

Lesson 9 - Financial Analysis – Lecture Notes

Bell Ringer: Going back to our question from the last lesson, Uncle Joe is giving you \$100 for your birthday. Would you rather have that money tomorrow or would you rather wait, let Uncle Joe invest it and get it one year from now? Now that you know about Future Value and Present Value of money what are factors you need to consider when answering this question?

A. Section 1 - Review Time Value of Money

1. Future Value of a Lump Sum
2. Present Value of a Lump Sum
3. Future Value of an Annuity (stream of cash flows)

B. Section 2 - What is Financial Analysis?

1. Managers and lenders should understand the strengths and weaknesses of the business. Most managers focus on the production aspect of the business (growing the crop, producing the product, raising the cattle, etc.) and end up ignoring the “financial” aspects of the business. Good managers realize that the production aspects and the financial aspects go hand-in-hand – you need to pay close attention to both!
2. Financial analysis uses the tools we’ve discussed (balance sheet, income statement, enterprise budgets, etc.) to make the business better/stronger. Financial analysis helps the manager identify methods of improving the overall business – through changes in the production aspects and/or through financial moves
3. 2 main Types of Financial Analysis
 - a. Ratio analysis
 - We look at key figures (net income, RATC, etc.) and ratios
 - Compare those figures and ratios to “benchmarks” to see if they are above average, average, or below average
 - “Benchmarks” are basically the goals that a manager should shoot for
 - Trend Analysis
 - With trend analysis we look at how the individual figures and ratios are changing over time. Are they improving or getting worse.
 - Ratio and trend analysis help a manager identify potential problem areas (weaknesses) in the business. They also help the manager identify the strengths of the business
 - b. For a basic financial analysis we look at 4 main areas: (refer to lesson 2, 3, 4 as a refresher)
 - Liquidity
 - Liquidity refers to the ability of the business to pay its bills that are due in the near future without having to disrupt the business (by selling productive assets)
 - Solvency
 - Solvency refers to the business’ ability to cover all of its liabilities (debts) with its assets. If the liabilities are greater than the assets, we say that the business is “insolvent”.
 - Profitability
 - Profitability refers to whether the business is “making money” – that is, is the business generating enough revenues to cover its expenses.
 - Financial efficiency
 - Financial efficiency examines how well the business can control its costs and how well it is using its assets

C. Section 3 - Liquidity Analysis

1. We use the balance sheet to analyze the liquidity of a business
2. Because we are looking to see if the business can cover all of its liabilities for the near future without disrupting the business, we just look at the Current Assets and the Current Liabilities
3. Current Ratio is a common ratio to measure liquidity
 - $\text{Current Ratio} = \text{Current Assets} / \text{Current Liabilities}$
 - A Current Ratio of 3 says "I have \$3 in current assets for every \$1 of liabilities due within the next year"
 - At a minimum, we like to see the Current Ratio greater than 1
 - If it is less than 1, that means we do not have enough current assets (that we can turn into cash) to pay all of the liabilities due within 1 year.
 - Ideally, we like to see the Current Ratio greater than 2
 - This would indicate that we have at least two times as much Current Assets available to pay our Current Liabilities
4. For the Example balance sheet (from lesson 3 exercise on Balance Sheets)
 - The Current Ratio for August 30, 2016 is:

Current Assets / Current Liabilities (have the students calculate this ratio)

$\$63,800 / \$29,500 = 2.2$ (ask the students if this is poor, okay, or strong)

This is greater than 2, so we would consider it to be strong – this firm has good liquidity. This is a strength of the business

- The Current Ratio for August 30, 2017 is:

$\$69,200 / \$37,700 = 1.8$ (have the students calculate this ratio)

The Current Ratio is greater than zero, but it is now less than 2. This means that the business' liquidity is "okay, but not as strong as it was in 2015".

- Trend analysis looks at the change from 2016 to 2017. The Current Ratio decreased over this time. (Ask the students if this is a good sign or a bad sign). This is not a good sign. That indicates a potential problem for the business. The manager should look at ways to improve the liquidity of the business.

