801)**	(9,860)
Other depreciation, amortisation and rentals		**(2,709)**	(2,578)
Others		**(6,888)**	(7,701)
Operating expenses		**(91,194)**	(81,486)
Operating profit before non-recurring items		**13,177**	12,999
Gains on deemed partial disposals of associates	2	**578**	1,929
Net reversal of impairment and other gains or charges		**173**	197
Operating profit	3	**13,928**	15,125

Real FS –Cathay Pacific
Note 3 : Operating Profit

3. OPERATING PROFIT

	2024 HK$M	2023 HK$M
Operating profit has been arrived at after charging/(crediting):		
Depreciation of property, plant and equipment		
– right-of-use assets	**3,787**	4,266
– owned	**7,676**	7,464
Amortisation of intangible assets	**596**	594
(Reversal of) impairment on non-financial assets		
– property, plant and equipment	**(46)**	(208)
– investments in associates	**27**	–
Expenses relating to short-term leases and leases of low-value assets	**12**	9
Gains on convertible bonds repurchase	**(106)**	–
(Gains)/losses on disposal of property, plant and equipment, net	**(42)**	33
Loss on disposal of intangible assets	**2**	1
Cost of stock expensed	**1,754**	1,300
Exchange differences, net	**(52)**	162
Auditors' remuneration	**17**	16
Government grants	**(266)**	(563)
Dividend income from unlisted equity investments	**(68)**	(58)

Disclosure of actual depreciation amounts, which ties to Note 7's total depreciation for the year.

Total Depreciation
= 3,787 + 7,676
= $11,463

Partial-Year Depreciation

- When an item of property, plant and equipment is acquired during the year, depreciation is calculated for the fraction of the year the asset is owned.
- Note: In this course we will only do full-month partial depreciation.
  - Eg. On August 1st 2023, Cathay purchased equipment for $62,500 cash. The equipment has an estimated useful life of 3 years and an estimated residual value of $2,500. Calculate the depreciation expense (assume straight line method) for the first year (2023)

$$\text{Depreciation Expense for 2023} = \frac{\$62{,}500 - \$2{,}500}{3 \text{ years}} \times \frac{5}{12}$$

$$= \$8{,}334$$

2023 : Depreciation expense (5 months) = $8,334
2024 : Depreciation expense (12 months) = $20,000
2025 : Depreciation expense (12 months) = $20,000
2026 : Depreciation expense (7 months) = $11,666

Changes in Depreciation Estimates

- Depreciation is based on two estimates:
  1) estimated useful life
  2) estimated residual value
- If estimates change, we need to take into account any changes in the estimate by depreciating the asset using the new residual value, and/or over the remaining of its new useful life.
  - Change in estimates does NOT affect the depreciation expense already taken.
  - Change in estimates only affects depreciation in future years.

Changes in Depreciation Estimates
Cathay Pacific Example

- Cathay purchased an aircraft for $60,000,000. The aircraft is depreciated using the straight-line method with a useful life of 20 years and an estimated residual value of $3,000,000. → Annual depreciation = ($60m - $3m)/20 years = $2.85m / year
- In year 5, Cathay changed the estimated total useful life to 25 years and lowered the residual value to $2,400,000.
- Calculate new annual depreciation expense from the fifth year onwards:

Acquisition cost	$60,000,000
Less: Accumulated depreciation (yrs 1-4) ($2.85m x 4)	(11,400,000)
Remaining book value (@ beg of Year 5)	48,600,000
Less: New residual value	(2,400,000)
New revised depreciable amount	46,200,000
New remaining useful life (25yrs – 4yrs)	21 years
Revised annual depreciation from year 5 onwards	2,200,000

Capitalize versus Expense
(Chapter 9 – LO4)

- Expenditures that will give future benefits can be capitalized (i.e. recorded as an asset instead of as an expense)

