Interpretation of Financial Statements

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* **Vision:**

  A world-class university committed to scholarly excellence

Purpose of Analysis

Financial statement analysis helps users make better decisions.

Internal Users

* Managers
* Officers
* Internal Auditors

External Users

* Shareholders
* Lenders
* Customers

Financial Statement Analysis

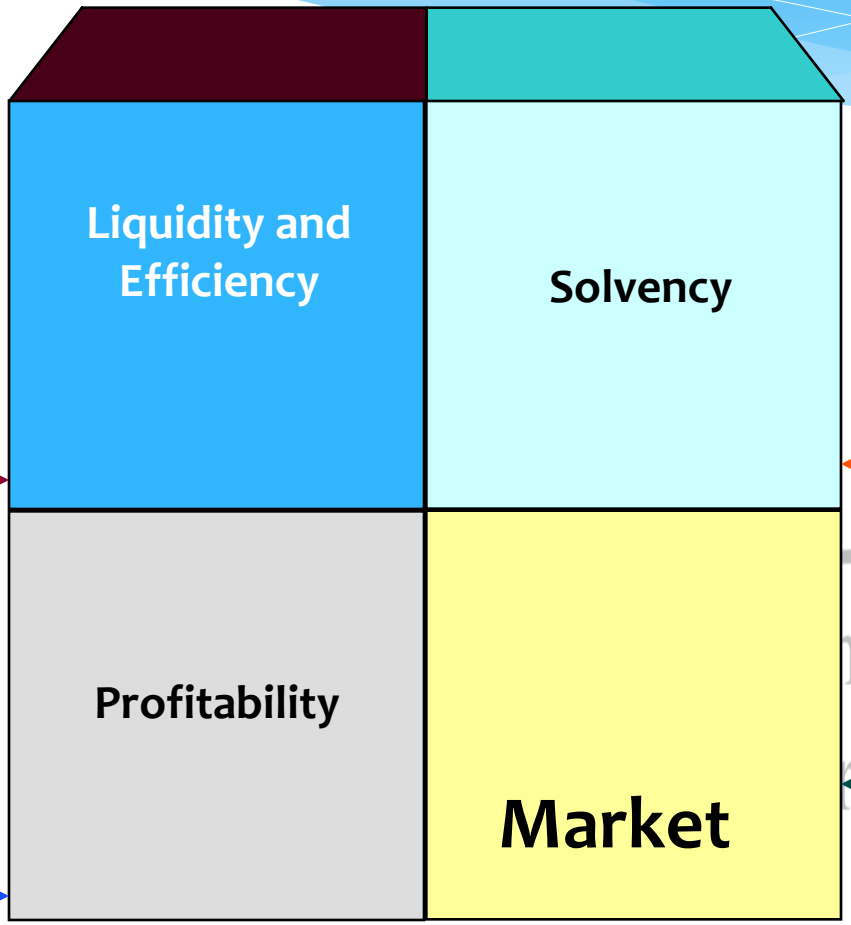
* **Objectives of Analysis**

1. To know whether the company is making enough profit or not
2. To evaluate the financial strength of the company
3. To judge the ability of the company to generate enough cash and cash equivalents and their timing
4. To know the future growth prospects