- What are possible causes of this decrease?
 - Increase in the operating loan – they had to borrow more money
 - Increased accrued interest – due to the larger operating loan
 - increased wages payable
 - manager should ask, "why did wages payable increase"

D. Section 4 - Solvency

1. We use the Balance Sheet to measure Solvency of a business
 - a. Solvency looks at whether the business has enough assets to repay all of its liabilities
 - So we look at Total Assets and Total Liabilities
 - b. We use the Debt/Asset ("Debt to Asset") Ratio to measure Solvency

- c. Debt/Asset Ratio = Total Liabilities / Total Assets
 - We like to see this ratio less than 70% for a new (start-up) business
 - We like to see it less than 40% for an established business
 - We like to see this ratio getting smaller over time
 - The lower it is, the less risk the business faces
 - A high Debt/Asset Ratio means the firm is:
 - Less Solvent
 - In a much riskier position
- d. A Debt/Asset Ratio of 40% means that you borrowed 40% of the purchase price of your assets. Another way to look at this ratio is that your lenders “own” 40% of your assets and you own the remaining 60% (you have paid for 60% out of pocket)

- For the example:

- Have the students calculate the Debt/Asset Ratio for August 30, 2016 and 2017:

2016: $\$274,500 / \$403,800 = 68\%$

2017: $\$268,700 / \$409,200 = 66\%$

Have the students rate these ratios as poor, okay, or strong. Assume it is a new, start-up business.

Because 70% is the highest we want to see this ratio, it can be rated as either “poor” or “okay” – it is fairly high, which means the firm is in a risky solvency position

Have the students use Trend Analysis and look at how the Debt/Asset Ratio has changed over the past year. Has it improved or gotten worse?

The Debt/Asset Ratio has improved over the past year – this is a good sign!

E. Section 5 - Profitability

1. Profitability analysis measures whether a business is making enough revenues to pay all of its expenses. We can measure profitability using the enterprise budgets and income statements – looking at:
 - Return Above Variable (Operating) Costs or Gross Margin
 - Return Above Total Costs or Net Income
2. We like to see these numbers greater than zero, as discussed in earlier lessons
3. We need to use the Balance Sheet and the Income Statement for profitability analysis
4. But it is useful to compare these numbers to the total amount of assets that you are using to operate the business. We call this the Rate of Return on Assets, or ROA. There are several formulas for calculating ROA – we will stick with the easiest:
5. $ROA = (\text{Net Income} + \text{Interest Expense}) / \text{Total Assets}$
 - ROA tells us how much profits we are making in relation to the assets we use in the business. Why do we do this? Consider this – 2 businesses each earn a Net Income of \$100,000 for the year. Business A uses \$500,000 of assets. Business B uses \$1 million of assets. Which business is more profitable? They both earn \$100,000, but let’s look at their ROA:

Business A's ROA = $\$100,000 / \$500,000 = 20\%$

Business B's ROA = $\$100,000 / \$1,000,000 = 10\%$

From this analysis, Business A is twice as profitable as Business B – even though they both earned \$100,000 of profits. Business A earned the same profits using less assets – that means less investment was necessary and lower overhead expenses than for Business B.

6. How to interpret ROA:

- If a business' ROA is 10%, we say "that business earned \$0.10 of profit for every \$1 of assets it used".
- We like to see ROA greater than zero – that means we made profits!
- We really like to see ROA greater than the interest rate on the liabilities of the business
 - If we borrow money at 5% APR and we earn an ROA of less than 5%, that means we aren't earning enough profits to pay the interest on the loans.
 - If we borrow money at 5% APR and earn an ROA of 8%, that means we have profits left over AFTER we have paid our interest
 - Remember the phrase, "if it costs more than it's worth, don't do it"? If the interest rate is higher than the ROA, it costs more than it is worth!
- For ROA, the higher the number, the better!

