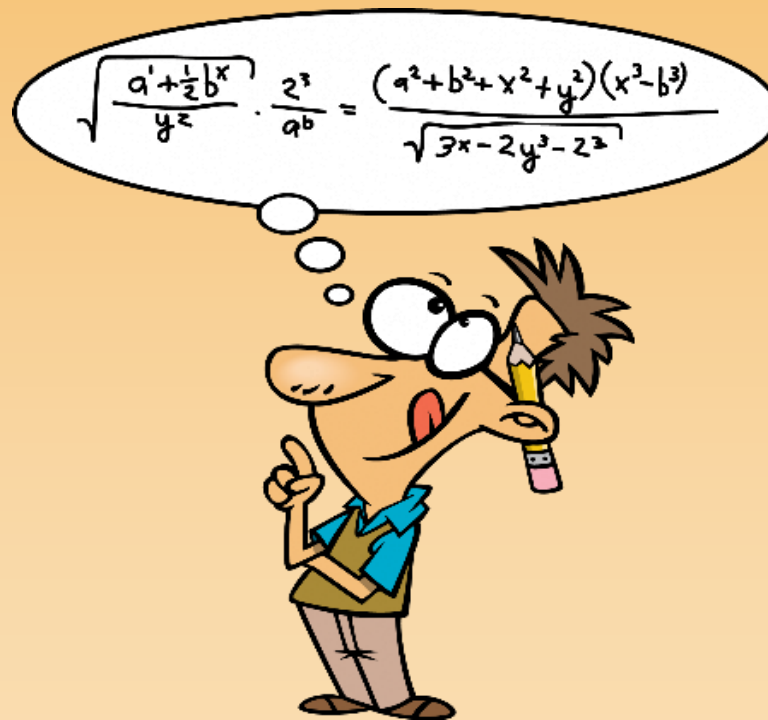


ANALYSIS AND INTERPRETATION OF FINANCIAL STATEMENTS



Financial Statement Analysis



Who analyzes financial statements?

Internal users - management

External users – investors & creditors

Financial Statement Analysis

What do internal users use it for?

Planning, evaluating and controlling company operations

What do external users use it for?

Assessing past performance and current financial position and making predictions about the future profitability and solvency of the company as well as evaluating the effectiveness of management

Financial Statement Analysis



Information is available from:

Financial statements

Auditor's report (Independent accountants)

Management's discussion and analysis

Methods of Financial Statement Analysis



Horizontal Analysis

Vertical Analysis

Ratio Analysis

Horizontal Analysis

Uses comparative financial statements to calculate dollar and or percentage changes in a financial statement item from one period to the next.



Horizontal Analysis

Calculating Change in Dollar Amounts

$$\begin{array}{|c|} \hline \text{Dollar} \\ \text{Change} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Current Year} \\ \text{Figure} \\ \hline \end{array} - \begin{array}{|c|} \hline \text{Base Year} \\ \text{Figure} \\ \hline \end{array}$$

Horizontal Analysis

Calculating Change as a Percentage

$$\text{Percentage Change} = \frac{\text{Dollar Change}}{\text{Base Year Figure}} \times 100\%$$

Sample Balance Sheet Horizontal Analysis


Horizontal Analysis of Comparative Balance Sheets				
For Years Ended				
Description	2021	2020	Horizontal Variance	
	Amount	Amount	Amount	Percentage
Assets				
Cash	15,000.00	10,000.00	5,000.00	50.0%
Securities	-	-	-	0.0%
Accounts Receivable - AR	30,000.00	25,000.00	5,000.00	20.0%
Notes Receivable	-	-	-	0.0%
Stock/Inventory	20,000.00	15,000.00	5,000.00	33.3%
Prepaid Expenses	5,000.00	3,000.00	2,000.00	66.7%
Current Assets	70,000.00	53,000.00	17,000.00	32.1%
Fixed Assets (Property, Plant, Equipment)	30,000.00	25,000.00	5,000.00	20.0%
Total Assets	100,000.00	78,000.00	22,000.00	28.2%
Liabilities and Stockholder's Equity				
Liabilities				
Accounts Payable - AP	20,000.00	15,000.00	5,000.00	33.3%
Accrued Liabilities	3,000.00	2,000.00	1,000.00	50.0%
Short -term borrowings	1,000.00	2,000.00	(1,000.00)	-50.0%
Taxes	2,000.00	1,000.00	1,000.00	100.0%
Current Liabilities	26,000.00	20,000.00	6,000.00	30.0%
Loans	2,000.00	5,000.00	(3,000.00)	-60.0%
Other long terms debt	-	-	-	0.0%
Total Liabilities	28,000.00	25,000.00	3,000.00	12.0%
Stockholder's Equity				
Common Stock	20,000.00	20,000.00	-	0.0%
Paid In Capital	5,000.00	5,000.00	-	0.0%
Retained Earnings	47,000.00	28,000.00	19,000.00	67.9%
Total Stockholder's Equity	72,000.00	53,000.00	19,000.00	35.8%
Total Liabilities and Stockholder's Equity	100,000.00	78,000.00	22,000.00	28.2%