Basic Building Blocks of Analysis

Ability to meet short-term obligations and to efficiently generate revenues

Ability to provide financial rewards sufficient to attract and retain financing



Ability to generate future revenues and meet long-term obligations

Ability to generate positive market expectations

Standards for Comparison

1. Intra-company
2. Competitor
3. Industry
4. Guidelines

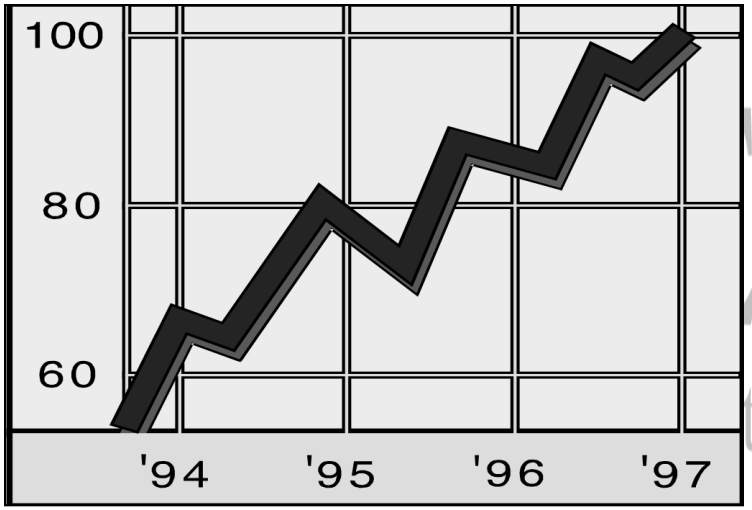
Tools for Financial Statement Analysis

1. Horizontal analysis
2. Vertical Analysis
3. Multi-step income statement
4. Common-sized analysis
5. Trend analysis
6. Analytical balance sheet

Tools of Analysis

Horizontal Analysis

* Comparing a company's financial condition and performance across time.



Horizontal Analysis

The percentage analysis of increase or decrease in each item of comparative balance sheet and profit and loss account is known as horizontal analysis

Formula:

(Current year's fig.- Previous year's fig.)*100

Previous year's fig.

Tools of Analysis

Vertical Analysis

* Comparing a company's financial condition and performance to a base amount.

Tools of Analysis

* **Multi-step Income Statement**

From the reported statement , it is necessary to segregate information and break-up of manufacturing, administrative and selling expenses which will show the profitability and disclose the following

a) Gross Profit—GP
b) Profit before depreciation, interest and tax—PBDIT
c) Operating Profit—OP or PBIT
d) Profit before tax and extraordinary items—PBTEOT
e) Profit before tax—PBT
f) Net profit--PAT

Tools of Analysis

* Common-sized Analysis

1. The tool is useful in comparing the performance and financial position of two companies within the same industry or in different industries
2. In case of balance sheet , each item is restated taking the total sources of fund or application of fund as 100
3. Similarly, in case of income statement, all items are expressed as a percentage of net sales which is taken at 100

Tools of Analysis

* Analytical Balance Sheet

1. It is a modified version of vertical balance sheet
2. It starts with 'Application of funds' side as against the vertical balance sheet that starts with 'Sources of Funds' side
3. It proves the basic accounting equation : Assets - outside liabilities= Owners' Funds
4. It shows that equity shareholders are the residual claimants on the assets of the company

Tools of Analysis

* Trend Analysis

1. It is an extension of horizontal analysis
2. Unlike in horizontal analysis, trend analysis compares position for more than two years, say, five years
3. Analysis for a longer period confirms the findings of horizontal analysis

Tools of Analysis

* Ratio Analysis:

Ratio refers to relationship between two variables expressed either in percentages or in multiples and seeks to establish the cause and effect relationship.

It assists in the following cases

1. Inter-firm comparison
2. Intra-firm comparison
3. Comparison against industry benchmark
4. Analysis of performance over a long period

Debt Ratio and its Purpose

* Measure of leverage
* Varies from industry to industry, but should be around 50%

$$= \frac{\text{Total liabilities}}{\text{Total assets}}$$

Current Ratio and its Purpose

$$= \frac{\text{Total current assets}}{\text{Total current liabilities}}$$

* Measure of liquidity
* Also called Working Capital Ratio
* Some successful companies have current ratios less than 1.0
* The ratio is a measure of short term solvency
* The ratio indicates to what extent cash on hand and disposable assets are enough to pay off near term liabilities.

Quick Ratio and its Purpose

$$= \frac{\text{Total current assets- Inventory- Prepayments}}{\text{Total current liabilities}}$$

* Measure of liquidity
* Also called Acid test Ratio
* Some successful companies have current ratios less than 1.0
* The ratio is a measure of short term solvency and is a harsher version of the current ratio
* The ratio balances short term liabilities against cash and liquid instruments.