Have students calculate the ROA for 2016 and 2017:

ROA = (Net Income + Interest Expense) / Total Assets

2016: $(\$6,000 + \$8,000) / \$403,800 = 3.5\%$

2017: $(\$20,000 + \$7,000) / \$409,200 = 6.6\%$ (rounded)

Assume the APR on the business loans is 6% APR. Have the students rate the ROA as poor, okay, or strong.

For 2016: Poor – the ROA is less than the APR. You might say that it is "okay" because it is greater than zero, but it is not as high as the APR.

For 2017: Strong – the ROA is greater than the APR.

For Trend Analysis – the ROA increased from 2016 to 2017 – that means the profitability of the business improved over the year – good sign!

F. Section 6 - Financial Efficiency

1. There are many ways to measure the financial efficiency of a business. We will focus on how good they are at controlling their costs. The better a manager is at cost control, the greater the opportunity for profits!
2. We will use the Operating Expense/Receipt Ratio to measure financial efficiency
 - We use the Income Statement for this analysis
3. Op. Expense/Receipt Ratio = (Total Expenses – Interest – Depreciation) / Total Revenues

4. We like to see this ratio less than 75%
 - An Operating Expense/Receipt Ratio of 75% indicates that the business spends \$0.75 (in operating and overhead expenses) to generate \$1 of revenue
 - The lower this ratio, the better
 - We do NOT want to see it greater than 100%

For the Example: Calculate the Operating Expense/Receipt Ratio for 2016 and 2017:

Op. Expense/Receipt Ratio = (Total Expenses – Interest – Depreciation) / Total Revenues

2016: $(\$25,000 + \$69,000 - \$8,000 - \$5,000) / \$100,000 = 81\%$

2017: $(\$40,000 + \$75,000 - \$7,000 - \$5,000) / \$135,000 = 76\%$ (rounded)

Have the students rate each ratio and do a trend analysis:

2016: The Operating Expense/Receipt Ratio above 75% - this is poor. The manager should find ways of reducing the expenses without hurting the revenues

2017: The ratio is just above 75% (okay/poor).

Trend: The ratio decreased from 81% to 76%, this shows an improvement in the business. Good job by the manager! But he/she should find other ways to improve this ratio.

G. Section 7 - Summary

1. Let's look at all of the areas of analysis and determine the business' strengths and weaknesses:
2. For the example floral business:

Liquidity:	Okay – has been decreasing – potential problem	~ strength
Solvency:	Poor/Okay for new business – has been improving	~ weakness
Profitability:	Okay – has been improving	~ weakness
Financial Efficiency:	Okay – but has been improving	~ weakness

Although this firm “made money” (had profits), it has some financial problems that the manager must address. In this case, the financial efficiency appears to be the biggest weakness – this is where the manager should focus his/her attention.

- If he/she can improve the Operating Expense Receipt ratio by reducing unnecessary costs or improving revenues, that will improve profitability even more. It should also improve the liquidity (more profits = more money available = higher liquidity).

3. Lenders look at this same analysis when they are reviewing a loan application. They will identify the strengths and weaknesses of the business in the same manner. If the manager knows what the strengths and weaknesses are ahead of time, he/she can:

- work to improve those weaknesses (improve the overall business!)
- address the lender's concerns about those weaknesses

Materials: **PowerPoint on Financial Analysis**
 Note Organizer
 In-class Exercise and Key
 Homework Exercise and Key
 Take Home Reading

FINANCIAL ANALYSIS



What is Financial Analysis?

- Using financial tools:
 - Enterprise budgets
 - Balance sheets
 - Income statements
- To identify a business' strengths and weaknesses
 - Helps the manager improve the business



Why is it Necessary?

- Financial Analysis:
 - Helps a manager take actions to improve the business
 - Identifies potential problems before they occur
 - Helps lenders analyze loan applications for strengths, weaknesses, and risks
 - Helps the manager understand the business more fully



Types of Financial Analysis

- Ratio Analysis
 - Use ratios and figures (net income, RAVC, etc.)
 - Compare those ratios and figures to "benchmarks"
 - Benchmarks are "goals" or "standards"
- Trend Analysis
 - Look at changes in ratios and figures over time
 - Are they improving or getting worse?



