

Ecological footprint : (Need)

- Land and water area needed to produce resources we use & absorb waste we generate
- Currently ecological footprint = 1.7 times earth
- Earth alone can't fulfil everyone's footprint.
So, ozone layer depletion, snow melting, global warming etc occur. So ecological depletion is occurring.
- Measure human demand on nature, i.e. the quantity of nature it takes to support people or an economy.
- The ecological footprint is defined as the biologically productive area needed to provide for everything people use: fruit | vegetable | fish | wood | fibers, absorption of carbon dioxide from fossil fuel & space for road & building.

ways to reduce ecological footprint

- Consider using renewable energy (solar, wind energy)
- Conserve energy
- Drive less, travel sustainably
- Get rid of single use plastic
- Eat less meat, consume more plant based food
- Recycle whenever you can
- Repair instead of replace
- Use less water

Ecological limit

- means the maximum level of human use and disturbance that the Earth's natural system can handle without losing their ability to function properly.
- In simple term, it's like Earth's budget - there's only so much clean air, water, fertile soil and stable climate that we can use or damage before nature can't recover.
- Ecological limit ensure sustainable development by keeping resource use and waste within nature's ability to regenerate & absorb impacts.
- When these limit are crossed we get irreversible damage and loss of the "services" nature provides such as fresh water, fertile soil, stable weather and biodiversity.
 - It's essentially saying:
"The planet has natural limit. If we exceed them, life as we know it become unstable".

Economics

Ecological theory

- is the study of how economics work - it explain how goods and services are produced, distributed & govt make decision about using resources.
- It provides generalization about patterns & relationship in economic activity (eg supply & demand, price changes, market behaviour)
- Traditional economic theory often focuses on micro-level behaviour - how individual or firm act in the market
- Modern concept point out that traditional theory often ignores the role of ecosystem & environmental limits in sustaining the economy.
- This gap gave anse to ecological economics which integrate environmental factor and resource limit into economic model.

Sustainable development

- Means improving people's live today without harming the planet's ability to support life in the future
- It's about meeting present needs while ensuring future generations can also meet theirs
- It links human development goals with the carrying capacity of natural system.
- It requires responsibility to protect, maintain & improve earth's resources
- The aim is a stable balance b/w the economy, Social & environment
 - ↳ 3 main objective

1) Economic growth

Strong, competitive economy with well planned hinduse to support innovation & development

2) Environmental protection

Safeguard biodiversity, use resource wisely, reduce waste pollution & fight climate change

3) Social inclusion

Build healthy communities provide housing & ensure service meet social & cultural needs.

Ch 9



- Project funding Mechanism
- Debt and equity finance
- Funding and financing
- FIRR & EIRR
- Method of financing

Source of project finance are

- Debt finance - Equity finance
- Public " - Personal finance capital

Method of financing

- Dept financing
- Equity financing
- Capital structure

Dept financing

- Borrowing money from outside source that must be repaid with interest
- Source: Banks, financial institutions, loan from other company.
- Ownership: Lenders do not get ownership in company
- Interest must be paid regularly whether the business makes profit or loss
- Increase financial risk if the company can't pay back.
- Eg A company take Rs 50 lakh Bank loan at 10% interest of 5 years.

2) Equity Financing

- Raising money by selling ownership share of the company.
- Source: owner's personal investment, selling share to public (IPO)
- Investor become part-owner and may share in profit
- No repayment obligation but profit are share.
- Eg: A startup sell 20% of its share to an investor for 50 lakhs

- Funding

- Providing money to start or grow a business or project
- Can be from any source - donation, personal savings, investors.
- often no repayment required
- Eg: A government gives a startup Rs 10 lakh as a grant to support innovation.
Your parent give you Rs 2 lakh to start a small shop - that's also funding.

Financing

- Arranging the money for business operation usually involving borrowing or raising capital through debt or equity.
- Repayment or sharing ownership
- Eg: A company take Rs 50 lakh bank loan to buy machinery
A startup sell 20% of its share to investor for Rs. 1 crore.

Project funding mechanism

- 1) Government budget
- 2) Public - private partnership (PPP)
- 3) Private investment.

Project funding

Total Capital required to complete a project

In Nepal, project funding is essential for development in sector like Infrastructure, Education, Health.

1) Government Budget

Project are funded directly from the national project budget through annual budget allocation, use mainly for road, schools, irrigation, health project.