Sample Income Statement

Horizontal Analysis

Horizontal Analysis Income Statements				
For Periods				
Description	2021	2020	Variance	
	Amount	Amount	Amount	Percentage
INCOME				
Sales from sale of goods and services (Net of discounts)	250,000.00	225,000.00	25,000.00	11.11%
Returns & Allowances	7,000.00	5,000.00	2,000.00	40.00%
Net Sales	243,000.00	220,000.00	23,000.00	10.45%
Other Operating Revenue	-	-	-	0.00%
Other Income	2,500.00	2,000.00	500.00	25.00%
Total Revenue	245,500.00	222,000.00	23,500.00	10.59%
EXPENSES				
Cost Of Goods Sold	65,000.00	50,000.00	15,000.00	30.00%
Salaries & Wages	85,000.00	80,000.00	5,000.00	6.25%
Payroll Taxes	8,500.00	8,000.00	500.00	6.25%
Employee Benefits Expense	6,000.00	5,000.00	1,000.00	20.00%
Advertising	2,000.00	3,000.00	(1,000.00)	-33.33%
Professional Fees	3,000.00	4,000.00	(1,000.00)	-25.00%
Maintenance & Repairs	4,000.00	6,000.00	(2,000.00)	-33.33%
Utilities	8,700.00	8,000.00	700.00	8.75%
Rent	12,000.00	12,000.00	-	0.00%
Vehicle Expenses	3,500.00	4,000.00	(500.00)	-12.50%
Entertainment	1,000.00	2,000.00	(1,000.00)	-50.00%
Postage	600.00	500.00	100.00	20.00%
Telephone & internet	700.00	600.00	100.00	16.67%
Bank Fees	300.00	200.00	100.00	50.00%
Credit Card Fees	7,000.00	5,000.00	2,000.00	40.00%
Office Supplies	1,500.00	1,000.00	500.00	50.00%
Computer Supplies	1,000.00	2,000.00	(1,000.00)	-50.00%
Insurance	5,500.00	5,000.00	500.00	10.00%
Licenses & Permits	700.00	800.00	(100.00)	-12.50%
Business Taxes	1,500.00	2,000.00	(500.00)	-25.00%
Other Expenses	1,000.00	1,500.00	(500.00)	-33.33%
Total Operating Expenses	153,500.00	150,600.00	2,900.00	1.93%
Total Expenses	218,500.00	200,600.00	17,900.00	8.92%
EARNINGS BEFORE INTEREST, TAX, DEPRECIATION AND AMORTIZATION	27,000.00	21,400.00	5,600.00	26.17%
Depreciation and Amortisation Expense	5,000.00	5,000.00	-	0.00%
Interest	-	-	-	0.00%
PROFIT BEFORE EXCEPTIONAL ITEMS AND TAX	22,000.00	16,400.00	5,600.00	34.15%
Exceptional Items	-	-	-	0.00%
PROFIT BEFORE TAX	22,000.00	16,400.00	5,600.00	34.15%
Less : Tax Expense				
Current Tax	3,000.00	2,400.00	600.00	25.00%
Total Tax Expenses	3,000.00	2,400.00	600.00	25.00%
PROFIT AFTER TAX	19,000.00	14,000.00	5,000.00	35.71%

Vertical Analysis



Each item is expressed as a percentage of a significant total, e.g., all income statement items are expressed as a percentage of sales and balance sheet items as a percentage of assets.