Main Areas of Analysis

- Liquidity
 - Having enough current assets to cover your current liabilities
- Solvency
 - Having enough total assets to cover your total liabilities
- Profitability
 - "Are we making money above our expenses?"
- Financial Efficiency
 - How well are we controlling our costs?



Liquidity Analysis

- Use the Balance Sheet
- Current Ratio is the main measure
 - $\text{Current Ratio} = \text{Current Assets} / \text{Current Liabilities}$
- Like to see:
 - A minimum ratio of 1.0
 - Greater than 2.0 is strong
- Interpretation:
 - A Current Ratio of 2 means that you have \$2 of current assets for every \$1 of liabilities that are due within the next year (current liabilities)



Solvency Analysis

- Use the Balance Sheet
- Debt/Asset Ratio is the main measure
 - $\text{Debt/Asset Ratio} = \text{Total Liabilities} / \text{Total Assets}$
- Like to see:
 - Less than 40% for an existing business
 - Less than 70% for a new or start-up business
 - Decreasing over time
 - The lower it is, the less risk you face



Solvency Analysis

- Interpretation:
 - A Debt/Asset Ratio of 40% shows that you owe your lenders 40% of the value of your assets
 - Or - that you have paid for 60% of your assets
 - Another way to look at it:
 - Your lenders "own" 40% of your assets
 - You own 60% of your assets



Profitability Analysis

- Use the Income Statement or Enterprise Budget
 - Gross Margin or Return Above Variable Costs
 - Net Income or Return Above Total Costs
- Also need the Balance Sheet
- Main ratio is Rate of Return on Assets (ROA)
 - $\text{ROA} = (\text{Net Income} + \text{Interest}) / \text{Total Assets}$



Profitability Analysis

- Like to see:
 - ROA > 0% at a minimum
 - ROA > interest rate (APR) on your loans
 - ROA > 8% is strong
 - Growing over time
 - The higher, the more profitable your business
- Interpretation:
 - An ROA of 10% means that you earned \$0.10 of profit for every \$1 of asset used in your business.



Financial Efficiency Analysis

- We're just focusing on cost control here
- Use the Income Statement
- Operating Expense/Receipt Ratio
 - $\text{Op. Exp/Rec} = (\text{Total Exp.} - \text{Int.} - \text{Dep.}) / \text{Total Revenue}$
- Like to see:
 - Less than 75%
- Interpretation:
 - A ratio of 75% means that the business spends \$0.75 in expenses to generate \$1 of revenue



Summary

- Look at your ratings for each area

Area	Rating	Strength or Weakness?
Liquidity	Strong/Okay	→ Strength
Solvency	Poor/Okay	→ Weakness
Profitability	Poor/Okay	→ Weakness
Financial Efficiency	Poor/Okay	→ Weakness



Summary

- Now the manager can see what areas need to be improved!
- Main ways to improve a business:
 - Reduce the top 5 expenses
 - Without hurting production
 - Increase revenues
 - More units produced & sold
 - Different price
 - Get rid of unneeded or un-used assets



Summary

- A manager must look at the financial and the production aspects of the business
 - They are directly related!!
 - Too often the financial aspects are ignored
- Lenders use this same analysis to review loan applications
 - Managers should know their own strengths and weaknesses BEFORE meeting with the lender!



Financial Analysis- Notes Organizer

What is Financial Analysis?

- Using financial tools:
 - Enterprise budgets
 - _____
 - Income statements
- To identify a business' strengths and weaknesses
 - Helps the manager improve the business

Why is it Necessary?

- Financial Analysis:
 - Helps a manager take actions to improve the business
 - Identifies potential problems before they occur
 - Helps lenders analyze loan applications for _____
 - Helps the manager understand the business more fully

Types of Financial Analysis

- _____
 - Use ratios and figures (net income, RAVC, etc.)
 - Compare those ratios and figures to "benchmarks"
 - Benchmarks are "goals" or "standards"
- Trend Analysis
 - Look at changes in ratios and figures over time
 - _____

Main Areas of Analysis

- Liquidity
 - Having enough current assets to cover your current liabilities
- _____
 - Having enough total assets to cover your total liabilities
- Profitability
 - "Are we making money above our expenses?"
- _____
 - How well are we controlling our costs?