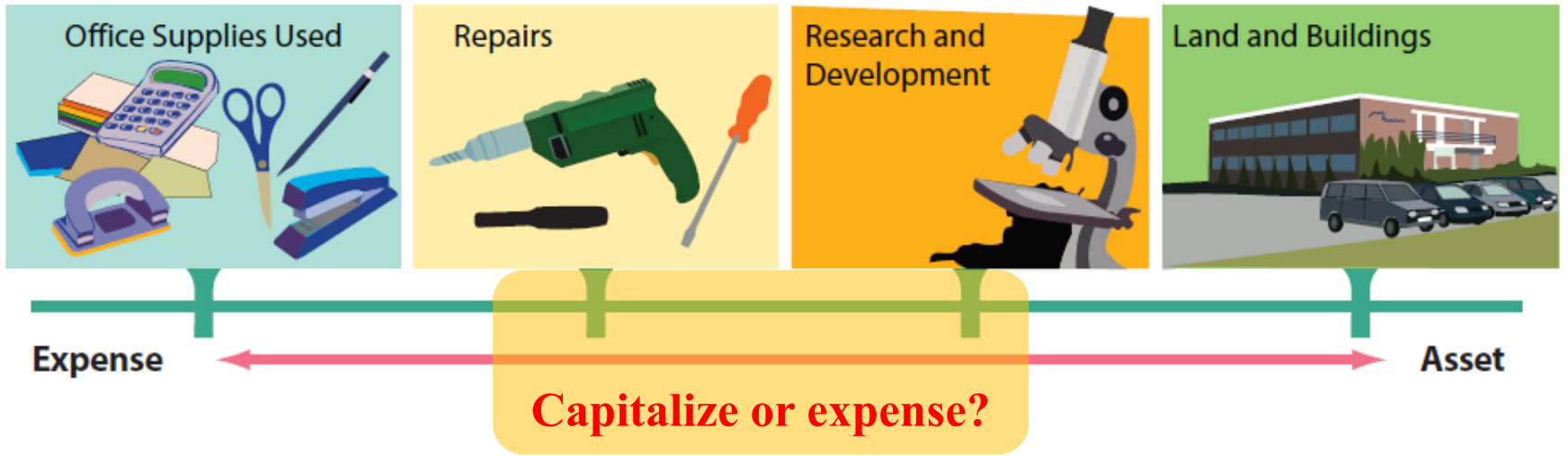


Exhibit 9.6

- R&D: (i) Research cost are expensed. Development cost <u>after</u> technological feasibility is established can be capitalized. (IFRS)

  (ii) Research & development costs are all expensed in period incurred (GAAP)

- Repairs: capitalize or expense? (see next slide)

Additional Expenditures on PPE
Capitalize or Expense?

- Fixed assets typically require maintenance or improvements during their lives to remain productive. (e.g. repairs, maintenance, upgrades, overhauls, improvements)
- Should we capitalize or expense these expenditures?

Types of Expenditures	Capitalize or Expense?	Identifying Characteristics
1) **Revenue Expenditures** – ordinary repairs & maintenance	**Expense** (Dr Expense)	▪ Maintains normal operating condition ▪ Does not increase productivity ▪ Does not extend life beyond original estimate ▪ Recurring in nature and involve small amounts of money at each occurrence
2) **Capital Expenditures** – additions & improvements	**Capitalize** (Dr Asset)	▪ Major overhauls or partial replacements ▪ Usually occur infrequently ▪ Increases efficiency ▪ Extends useful life beyond original estimate ▪ Involve large amounts of money

Capitalize or Expense?
A Blur Line…

- In many cases, there is no clear line distinguishing between ordinary repairs & maintenance (revenue expenditures) and improvements (capital expenditures).

Types of Expenditures	Financial Statement Effect		
	Capitalize or Expense?	Statement Affected	Effect on Net Income
1) Revenue Expenditures	Expense	**Income Statement** • Recorded as expense in current period	**Lower Net Income** • Expense is taken fully in current period
2) Capital Expenditures	Capitalize	**Balance Sheet** • Recorded as fixed asset & depreciated over time	**Higher Net Income** • Expense is taken slowly over useful lifetime

- Capitalizing expenditures can result in higher net income for the period→ creating incentives for companies to misclassify expense as capital expenditures in order to boost income!
  - E.g. WorldCom scandal (2002): Capitalized rather than expensing expenditures, resulting in inflated revenues. Assets were inflated by as much as $11 billion!
- Many companies have policies regarding the expensing of all expenditures below a certain threshold amount. If amounts involved are not material, most companies expense the item.

Impairment of PPE

- An impairment is the amount by which the carrying amount of an asset exceeds its recoverable amount.
  - Impairment is the **loss** of a portion of the utility and value of an asset (e.g. through casualty, obsolescence, lack of demand for asset's service)
- E.g. An equipment has a carrying amount of $8,000 ($9,000 acquisition cost less $1,000 accumulated depreciation) and a recoverable amount of $7,500.