Vertical Analysis Statements



$$\begin{array}{l} \text{Income} \\ \text{Statement} \\ \text{Percentage} \\ \% \end{array} = \frac{\text{Item}}{\text{Net Sales}} \times 100$$

$$\begin{array}{l} \text{Balance} \\ \text{Sheet} \\ \text{Percentage} \\ \% \end{array} = \frac{\text{Item}}{\text{Total Assets}} \times 100$$

Sample Balance Sheet

Vertical Analysis

Vertical Analysis of Comparative Balance Sheets				
For Periods				
Description	2021		2020	
	Amount	Percent	Amount	Percent
Assets				
Cash	15,000.00	15.0%	10,000.00	12.8%
Securities	-	0.0%	-	0.0%
Accounts Receivable - AR	30,000.00	30.0%	25,000.00	32.1%
Notes	-	0.0%	-	0.0%
Stock/Inventory	20,000.00	20.0%	15,000.00	19.2%
Prepaid Expenses	5,000.00	5.0%	3,000.00	3.8%
Current Assets	70,000.00	70.0%	53,000.00	67.9%
Fixed Assets (Property, Plant, Equipment)	30,000.00	30.0%	25,000.00	32.1%
Total Assets	100,000.00	100.0%	78,000.00	100.0%
Liabilities and Stockholder's Equity				
Liabilities				
Accounts Payable - AP	20,000.00	20.0%	15,000.00	19.2%
Accrued Liabilities	3,000.00	3.0%	2,000.00	2.6%
Short -term borrowings	1,000.00	1.0%	2,000.00	2.6%
Taxes	2,000.00	2.0%	1,000.00	1.3%
Current Liabilities	26,000.00	26.0%	20,000.00	25.6%
Loans	2,000.00	2.0%	5,000.00	6.4%
Other long terms debt	-	0.0%	-	0.0%
Total Liabilities	28,000.00	28.0%	25,000.00	32.1%
Stockholder's Equity				
Common Stock	20,000.00	20.0%	20,000.00	25.6%
Paid In Capital	5,000.00	5.0%	5,000.00	6.4%
Retained Earnings	47,000.00	47.0%	28,000.00	35.9%
Total Stockholder's Equity	72,000.00	72.0%	53,000.00	67.9%
Total Liabilities and Stockholder's Equity	100,000.00	100.0%	78,000.00	100.0%

Sample Income Statement

Vertical Analysis

Vertical Analysis Income Statements				
For Periods				
Description	2021	2020	2021	2020
	Amount	Amount	Percentage	Percentage
INCOME				
Sales from sale of goods and services (Net of discounts)	250,000.00	225,000.00	100.00%	100.00%
Returns & Allowances	7,000.00	5,000.00	2.80%	2.22%
Revenue from sale of goods and services	243,000.00	220,000.00	97.20%	97.78%
Other Operating Revenue		-	0.00%	0.00%
Other Income	2,500.00	2,000.00	1.00%	0.89%
Total Revenue	245,500.00	222,000.00	98.20%	98.67%
EXPENSES				
Cost Of Goods Sold	65,000.00	50,000.00	26.00%	22.22%
Salaries & Wages	85,000.00	80,000.00	34.00%	35.56%
Payroll Taxes	8,500.00	8,000.00	3.40%	3.56%
Employee Benefits Expense	6,000.00	5,000.00	2.40%	2.22%
Advertising	2,000.00	3,000.00	0.80%	1.33%
Professional Fees	3,000.00	4,000.00	1.20%	1.78%
Maintenance & Repairs	4,000.00	6,000.00	1.60%	2.67%
Utilities	8,700.00	8,000.00	3.48%	3.56%
Rent	12,000.00	12,000.00	4.80%	5.33%
Vehicle Expenses	3,500.00	4,000.00	1.40%	1.78%
Entertainment	1,000.00	2,000.00	0.40%	0.89%
Postage	600.00	500.00	0.24%	0.22%
Telephone & internet	700.00	600.00	0.28%	0.27%
Bank Fees	300.00	200.00	0.12%	0.09%
Credit Card Fees	7,000.00	5,000.00	2.80%	2.22%
Office Supplies	1,500.00	1,000.00	0.60%	0.44%
Computer Supplies	1,000.00	2,000.00	0.40%	0.89%
Insurance	5,500.00	5,000.00	2.20%	2.22%
Licenses & Permits	700.00	800.00	0.28%	0.36%
Business Taxes	1,500.00	2,000.00	0.60%	0.89%
Other Expenses	1,000.00	1,500.00	0.40%	0.67%
Total Operating Expenses	153,500.00	150,600.00	61.40%	66.93%
Total Expenses	218,500.00	200,600.00	87.40%	89.16%
EARNINGS BEFORE INTEREST, TAX, DEPRECIATION AND AMORTIZATION				
	27,000.00	21,400.00	10.80%	9.51%
Depreciation and Amortisation Expense	5,000.00	5,000.00	2.00%	2.22%
Interest			0.00%	0.00%
PROFIT BEFORE EXCEPTIONAL ITEMS AND TAX	22,000.00	16,400.00	8.80%	7.29%
Exceptional Items			0.00%	0.00%
PROFIT BEFORE TAX	22,000.00	16,400.00	8.80%	7.29%
Less : Tax Expense				
Current Tax	3,000.00	2,400.00	1.20%	1.07%
Total Tax Expenses	3,000.00	2,400.00	1.20%	1.07%
PROFIT AFTER TAX	19,000.00	14,000.00	7.60%	6.22%