Asset Turnover and its Purpose

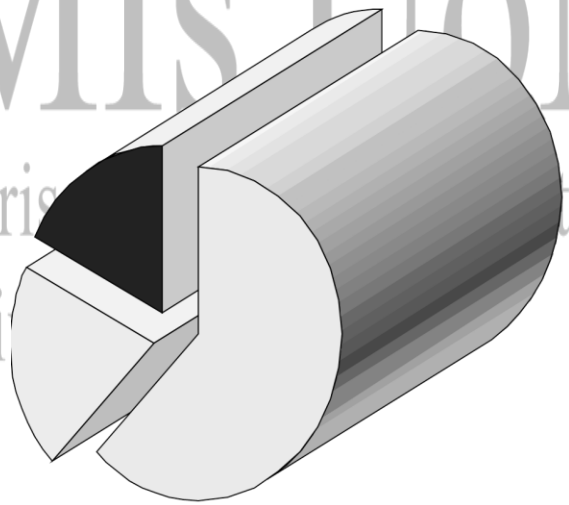
* Measure of company efficiency
* The higher the asset turnover ratio, the more efficient the company is using its assets to generate sales.

$$= \frac{\text{Sales}}{\text{Total assets}}$$

Return on Sales and its Purpose

* Measure of the amount of profit earned per currency amount of sales.
* Evaluated within the appropriate industry.

$$= \frac{\text{Net income}}{\text{Sales}}$$



Return on Equity and its Purpose

* Overall measure of performance — profit earned per currency amount of investment.
* Typically between 15% and 25%.

$$= \frac{\text{Net income}}{\text{Owners' equity}}$$

Tools of Analysis

* Classification of Ratios

1. Return on Investment (ROI) ratios
2. Solvency ratios
3. Liquidity ratios
4. Efficiency or Turnover ratios
5. Profitability ratios
6. Du Pont Analysis
7. Capital Market ratios

Financial Statement Analysis

* Return on Investment (ROI) ratios

This ratio seeks to measure the efficiency of performance or otherwise of the company. Higher the ratio, greater is the financial security for investors. Maximisation of ROI is the ultimate objective of any company.

Under this group, the following ratios are computed

1. Return on Net Worth
2. Earnings per Share

Financial Statement Analysis

* Return on Net Worth (RONW)

The ratio measures the net profit earned on equity shareholders' funds. It is the measure of overall profitability of a company.

Formula:

$$\frac{(\text{PAT-Pref.dividend})*100}{\text{Net Worth (Equity capital + Reserves \& Surplus-Misc. expenditure not written off)}}$$

Financial Statement Analysis

* Earning per Share (EPS)

The ratio measures the overall profitability in terms of per equity share of capital contributed.This is the most widely used ratio across industries.

Formula:

$$\frac{\text{PAT-Pref.Dividend}}{\text{Weighted average no. of equity shares O/S}}$$

Financial Statement Analysis

* Solvency Ratios

The capacity of a company to discharge its long-term obligation indicates its financial strength and solvency position.

Under this group, the following ratios are computed.

1. Debt-Equity ratio
2. Interest coverage ratio
3. Debt-service coverage ratio

Financial Statement Analysis

* Debt-Equity ratio (times)

The ratio measures the proportion of debt and capital – both equity and preference in the capital structure of a company. It helps in knowing whether a company is relying more on debt or capital for financing its assets. Higher the debt , more is the financial risk.

Formula:

$$\frac{\text{Long term debt}}{\text{Total net worth(Eq. shareholders' funds+Pref. cap)}}$$

Financial Statement Analysis

* Interest Coverage Ratio (times)

The ratio measures the ability of a company to service the interest obligations out of its cash profits. Higher the ratio, greater is the ability.

Formula:

PAT+Int. on long-term debt+Non-cash charges

Interest on long-term debt

Financial Statement Analysis

* Debt Service Coverage Ratio (times)

This ratio helps in assessing whether a company has the ability to service its instalments of the principal due and the interest obligations out of the revenues generated. Higher the ratio, greater is the ability.

Formula:

PAT+Int. on long term debt+Non-cash charges

Int. on long term-debt +Instalments of principal due

Financial Statement Analysis

* Liquidity Ratio

Liquidity refers to the capacity a company to meet its day to day expenses and discharge short-term obligations of suppliers and other creditors smoothly.

Following ratios are calculated under this head.

1. Current Ratio
2. Quick Ratio
3. Collection period
4. Suppliers Credit
5. Inventory Holding period

Financial Statement Analysis

* Current Ratio (times)

The ratio measures the ability of a company to discharge its day to day obligations. A company should possess adequate level of current assets over current liabilities to be able to do so. A current ratio of more than 1 indicates that value of short-term assets is more than short-term liabilities. A current ratio of less than 1 indicates poor liquidity.