→ Impairment = recoverable amount – carrying amount

= $7,500 - $8,000

= $500

→ Journal entry:

Impairment loss on equipment	$500	
Accumulated Impairment Loss		$500

Real FS – Cathay Pacific
Income Statement: Impairment (Note 3)

No impairment recognized in 2023 and 2024.

But, CX recorded a reversal of impairment related to previously impaired aircrafts that returned to service
(you may refer also to Note 7(d) for details)

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3. OPERATING PROFIT

	2024 HK$M	2023 HK$M
Operating profit has been arrived at after charging/(crediting):		
Depreciation of property, plant and equipment		
– right-of-use assets	**3,787**	4,266
– owned	**7,676**	7,464
Amortisation of intangible assets	**596**	594
(Reversal of) impairment on non-financial assets		
– property, plant and equipment	**(46)**	(208)
– investments in associates	**27**	–
Expenses relating to short-term leases and leases of low-value assets	**12**	9
Gains on convertible bonds repurchase	**(106)**	–
(Gains)/losses on disposal of property, plant and equipment, net	**(42)**	33
Loss on disposal of intangible assets	**2**	1
Cost of stock expensed	**1,754**	1,300
Exchange differences, net	**(52)**	162
Auditors' remuneration	**17**	16
Government grants	**(266)**	(563)
Dividend income from unlisted equity investments	**(68)**	(58)

Disposal of PPE

- Companies often dispose of their PPE before the end of its useful life, either through:
  (a) Voluntary disposals (e.g. discard it, sell it, trade it)
  (b) Involuntary disposals (e.g. fire, accident)
- Disposal of PPE typically requires **two journal entries**:
  1) An AJE to update depreciation expense and accumulated depreciation accounts to the date of disposal.
  2) An entry to record the disposal.
     - The cost of asset and any accumulated depreciation related to the disposed asset are removed.
     - Any difference between cash received during disposal (e.g. for sale) and book value of asset is recorded as either Gain/Loss.

Disposal of PPE – Sale

Cathay Pacific Example

- Cathay Pacific sold flight equipment for $11M cash at the end of its 17th year of use.
- The flight equipment originally cost $30M and was depreciated using the straight-line method with zero residual value, with an estimated useful life of 25 years.

Q: How do we record this disposal of asset?

1) Bring depreciation expense and accumulated depreciation up to date.

- Annual Depreciation = ($30M – $0) ÷ 25 Years
  = $1,200,000
- Journal entry to record 17th year depreciation expense:

Depreciation Expense	$1,200,000	
Accumulated Depreciation		$1,200,000

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Disposal of PPE - Sale

Cathay Pacific Example

2) Record the disposal

- Total Accumulated Depreciation = 17yrs. × $1,200,000 = $20.4 M
- Net Book Value @ disposal = Cost $30M – Accum. Depr. $20.4M = $9.6 M
- Gain on disposal = Cash received from sale – net book value
  = $11M – 9.6M
  = $1.4 M
- Journal entry to record Cathay's sale of the equipment at the end of the 17th year:

Cash	$11,000,000	
Accumulated Depreciation	20,400,000	
Aircraft Equipment		30,000,000
Gain on Disposal of PPE		1,400,000

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Disposal of PPE – Discarding

Cathay Pacific Example

- Cathay Pacific has flight equipment originally costing $30M and was depreciated using the straight-line method with zero residual value and an estimated useful life of 25 years. After 25 years, the flight equipment was discarded.

Q: How do we record this disposal of asset?

Remove the fully-depreciated asset and accumulated depreciation from the book.

Accumulated Depreciation	$30,000,000	
Aircraft Equipment		$30,000,000

- *If discarded asset has not been fully depreciated, then a loss will be recognized. Assuming aircraft equipment's accumulated depreciation is $20m.*

Accumulated Depreciation	*$20,000,000*	
Loss on Disposal of PPE	*$10,000,000*	
Aircraft Equipment		*$30,000,000*