2) Public - private Partnership (PPP)

→ PPP is widely Project funding mechanism throughout the world

→ Joint venture between government & public

- Common in infrastructure, urban development

Eg: Kathmandu valley waste management project

3) Private investment

→ funded by the domestic or foreign private investors

→ Common, in hydropower, cement, telecom, tourism

Eg: Upper Tamakoshi Hydropower.

$$\times (1+i)^N$$



FIRR and EIRR.

Financial Internal Rate of Return (FIRR)

- Check if the project is profitable for the owner/investor using actual cash flow (revenue - cost)
- The rate of return a project generates based on its own financial cash flow - what the project itself earns from sales or revenue minus its operating & capital cost.

$$\sum_{n=0}^m \frac{I_n}{(1+r)^n} = \sum_{n=0}^m \frac{B_n}{(1+r)^n}$$

I_n = Investment Expenditure for the entire project life period from year 0 to m.

B_n = Annual net income for the entire project life period from 0 to m

Solving above equation we obtain value of r, which is called FIRR

Decision Rule

If $\text{FIRR} > \text{MARR}$, Accept the project

If $\text{FIRR} = \text{MARR}$; remain indifferent

If $\text{FIRR} < \text{MARR}$, reject the project



Economic Internal Rate of Return (EIRR)

- Check if the project is ^{beneficial} ~~positive~~ for the whole society (including social, environmental & indirect effect)
- » The rate of return on a project from the perspective of the whole economy includes social, environmental and indirect benefit or cost (positive or negative externalities)

$EIRR = FIRR + \text{profitability associated with consumers due to market price distribution} + \text{" " " externalities expressed in market price} + \text{profitability associated with environmental distribution}$

for a project to be accepted, the EIRR should be greater than the economic cost of capital.

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Pothivara Engineering works company has following Capital structure:

Common stock RS 1000000
Bond RS 1500000
Preferred stock RS 500000
Total capital RS 3000000

The company's cost of common stock is 21%.

Cost of bond before tax is 18%. If tax rate is 40%.

Cost of preferred stock is 17%.

Calculate Weighted average cost of capital (WACC) of the company.

$$\text{Value of preferred stock } (P) = 500000$$

$$\text{Value of common stock } (E) = 1000000$$

$$\text{Value of Debt Bond } (D) = 1500000$$

$$\text{Total Capital } (V) = P + E + D = 3000000$$

We know

$$WACC = R_E \cdot W_E + R_P \cdot W_P + R_D \cdot W_D \cdot (1 - T)$$

$$WACC = \frac{E}{V} \cdot R_E + \frac{P}{V} \cdot R_P + \frac{D}{V} \cdot R_D \cdot (1 - T)$$

Where, $R_E = 21\%$.

$$R_D = 18\%$$

$$R_P = 17\%$$

Tax Rate, $T = 40\%$.

$$WACC = \frac{10^6}{3 \times 10^6} \cdot 0.21 + \frac{5 \times 10^5}{3 \times 10^6} \times 0.17 + \frac{1.5 \times 10^6}{3 \times 10^6} \times 0.18 \times (1 - 0.4)$$
$$= 15.23\%$$

2018 F | 2019 SP



If interest on debt is 12%, divided to shareholder over 15%. calculate weighted average cost of capital if debt is 70% & equity is 30%. tax rate is 20%.

Soln

Interest on debt = 12%.

Tax rate, $T = 0.20\%$.

Dividend to shareholder ratio = 15%.

WACC = ?

Debt ($\frac{D}{V}$) = 70%.

Equity ($\frac{E}{V}$) = 30%.

We know

$$WACC = \frac{E}{V} R_E + \frac{D}{V} R_D \times (1-T)$$

$$= 0.3 \times 0.15 + 0.7 \times 0.12 (1 - 0.2)$$

$$= 0.045 + 0.06720$$

$$\approx 11.22\%$$

WACC is 11.22%

2017SP

calculate the after tax cost of debt while
interest rate is 10% and tax rate = 40%.

Interest rate = 10%.

Tax rate = 40%.

$$\begin{aligned}\text{After tax cost of debt} &= \text{Interest rate} \times (1 - \text{Tax rate}) \\ &= 10\% \times 60\% \\ &= 6\%.\end{aligned}$$

Ch 10

Basic Accounting procedure



1) Accounting Terminologies : Asset & Liabilities, fundamental equation of accounting.