Trend Percentages



Show changes over time in given financial statement items (can help evaluate financial information of several years)

Ratios

- **Financial Ratios** are mathematical comparisons of financial statement account balances or categories. Most of these ratios result from dividing one account balance or financial measurement by another. If you recall, back in elementary school arithmetic you studied fractions. That's what ratios are. These relationships between the financial statement accounts serve as indicators and help internal company management, owners, and creditors understand how well a business is performing and what areas need improvement.
-

Ratio Analysis



Expression of logical relationships between items in financial statements.

Ratios

How do you use them ?

As indicators to help internal company management, owners, and creditors understand how well a business is performing and what areas need improvement.

Financial ratios allow you to be able to make the following comparisons:

- Industry Averages
 - Competitors
 - Your own ratios from current and prior years
 - Your planned ratios for the current and future years
-

Ratios

Ratios can be expressed in three different ways:

- 1. Ratio (Ratio of 2:1)**
 - 2. % (Percentage of 2%)**
 - 3. Decimal Number (Number of 2.0)**
-

Categories of Ratios

Profitability Ratios - Indicate the ability of a business to generate income (profit) relative to revenue, balance sheet assets, and equity

Liquidity Ratios - Indicate a company's short-term debt-paying ability

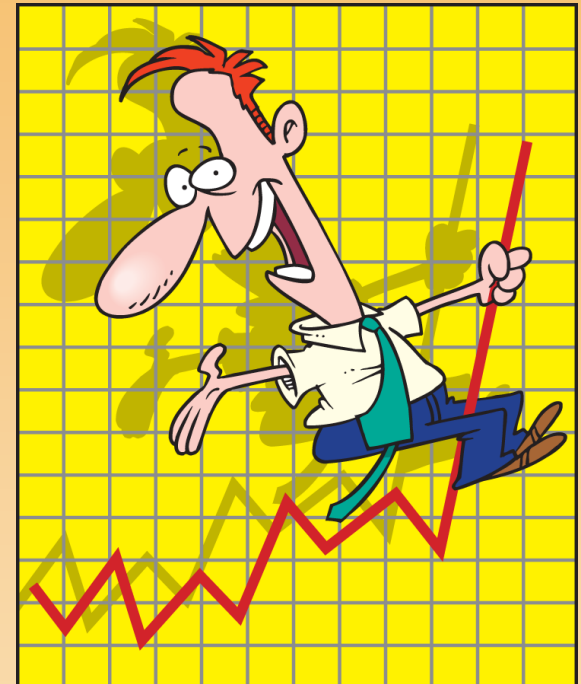
Solvency Ratios - Show the relationship between debt and equity financing

Activity (Efficiency) Ratios Indicate how efficient a company's operations are performing

Profitability Ratios

Profitability Ratios

- Return on Total Assets Ratio
- Return on Fixed Assets Ratio
- Return on Equity Ratio
- Gross Margin Percentage Ratio
- Net Profit Margin Ratio



Return on Total Assets

$$\begin{array}{l} \text{Return} \\ \text{on} \\ \text{Assets} \end{array} = \frac{\text{Net Income}}{\text{Average Assets}} \times 100$$

Normally Expressed As A Percentage 10.4%

Measures the amount of net income generated for each dollar invested in total assets during a period.

Return on Fixed Assets

$$\text{Return on Fixed Assets} = \frac{\text{Net Income}}{\text{Average Fixed Assets}} \times 100$$

Normally Expressed As A Percentage 24.6 %

Measures a companies return on their investment in property, plant, and equipment.