Real FS –Cathay Pacific
Disposal of PPE

7. PROPERTY, PLANT AND EQUIPMENT

	Aircraft and related equipment		Other equipment		Land and buildings		
	Owned HK$M	Right-of-use assets HK$M	Owned HK$M	Right-of-use assets HK$M	Owned HK$M	Right-of-use assets HK$M	Total HK$M
Cost							
At 1st January 2024	**158,388**	**45,519**	**5,383**	**245**	**15,295**	**7,738**	**232,568**
Additions	**7,806**	**1,421**	**271**	**29**	**253**	**137**	**9,917**
Disposals	**(843)**	**(1,988)**	**(90)**	**(46)**	**(22)**	**(111)**	**(3,100)**
Transfers	**2,394**	**(2,394)**	**4**	**–**	**2**	**–**	**6**
Other right-of-use asset adjustments	**–**	**275**	**–**	**4**	**–**	**1,791**	**2,070**
At 31st December 2024	**167,745**	**42,833**	**5,568**	**232**	**15,528**	**9,555**	**241,461**
Accumulated depreciation and impairment							
At 1st January 2024	**81,331**	**16,457**	**4,313**	**173**	**9,608**	**4,598**	**116,480**
Charge for the year	**6,873**	**3,034**	**198**	**33**	**605**	**720**	**11,463**
Disposals	**(648)**	**(1,988)**	**(82)**	**(46)**	**(21)**	**(108)**	**(2,893)**
Reversal of impairment	**(46)**	**–**	**–**	**–**	**–**	**–**	**(46)**
Transfers	**1,398**	**(1,398)**	**–**	**–**	**–**	**–**	**–**
At 31st December 2024	**88,908**	**16,105**	**4,429**	**160**	**10,192**	**5,210**	**125,004**

Reducing acquisition cost for disposed PPE

Reducing accumulated deprecation for disposed PPE

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Real FS –Cathay Pacific
Note 3 : Gain/Loss on PPE Disposal

3. OPERATING PROFIT

	2024 HK$M	2023 HK$M
Operating profit has been arrived at after charging/(crediting):		
Depreciation of property, plant and equipment		
– right-of-use assets	**3,787**	4,266
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Amortisation of intangible assets	**596**	594
(Reversal of) impairment on non-financial assets		
– property, plant and equipment	**(46)**	(208)
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Dividend income from unlisted equity investments	**(68)**	(58)

Recording loss on disposal of PPE

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Part 2 : CATERPILLAR Inc. (continued)

RECALL: Caterpillar Inc. purchased a truck in 2023 and the truck was depreciated using the **units-of-production** method for 2023 & 2024.

- In 2025, Caterpillar Inc. made the following expenditures on the truck:

  (i) On Jan 1, spent $46,750 to re-engine the truck, which increased the total life to 200,000 miles. The expected salvage value remains unchanged.

  (ii) $6,000 in cash on new tires and regular maintenance.

- Miles driven on the truck is 20k miles in 2025 (after engine upgrade).
- Truck was sold on Dec 31, 2025 for $120k.

Q3 : Compute depreciation expense for 2025 under the units-of-production depreciation method.

Q4 : Record journal entry for disposal of the truck on Dec 31, 2025.

Intangible Assets

- Non-current assets without physical substance, often providing exclusive rights or privileges.
- Acquisition cost (at purchase): Record cost at current cash equivalent, including purchase price, legal fees, and filing fees etc…
- Intangible assets are "amortised" (vs. PPE are "depreciated").

Definite Life

- Amortise over its estimated useful life. Usually assumed to have no salvage value
- Use straight-line method.
- e.g. Patents, Copyrights, Franchises

Indefinite Life

- Not amortised, but tested at least annually for possible impairment, and book value is reduced to fair value if impaired.
- e.g. Trademarks, Goodwill

- **Amortisation Expense is recognized over the estimated useful life on straight-line basis.**

Amortisation Expense	**XX**	
Accumulated Amortisation		**XX**

Intangible Assets
Examples of Intangibles

- **Goodwill** - when one company buys another company, the excess of the purchase price over the fair market value of acquired net assets is goodwill. (Note that only purchased goodwill is an intangible asset!)
- **Trademark**: exclusive legal right to use a distinctive name, image or slogan.
- **Copyrights**: exclusive rights to publish, use and sell literary, musical or artistic work.
- **Technology**: computer software (programs written by the company's employees) and web development.
- **Patents**: granted by the government for an invention, exclusive right for owner to use, manufacture and sell the product of the patent.
- **Franchise**: contractual right to sell certain products or services, use certain trademarks, or perform activities in a certain region.
- **Licenses & operating rights**: permit owners to use public property in performing services, obtained from government units or agencies.