Liquidity Analysis

- Use the Balance Sheet
- Current Ratio is the main measure
 - $\text{Current Ratio} = \text{Current Assets} / \text{Current Liabilities}$
- Like to see:
 - _____
 - Greater than 2.0 is strong
- Interpretation:
 - A Current Ratio of 2 means that you have \$2 of current assets for every \$1 of liabilities that are due within the next year (current liabilities)

Solvency Analysis

- Use the Balance Sheet
- Debt/Asset Ratio is the main measure
 - $\text{Debt/Asset Ratio} = \text{Total Liabilities} / \text{Total Assets}$
- Like to see:
 - Less than 40% for an existing business
 - Less than 70% for a new or start-up business
 - _____
 - The lower it is, the less risk you face
- Interpretation:
 - A Debt/Asset Ratio of 40% shows that you owe your lenders 40% of the value of your assets
 - Or – _____
 - Another way to look at it:
 - Your lenders “own” 40% of your assets
 - You own 60% of your assets

Profitability Analysis

- Use the Income Statement or Enterprise Budget
 - _____ or Return Above Variable Costs
 - Net income _____ or Return Above Total Costs
- _____
- Main ratio is Rate of Return on Assets (ROA)
 - $\text{ROA} = (\text{Net Income} + \text{Interest}) / \text{_____}$
- Like to see:
 - $\text{ROA} > 0\%$ at a minimum
 - $\text{ROA} > \text{interest rate (APR)}$ on your loans
 - $\text{ROA} > 8\%$ is strong

- Growing over time
 - The higher, the more profitable your business
- Interpretation:
 - An ROA of 10% means that you earned \$0.10 of profit for every \$1 of asset used in your business.

Financial Efficiency Analysis

- We're just focusing on cost control here
- _____
- Operating Expense/Receipt Ratio
 - $\text{Op. Exp/Rec} = (\text{Total Exp.} - \text{Int.} - \text{Dep.}) / \text{Total Revenue}$
- Like to see:
 - _____
- Interpretation:
 - A ratio of 75% means that the business spends \$0.75 in expenses to generate \$1 of revenue

Summary

- Look at your ratings for each area
- For the Floral Shop example:

Area	Rating	Strength or Weakness?
Liquidity	Strong/Okay	~ Strength
Solvency	Poor/Okay	~ Weakness
Profitability	Poor/Okay	~ Weakness
Financial Efficiency	Poor/Okay	~ Weakness

- Now the manager can see what areas need to be improved!
- Main ways to improve a business:
 - _____
 - Without hurting production
 - Increase revenues
 - More units produced & sold
 - _____
 - Get rid of unneeded or un-used assets

- A manager must look at the financial and the production aspects of the business
 - _____
 - Too often the financial aspects are ignored
- Lenders use this same analysis to review loan applications
 - Managers should know their own strengths and weaknesses _____ meeting with the lender!