2) Financial statement: The Balance sheet, Income statement, Cashflow statement

3) Using Ratio to make Decision: Debt Ratio, Current Ratio, Quick Ratio, Acid Test Ratio, Inventory Turnover Ratio, Total Asset Turnover, Profit Margin on sales, Return on Total Assets, Price Earnings Ratio & Book value per Share.

Assets

⇒ Things that a person or business own and that have value. Eg:

Types:

1) Current Assets

Used or converted into cash within a year

Eg: cash, inventory, account receivable, prepaid expenses

2) Fixed Assets

long term use. Eg: land, building, equipment

3) Tangible Assets

Investment or claim to cash

Stock, mutual fund, Bank deposit, Insurance

Intangible Assets

Don't have physical form but have value

Patent, Trademark, copyright, Brand name

Liabilities

→ Things that a person or business owes - meaning debt or obligation

Current Liabilities (short term)

→ Liabilities that must be paid within 1 year
Eg: Bill payable, Tax payable, wages payable, short term loan.

Non current Liabilities (long term)

Liabilities that have due after a year
Long term long loan, Lease obligation, Mortgage payable

Contingent Liabilities

- possible liabilities that may happen in the future depending on certain events
- lawsuit, product warranty claim,

Fundamental equation of accounting is

$$\text{Assets} = \text{Liabilities} + \text{owner's equity}$$

Assets - what the business owns

Liabilities - what the business owes

Owner's equity - owner's claim after liabilities are paid

It must always stay in balance - every transaction changes at least two parts but keep equality.

Financial ratio.

Tools used to analysis the company financial performance.

They compare value from financial statement, income statement, cash flow statement.

ratio

$$\rightarrow \text{Debt ratio} = \frac{\text{Total debt}}{\text{Total Capital}}$$

< 0.5 (lower means less financial risk)

It shows the proportion of total debt used in financing total assets of a firms.

$$\rightarrow \text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

Measure short term liquidity (1.5-2.0)

It is the quantitative relationship between current assets & liabilities.

3) Quick ratio | Acid test | liquid ratio:

$$= \frac{\text{Quick Assets}}{\text{Current Liabilities}} \rightarrow \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$$

Liquidity without relying on inventory

4) Turnover ratios

a) Inventory Turnover ratio = $\frac{\text{Cost of goods sold}}{\text{Average Inventory}}$

b) Total Assets Turnover = $\frac{\text{Net sales}}{\text{Avg Total Assets}}$

c) Profit Margin on sales

Profit Margin = $\frac{\text{Net Profit}}{\text{Net sales}} \times 100\%$

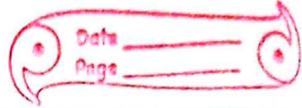
d) Return on Total Assets

ROA = $\frac{\text{Net Income}}{\text{Avg Total Assets}} \times 100\%$

e) Book value per share

$r = \frac{\text{Total Equity} - \text{Preferred Equity}}{\text{No. of common shares}}$

Formal record of a business financial activities showing how it earns, spend and manage money over a given period.



Financial statement

- Balance sheet:

In Balance sheet, assets and liabilities are arranged in certain order. Arranging asset and liabilities is called Marshalling of assets & liabilities.

$$\text{Assets} = \text{Liabilities} + \text{Owner's Equity}$$

Balance sheet of ... company

As on Date -

Liabilities Capital	Rs	Assets	Rs
Current Liabilities	Rs	current Assets	
Account payable	xxx	cash	xxx
Short term loan	xxx	Account Receivable	xxx
Total current Liabilities	xxx	Inventory	xxx
Long term Liabilities		Prepaid Expenses	xxx
Bank loan	xxx	Total Current Assets	xxx
Total Liabilities	xxx	Non Current Assets	
Owner's Equity		Property, plant &	xxx
Capital	xxx	Equipment	
Retained Earnings	xxx	Intangible Asset	(xxx)
Total Equity	xxx	Patent	xxx
Total Liabilities + Equity	xxx	Copyright	xxx
		Total Assets	xxx

Income statement

The income statement is also called profit & loss
Shows revenue and expenses over a period

Trading Account of ---
For the year ended ---

Dr	Cr		
Particulars	Rs	Particulars	Rs
To salaries & wages	xx	By Gross Profit bld	xx
To Rent	xx	By Commission	xx
To Insurance	xx	Received	
To Electricity & water	xx	By Interest Received	xx
To Telephone charges	xx	By Discount Received	xx
To repair & maintenance	xx	By other income	xx
To Advertising	xx		
To stationery & printing	xx		
To Interest paid	xx		
Import duty	xx		
Total	xx	Total	xx