"Intangibles" NOT recorded in the Books

- **"Intangibles" that are <u>not acquired</u> through an exchange is NOT recorded in the company's books**
- E.g. Internally generated/developed brand, employee's knowledge, CEO's vision
- The values of some companies' internally generated brands are not recorded as an asset in their books. (e.g. Apple, Microsoft, Amazon)

2023 The World's Most Valuable Brands (*by Interbrand*)				
Rank	**Brand**	**2023 Brand Value**	**Market Cap @ 31 March 2024**	**Net Book Value FY 2023/2024***
1	Apple	$503 B	$2,648 B	$51 B
2	Microsoft	$317 B	$3,126 B	$167 B*
3	Amazon	$277 B	$1,874 B	$146 B
4	Google	$260 B	$1,884 B	$252 B
5	Samsung	$ 91 B	$365 B	$274 B



Real FS –Cathay Pacific
Intangibles on Statement of Financial Position

	Note	2024 HK$M	2023 HK$M
ASSETS AND LIABILITIES			
Non-current assets and liabilities			
Property, plant and equipment	7	**116,457**	116,088
Intangible assets	8	**14,420**	14,539
Investments in associates	9	**16,371**	16,046
Other long-term receivables and investments	10	**3,598**	3,608
Deferred tax assets	14	**1,152**	1,085
		151,998	151,366

Intangibles is presented at **net book value** in the SFP.
(Refer to Note 8 for details)

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Note 8 Intangibles: Cost & Amortisation

8. INTANGIBLE ASSETS

	Goodwill HK$M	Computer software HK$M	Others HK$M	Total – Intangible assets HK$M	Prepayments HK$M	Total – Intangible assets and related prepayments HK$M
Cost						
At 1st January 2024	**11,654**	**9,082**	**39**	**20,775**	**30**	**20,805**
Additions	**–**	**492**	**–**	**492**	**–**	**492**
Transfer	**–**	**(6)**	**–**	**(6)**	**–**	**(6)**
Disposals	**–**	**(47)**	**–**	**(47)**	**–**	**(47)**
At 31st December 2024	**11,654**	**9,521**	**39**	**21,214**	**30**	**21,244**
Accumulated amortisation and impairment						
At 1st January 2024	**39**	**6,183**	**36**	**6,258**	**8**	**6,266**
Charge for the year	**–**	**593**	**3**	**596**	**6**	**602**
Disposals	**–**	**(44)**	**–**	**(44)**	**–**	**(44)**
At 31st December 2024	**39**	**6,732**	**39**	**6,810**	**14**	**6,824**
Net book value						
At 31st December 2024	**11,615**	**2,789**	**–**	**14,404**	**16**	**14,420**

Acquisition Cost

Accum. Amortisation

Total Amortisation Expense related to Intangibles for the period

Net Book Value

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Note 3 : Amortisation Expense on IS

3. OPERATING PROFIT

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Amortisation related to Intangibles (as disclosed in Note 8)

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FSA

Financial Analysis

- Fixed Assets Turnover ratio (LO10)
- Total Assets Turnover ratio

Assessing Efficiency of PPE
Fixed Assets Turnover

Fixed Assets Turnover:

$$\text{Fixed Assets Turnover} = \frac{\text{Net Sales}}{\text{Average Fixed Assets}}$$

- Measures how efficient a company is in using its fixed assets to generate sales
- Average Fixed Assets = (Beg Net PPE + End Net PPE) /2
- Rough indication of how much sales is generated per each dollar (unit) of PPE
- Also known as "PPE Turnover ratio"

Assessing Profitability & Efficiency of Assets
Total Assets Turnover

Total Assets (TA) Turnover:

$$\text{TA Turnover} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

- Measures a company's ability in using its total assets as a whole to generate sales
- Average Total Assets = (Beg Total Assets + End Total Assets) /2

Cathay Pacific
2024 FA Turnover & TA Turnover

Net Sales	**94,485**
Beg PPE	116,088
Ending PPE	116,457
Average PPE	**116,273**
Beg Assets	174,115
Ending Assets	171,244
Average Assets	**172,680**
Fixed Assets Turnover	**0.813**
Total Assets Turnover	**0.547**

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Fixed Assets & Total Assets Turnover
Major Airlines Example (2022-2023)