Formula:

$$\frac{\text{Current Assets, loans and advances+short-term Investments}}{\text{Current Liabilities+Provisions+Short-term debt}}$$

Financial Statement Analysis

* Quick Ratio (times)

The ratio measures as to how fast the company is able to meet its current obligations as and when they fall due. This is also known as acid-test ratio. Inventory and working capital limits are taken out of current assets and current liabilities respectively. A quick ratio of 1: 1 is indicates highly solvent position.

Formula:

Current Assets, Loans and Advances-Inventories

Current Liabilities+Provisions-Working Capital Limits

Financial Statement Analysis

* Collection Period (days)

The ratio measures how fast the company is able to realise the dues from the customers on credit sales. It helps to understand the credit policy of the company.

Formula:

Receivables *365

Credit sales

Financial Statement Analysis

* Suppliers' Credit (days)

The ratio measures the average credit period enjoyed by the company from its suppliers. It also helps to understand the credit policy extended to a company by the suppliers.

Formula:

Payables*365

Credit Purchases

Financial Statement Analysis

* Inventory Holding Period(days)

The ratio measures the average period for which cash is blocked in inventory. In other words the ratio explains how fast the company is able to convert its inventory into cash.

Formula:

Inventory*365

Cost of goods sold

Financial Statement Analysis

* Turnover Ratios

These ratios indicate how efficiently the assets of the company are used to generate revenue .

Following ratios are calculated under this group.

1. Overall Efficiency Ratio
2. Fixed Assets Turnover Ratio
3. Debtors Turnover Ratio
4. Inventory Turnover Ratio
5. Creditors Turnover Ratio

Financial Statement Analysis

* Overall Efficiency Ratio (times)

It shows how effectively the capital employed has helped in revenue generation. Higher the ratio greater is the efficiency.

Formula:

$$\frac{\text{Sales}}{\text{Capital Employed}}$$

Financial Statement Analysis

* Fixed Assets Turnover Ratio (times)

The ratio measures the sales revenue per rupee of fixed assets. It plays an important role in improving the overall profitability and financial position of the company.

Formula :

$$\frac{\text{Sales}}{\text{Net Block of Fixed Assets}}$$

Financial Statement Analysis

* Debtors Turnover Ratio (times)

It represents the number of times average dues from customers are realised. Higher the ratio, the better is the position.

Formula:

$$\frac{\text{Credit Sales}}{\text{Average Debtors}}$$

Financial Statement Analysis

* Creditors Turnover Ratio (times)

The ratio shows the average time taken to pay for goods and services. Longer the credit period achieved the better.

Formula:

$$\frac{\text{Credit Purchase}}{\text{Average Creditors}}$$

Financial Statement Analysis

* Inventory Turnover Ratio

The ratio measures the amount of capital tied up in raw material, W.I.P. and finished goods

Formula:

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

Financial Statement Analysis

* Working Capital Turnover:
* Formula:

$$\frac{\text{Sales}}{\text{Networking Capital}}$$

- Ratios higher than industry norms may indicate a strain on available liquid assets while low ratios may suggest too much liquidity.

Financial Statement Analysis

* Profitability Ratios

The purpose of study of these ratios is to assess the adequacy or otherwise of the profit earned by the company. The following ratios are calculated under this group.

1. Multi-step Profit Margin to Sales
2. Individual Cost and Expense to Sales
3. Other Income , Extraordinary Items and Prior Period Adjustments to PBT or Sales
4. Effective Tax Rate

Financial Statement Analysis

* Multi-step Profit Margin to Sales Ratios(%)

These ratios measure several profit margin indicators. All these ratios are computed in relation to Sales.

1. Gross Profit Margin-GP
2. Profit Before Depreciation, Interest and Tax-PBDIT
3. Operating Profit-OP
4. Profit Before Tax and Extra-ordinary Items-PBTEOT
5. Profit Before Tax-PBT
6. Net Profit Margin-PAT

Financial Statement Analysis

* Gross Profit Margin (%)

This reflects the efficiency with which management produces each unit of output. It also indicates the spread between the cost of goods sold and the sales revenue.

Formula:

$$\frac{\text{Sales} - \text{Cost of Goods Sold}}{\text{Sales}} \times 100$$

Financial Statement Analysis

* Operating Profit Margin (%)

This ratio indicates profitability from operating activities. A higher margin implies better sales realisation and effective cost control.