Return on Equity (ROE)

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Average Equity}} \times 100$$

Normally Expressed As A Percentage 15%

**Important measure of the
income-producing ability
of a company.**

Gross Profit Margin

$$\begin{array}{l} \text{Net Income} \\ \text{to} \\ \text{Net Sales} \end{array} = \frac{\text{Net Sales} - \text{Cost Of Goods Sold}}{\text{Net Sales}} \times 100$$

Normally Expressed As A Percentage 35.7%

Measures the proportion of the sales dollar left after deducting cost of goods sold.

Net Profit Margin Return on Sales

$$\begin{array}{l} \text{Net Income} \\ \text{to} \\ \text{Net Sales} \end{array} = \frac{\text{Net Income}}{\text{Net Sales}} \times 100$$

Normally Expressed As A Percentage 8.3%

Measures the proportion of the sales dollar which is retained as profit.

Liquidity Ratios

Liquidity Ratios

- Cash Ratio
- Quick (acid test) Ratio
- Current Ratio
- Working Capital



Cash Ratio

$$\text{Cash Ratio} = \frac{\text{Cash}}{\text{Current Liabilities}}$$

Normally Expressed As A Ratio 2:1

**Measures the ability
of the company to pay current
debts with cash.**

Acid-Test (Quick) Ratio

$$\text{Acid-Test Ratio} = \frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Measures a company's ability to pay off short-term liabilities using **liquid** assets.

Quick assets are Cash, Marketable Securities, Accounts Receivable (net) and current Notes Receivable.

Normally Expressed As A Ratio 1:1

Current Ratio

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Normally Expressed As A Ratio 2.5:1

**Measures the ability
of the company to pay current
debts as they become due.**

Working Capital*

Working Capital = Currents Assets – Current Liabilities

The excess of current assets over current liabilities.

Expressed As a Dollar Amount \$52,347

*** While this is not actually a ratio, it does give an indication of a company's liquidity.**

Solvency Ratios



Solvency Ratios

- Debt to Assets Ratio (Debt Ratio)
- Debt to Equity Ratio

Debt To Assets Ratio

$$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}} \times 100$$

Normally Expressed As A Percentage 45.9 %

**Measures the proportion
of total assets provided by
creditors.**

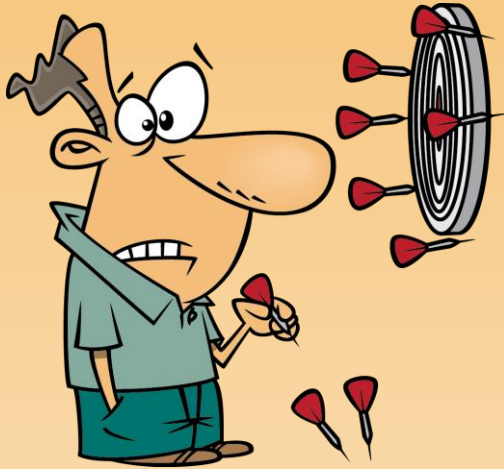
Debt To Equity Ratio

$$\text{Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Equity}} \times 100$$

Normally Expressed As A Percentage 29.8 %

**Measures a company's debt position
as related to its equity.**

Activity Ratios



Activity Ratios

- Accounts Receivable Turnover Ratio
- Average Accounts Receivable Collection Days Ratio
- Inventory Turnover Ratio
- Average Days of Inventory Ratio
- Accounts Payables Turnover Ratio
- Average Accounts Payable Days Ratio

Accounts Receivable Turnover

Net, credit sales

**Average, net accounts
receivable**

$$\text{Accounts Receivable Turnover} = \frac{\text{Sales on Account}}{\text{Average Accounts Receivable}}$$

Normally Expressed As A Decimal Number 11.3

This ratio measures how many times a company converts its receivables into cash each year.

Number of Days' Sales in Accounts Receivable

$$\begin{aligned} \text{Days' Sales} \\ \text{in Accounts} \\ \text{Receivables} &= \frac{\text{Average Accounts Receivable}}{\text{Net Credit Sales}} \\ &\quad \times \\ &\quad \text{30, 90, or 365} \end{aligned}$$

Normally Expressed As A Decimal Number 30.5

Measures, on average, how many days it takes to collect an account receivable.

Inventory Turnover

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

Normally Expressed As A Decimal Number 10.2

**Measures the number of times
inventory is sold and
replaced during the year.**

Number of Days of Inventory

$$\text{Days Of Inventory} = \frac{\text{Average Inventory}}{\text{Cost Of Goods Sold}} \times 30, 90, \text{ or } 365$$

Normally Expressed As A Decimal Number 33.3

Measures the average number of days necessary to sell all inventory for a period.