Comparing Fixed Assets & Total Assets turnover ratios of major airlines

	Singapore Airlines (SGD'm)	Cathay Pacific (HKD'm)	Eva Airlines (NT$'000)	Emirates (AED'm)	Japan Airlines (YEN'm)	Virgin Atlantic (GBP'm)	United Airlines (USD'm)
FY2022							
Net Sales	7,615	51,036	138,068,607	58,282	682,712	2,854	44,955
Average PPE	26,870	121,423	218,845,380	117,802	1,047,642	2,028	37,528
Average Assets	43,126	188,771	322,422,919	150,881	2,241,502	3,305	67,767
Fixed Assets Turnover	**0.283**	**0.420**	**0.631**	**0.495**	**0.652**	**1.407**	**1.198**
Total Assets Turnover	**0.177**	**0.270**	**0.428**	**0.386**	**0.305**	**0.864**	**0.663**
FY2023							
Net Sales	17,775	94,485	200,356,523	106,702	1,375,588	3,119	53,717
Average PPE	27,774	117,472	209,404,884	107,527	1,038,833	2,311	41,033
Average Assets	48,886	177,515	324,857,047	153,836	2,448,164	3,500	69,231
Fixed Assets Turnover	**0.640**	**0.804**	**0.957**	**0.992**	**1.324**	**1.350**	**1.309**
Total Assets Turnover	**0.364**	**0.532**	**0.617**	**0.694**	**0.562**	**0.891**	**0.776**

Fixed Assets & Total Assets Turnover
Major Airlines Example (2020-2021)

Comparing Fixed Assets & Total Assets turnover ratios of major airlines

	Singapore Airlines (SGD'm)	Cathay Pacific (HKD'm)	Eva Airlines (NT$'000)	Emirates (AED'm)	Japan Airlines (YEN'm)	Virgin Atlantic (GBP'm)	United Airlines (USD'm)
FY2020							
Net Sales	15,976	46,934	89,048,776	90,995	1,411,230	868	15,355
Average PPE	24,570	136,020	249,773,015	114,255	963,512	2,090	30,818
Average Assets	32,109	209,545	342,909,475	149,730	1,944,845	3,016	56,080
Fixed Assets Turnover	**0.650**	**0.345**	**0.357**	**0.796**	**1.465**	**0.415**	**0.498**
Total Assets Turnover	**0.498**	**0.224**	**0.260**	**0.608**	**0.726**	**0.288**	**0.274**
FY2021							
Net Sales	3,816	45,587	103,872,359	30,230	481,224	928	24,634
Average PPE	26,421	127,958	237,951,064	130,912	1,021,610	1,919	34,093
Average Assets	35,647	200,601	327,440,653	161,920	1,983,321	2,982	63,862
Fixed Assets Turnover	**0.144**	**0.356**	**0.437**	**0.231**	**0.471**	**0.484**	**0.723**
Total Assets Turnover	**0.107**	**0.227**	**0.317**	**0.187**	**0.243**	**0.311**	**0.386**

Take Away for Lecture 09

- PPE (Property, Plant & Equipment)
  - Depreciation methods: Straight-line, Units-of-production, Declining-balance
  - Recording PPE transactions:
    - Acquisition
    - Changes in estimates
    - Capital expenditures
    - Impairments
    - Disposals/ Sales of PPE
- Natural Assets – Depletion (similar to units-of-production depr.)
- Intangible Assets - Amortization
- FSA:
  - Fixed Assets Turnover
  - Total Assets Turnover

"Tom, you're an asset to the company. It's just that you're depreciating."

Next Week (Oct 21) : NO CLASS!

Important Reminder

There is NO class in Week 10 (Oct 21) as it is NUS Well-Being Day!

Next class will be on Oct 28…

Week 11 (October 28)
Lecture 10 – Chapter 12: Equity

- Raising equity financing (LO1)
- Corporations (LO2)
- Ownership of a corporation: Accounting for stock (LO3)
  - Common stock issuance (par value vs. no par value) Preferred stock
  - Stock repurchase: Treasury stocks
- Retained Earnings (LO4)
  - Cash dividends & Stock dividends
- Other Equity Items: OCI & Reserves (LO5)
- FSA:
  - EPS (Earnings per share)
  - PE (Price Earnings) Ratio
  - Dividend Payout Ratio

See you in Week 11!

Post your questions on Canvas discussion forum.

My email: hanny.kusnadi@nus.edu.sg