Formula:

$$\frac{\text{Operating Profit}}{\text{Sales}} \times 100$$

Financial Statement Analysis

* Net Profit Margin(%)

The ratio is the overall measure of the firm's ability to earn profit per rupee of sales. It also establishes relationship between manufacturing, administering and selling the products.

Formula:

Profit After Tax

---------- X100

Sales

Financial Statement Analysis

* Individual Costs and Expenses to Sales Ratios (%)

These ratios measure the proportion of individual items of cost and expense in relation to sales. They also assist the analyst in cost minimisation and cost reduction.

Formula:

$$\frac{\text{Raw Materials Consumed}}{\text{Net Sales}} \times 100$$

Financial Statement Analysis

* Other Income, Extraordinary Items and Prior Period Adjustments to PBT or Net Sales (%)

These ratios seek to measure the impact of the above items on PBT or net sales.

Formula:

$$\frac{\text{Extraordinary Item}}{\text{PBT}} \times 100$$

Financial Statement Analysis

* Effective Tax Rate(%)

The ratio measures the actual effective rate at which a company pays income tax as against the statutory rate.

Formula:

$$\frac{\text{Current Income Tax}}{\text{PBT}} \times 100$$

Financial Statement Analysis

* DU PONT Analysis

RONW is a function of Net Profit Margin and Net worth Turnover. DU PONT analysis seeks to measure and establish this relationship between the two determinants. Through these ratios a firm can devise suitable remedies to overcome the weak area of overall performance.

Formula:

(PAT-Pref. Div)X100 Net Sales

----------X----------

Net Sales Net Worth

Financial Statement Analysis

* Capital Market Ratios

Following ratios are computed under this group.

1. EPS
2. Price Earning Ratio-P/E
3. Market Capitalisation
4. Yield to Investors

Financial Statement Analysis

* Price Earning Ratio (times)

P/E multiple is an important indicator of the premium that the market wishes to put on a firm's earnings. It can be used to price a share and value a firm.

Formula:

$$\frac{\text{Market Price of Equity Share}}{\text{EPS}}$$

Financial Statement Analysis

* Market Capitalisation (Rs.)

The ratio measures the total market value of the number of equity shares outstanding.

Formula:

No. of Equity Shares O/S X Market Price

Financial Statement Analysis

* Yield to Investors (%)

The ratio measures the total gain or loss suffered by investors in relation to their investment in equity shares of a company.

$$\frac{\text{Dividend recd.+ Market Appreciation}}{\text{Initial Investment}} \times 100$$

Example of Financial Ratio Analysis

- Trend Analysis

	2010	Definition
Trend Analysis Ratios		
Total Revenue Growth	15.6%	
EBITDA Growth	12.5%	(EBITDA 2010/EBITDA 2009) -1

Financial Ratio Analysis

- Liquidity Ratio
  - How well the Company manages **Cash**

	2010	Definition
Liquidity Ratios		
Current Ratio	2.57x	CA/CL
Quick ratio	1.85x	(Cash + A/R) / CL
Accounts Receivable Turnover (ART)	21.14x	Revenue/Avg AR
Accounts Receivable Days	17.26	365 / ART

Financial Ratio Analysis

- Solvency Ratio
  - How well the Company manages **Debt**

	2010	Definition
Solvency Ratios		
LTD / Total Capitalization	38.1%	LTD / (LTD + Equity)
EBITDA / Interest (Coverage Ratio)	3.61x	EBITDA / Interest
LTD / EBITDA (Leverage Ratio)	2.73x	LTD / EBITDA

Financial Ratio Analysis

- Activity and Operating Ratios
  - It measures productivity and efficiency for running the business

	2010	Definition
Activity Ratios / Operating Ratios		
Inventory Ratio (IR)	11.20x	Cost of Revenues/Avg Inventory
Inventory Ratio - Days	32.59	365 / IR

Financial Ratio Analysis

- Profitability Ratio
  - How profitable is the company

	2010	Definition
Profitability Ratios		
Gross Margin	62.2%	Gross Margin / Revenues
EBITDA Margin	39.0%	EBITDA / Revenue
EBIT Margin	33.2%	EBIT / Revenue
Return on Assets (ROA)	4.8%	NI / Avg Assets
Gross Return on Assets	11.8%	EBIT / Avg Assets
Return on Equity (ROE)	8.1%	NI / Avg Equity

Break Even Analysis

* When examining the income statement it is also helpful to do a break-even analysis, for this serves to indicate the viability and vulnerability of the business.
* The operating expenses of a company are relatively fixed regardless of the production level and sales' performance, but cost of goods sold and turnover are directly correlated to sales.
* Break-even analysis may be carried out in two ways:

(i) the break-even volume or

(ii) the break-even price.