Accounts Payable Turnover

$$\text{Accounts Payable Turnover} = \frac{\text{Net Credit Purchases}}{\text{Average Accounts Payable}}$$

Normally Expressed As A Decimal Number 41.2

Measures how quickly a business makes payments to creditors and suppliers that grant them credit payment terms.

Accounts Payable Payment Days

$$\begin{aligned} \text{Accounts Payables Payment Days} &= \frac{\text{Average Accounts Payable}}{\text{Net Credit Purchases}} \\ &\quad \times \\ &\quad \text{30, 90, or 365} \end{aligned}$$

Normally Expressed As A Decimal Number 29.8

Measures, on average, how many days it takes to pay creditors.

Sample Ratio Analysis Data

XYZ Financials						
Description	CY		PY		PY-1	
	Amount	Pctg	Amount	Pctg	Amount	Pctg
		%		%		%
Income Statement						
Net Sales (Revenue)	501,250	100.0%	402,960	100.0%	378,355	100.0%
Cost of Goods Sold	300,897	60.0%	220,467	54.7%	215,662	57.0%
Gross Profit	200,353	40.0%	182,493	45.3%	162,693	43.0%
Operating Expenses	114,289	22.8%	109,877	27.3%	98,372	26.0%
Earnings Before Interest & Taxes	86,064	17.2%	72,616	18.0%	64,321	17.0%
Interest Expense	11,059	2.2%	9,234	2.3%	8,655	2.3%
Tax Expense	11,824	2.4%	8,987	2.2%	7,894	2.1%
Net Income	63,181	12.6%	54,395	13.5%	47,772	12.6%
Balance Sheet						
Cash	42,959	16.4%	28,531	14.6%	24,285	16.9%
Short Term Investments	4,000	1.5%	3,000	1.5%	2,500	1.7%
Accounts Receivable	69,711	26.6%	44,048	22.5%	26,528	18.5%
Prepaid Expenses	6,364	2.4%	3,186	1.6%	3,486	2.4%
Inventory	73,987	28.2%	57,899	29.6%	46,607	32.4%
Current Assets	197,021	75.1%	136,664	69.9%	103,406	72.0%
Net Fixed Assets	52,314	19.9%	43,749	22.4%	27,955	19.5%
Other Assets	13,114	5.0%	14,982	7.7%	12,267	8.5%
Total Assets	262,449	100.0%	195,395	100.0%	143,628	100.0%
Accounts Payable	25,075	9.6%	18,534	9.5%	16,897	11.8%
Other Liabilities	2,500	1.0%	1,495	0.8%	985	0.7%
Current Liabilities	27,575	10.5%	20,029	10.3%	17,882	12.5%
Long Term Liabilities	16,443	6.3%	20,116	10.3%	24,891	17.3%
Total Liabilities	44,018	16.8%	40,145	20.5%	42,773	29.8%
Total Equity	218,431	83.2%	155,250	79.5%	100,855	70.2%
Total Liabilities & Equity	262,449	100.0%	195,395	100.0%	143,628	100.0%

Sample Ratio Analysis

XYZ Company

RATIO ANALYSIS

Profitability Ratios		CY	PY	Activity Ratios		CY	PY
Return on Total Assets		27.6%	32.1%	Accounts Receivable Turnover		8.81	11.42
Return on Fixed Assets		131.5%	151.7%	Accounts Receivable Collection Days		41.42	31.96
Return on Equity		33.8%	42.5%	Inventory Turnover		4.56	4.22
Gross Margin %		40.0%	45.3%	Days of Inventory		79.99	86.51
Return On Sales (Net Profit Margin)		12.6%	13.5%	Accounts Payable Turnover		13.80	12.44
				Accounts Payable Payment Days		26.45	29.33
Liquidity Ratios		CY	PY	Solvency Ratios		CY	PY
Cash Ratio		1.56:1	1.42:1	Times Interest Earned		7.78	7.86
Quick Ratio		4.23:1	3.77:1	Debt To Total Assets		16.77%	20.55%
Current Ratio		7.14:1	6.82:1	Debt To Equity		20.15%	25.86%
Working Capital		\$169,446	\$ 96,519				

Important Considerations

- **Need for comparable data**
 - ◆ Data is provided by Dun & Bradstreet, Standard & Poor's etc.
 - ◆ Must compare by industry
- **Influence of external factors**
 - ◆ General business conditions
 - ◆ Seasonal nature of business operations
- **Impact of inflation**