Each of these is based on the profit formula, namely:

* Operating Profit = Turnover – Operating Expenses – Cost of Goods Sold

OP= TO – OE – COGS

Break Even Analysis

* The break-even volume (BEV) is the point at which turnover equals the sum of operational expenses and COGS.
* At this point, the company is neither making a profit or a loss.
* If less goods (seed) is sold than the BEV, then the company is operating at a loss, whereas if more goods (seed) is sold than the BEV, the company is operating at a profit.
* In the case where a company is operating at a profit, the margin of actual sales over the break-even volume indicates the buffer the company has in the event of future turnover decline (due to reduced volumes, reduced prices or both).
* The formula for calculating BEV is, BEV = OE / (Price/t – COGS/t)

Break Even Analysis

* **Example:**
* Suppose Company X has sold 1,600 tons of seed in a year at $1,845,000 whose cost is $ 1,077,000 and their operating expenses is $ 435,900. then:
* The total BEV is:

  = 435 900 / (1 845 000 / 1600 – 1 077 000 / 1600) = 903 t
* Thus, while the company sold 1,600 t of seed, their margin over the BEV was only 697 t.
* Another way to consider this is that the BEV was about two-thirds of their sales volume, so their margin was 43%.

Break Even Analysis

* The break-even price (BEP) may also be determined for the given volume of seed (goods) sold, as follows:
* BEP = (OE + COGS) / Volume Seed Sold
* **Example:**
* Suppose Company X has sold 1,600 tons of seed in a year at $1,845,000 whose cost is $ 1,077,000 and their operating expenses is $ 435,900. then:
* BEP = (435 900 + 1 077 000) / 1 600 = $945.56/t The actual average selling price was $1,153.13/t (i.e., TO/Volume), which indicates that the company did not have much room to maneuver on the average price.

Break Even Analysis

* Scenario/ Sensitivity Analysis based on the break even model shows that the company is more vulnerable to price than volume reductions. A 10% decrease in price or volume would have the same effect on the turnover, but each would have different impacts on the COGS and gross profit.
* A 10% decrease in price reduces TO by 10%, but has no effect on COGS (assuming the same volume of seed sold) and therefore results in a significant decrease in gross profit.
* On the other hand, a 10% decrease in the volume of seed sold at the same price, decreases TO and COGS, and so does not reduce profits as much as in the case of a 10% decrease in average price.

Break Even Analysis

	original		Volume reduction		Price reduction	
Volume	1,600t		1,440t		1,600t	
Price	$1,153/t		$1,153/t		$1,038/t	
Turnover	1,845,000		1,660,500		1,660,500	
COGS	1,077,000		969,300		1,077,000	
Gross profit	768,000	42%	691,200	42%	583,500	35%
Operating Expenses	435,900		435,900		435,900	
Operating profit	332,100	18%	255,300	15%	147,600	9%
Decrease in OP			77%		44%	

Break Even Analysis

* When volume sales decrease, carry-over stocks will increase, for a given level of production. Although these stocks will appear as an asset on the balance sheet, the longer-term impact on the company will depend on whether the stocks are eventually sold or not.
* Companies' break-even points tend to vary and different companies tend to have different breakeven points depending on their cost structures and sensitivity to volumes and prices.
* Break-even analyses may be done for each product line.
* The break-even analysis of each product, together with the gross margin and contribution of each product to the total gross profit are good indicators of which products are the most profitable and stable, which need improvements in financial efficiency or those which should be discontinued.

Break Even Analysis

* However, in some cases a product with a low contribution or gross margin may be a complementary product to a "cash cow" and removal of it from the product portfolio may negatively impact on the "cash cow".
* *Example: Seeds for rotation crops for maize that traditionally have higher margins may have lower margins. Discontinuing such crop seeds may also affect the maize seed turnover*