Financial Analysis – In-Class Exercise

Floral Business Balance Sheet

As of: August 30

Assets			Liabilities		
	2022	2023		2022	2023
Current Assets			Current Liabilities		
<u>Cut Flowers</u>	<u>\$800</u>	<u>\$1,200</u>	<u>Operating Loan</u>	<u>\$20,000</u>	<u>\$25,000</u>
<u>Cash</u>	<u>\$3,000</u>	<u>\$5,000</u>	<u>Wages Payable</u>	<u>\$5,000</u>	<u>\$7,500</u>
<u>Seed & Fertilizer inventory</u>	<u>\$25,000</u>	<u>\$23,000</u>	<u>Accrued Interest</u>	<u>\$4,500</u>	<u>\$5,200</u>
<u>Accounts Receivable</u>	<u>\$35,000</u>	<u>\$40,000</u>			
Total Current Assets	<u>\$63,800</u>	<u>\$69,200</u>	Total Current Liabilities	<u>\$29,500</u>	<u>\$37,700</u>
Non-Current Assets			Non-Current Liabilities		
<u>Greenhouse, Land, Bldings</u>	<u>\$265,000</u>	<u>\$265,000</u>	<u>Mortgage Remainin</u>	<u>\$200,000</u>	<u>\$193,000</u>
<u>Equipment</u>	<u>\$75,000</u>	<u>\$75,000</u>	<u>Equipment Loans Re</u>	<u>\$45,000</u>	<u>\$38,000</u>
Total Non-Current Assets	<u>\$340,000</u>	<u>\$340,000</u>	Total Non-Current Liabili	<u>\$245,000</u>	<u>\$231,000</u>
			Total Liabilities	<u>\$274,500</u>	<u>\$268,700</u>
			Net Worth (Owners Equi	<u>\$129,300</u>	<u>\$140,500</u>
			(Total Assets - Total Liabilities)		
Total Assets	<u>\$403,800</u>	<u>\$409,200</u>	Total Liabilities & Net W	<u>\$403,800</u>	<u>\$409,200</u>
	2022	2023			
Current Ratio					
(Current Assets/Current Liabilities)					
Debt/Asset Ratio					
(Total Liabilities/Total Assets)					

Income Statement

Floral Business

For the Years Ending December 31

	2022	2023
Revenues		
Cut Flowers	\$30,000	\$40,000
Arrangements	\$70,000	\$95,000
Total Revenues	\$100,000	\$135,000
Cost of Goods Sold:	\$25,000	\$40,000
Gross Margin	\$75,000	\$95,000
Overhead Expenses:		
Administrative	\$10,000	\$10,000
Labor (wages)	\$30,000	\$35,000
Rent	\$12,000	\$12,000
Interest	\$8,000	\$7,000
Depreciation	\$5,000	\$5,000
Other	\$4,000	\$6,000
Total Overhead Expenses	\$69,000	\$75,000
Total Expenses	\$94,000	\$115,000
Net Income	\$6,000	\$20,000

	2022	2023
Rate of Return on Assets (ROA)		
(Net Income + Interest Expense)/Total Assets		
Operating Expense/Receipt		
(Total Expenses - Interest - Depreciation)/Total Revenues		

Financial Analysis – In-Class Exercise (KEY)

Floral Business Balance Sheet

As of: August 30

Assets			Liabilities		
	2022	2023		2022	2023
Current Assets			Current Liabilities		
Cut Flowers	\$800	\$1,200	Operating Loan	\$20,000	\$25,000
Cash	\$3,000	\$5,000	Wages Payable	\$5,000	\$7,500
Seed & Fertilizer inventory	\$25,000	\$23,000	Accrued Interest	\$4,500	\$5,200
Accounts Receivable	\$35,000	\$40,000			
Total Current Assets	\$63,800	\$69,200	Total Current Liabilities	\$29,500	\$37,700
Non-Current Assets			Non-Current Liabilities		
Greenhouse, Land, Bldings	\$265,000	\$265,000	Mortgage Remainin	\$200,000	\$193,000
Equipment	\$75,000	\$75,000	Equipment Loans Re	\$45,000	\$38,000
Total Non-Current Assets	\$340,000	\$340,000	Total Non-Current Liab	\$245,000	\$231,000
			Total Liabilities	\$274,500	\$268,700
			Net Worth (Owners Eq	\$129,300	\$140,500
			(Total Assets - Total Liabilities)		
Total Assets	\$403,800	\$409,200	Total Liabilities & Net W	\$403,800	\$409,200
	2022	2023			
Current Ratio	<u>2.2</u>	<u>1.8</u>			
(Current Assets/Current Liabilities)					
Debt/Asset Ratio	<u>68%</u>	<u>66%</u>			
(Total Liabilities/Total Assets)					

Income Statement Floral Business

For the Years Ending December 31

	2022	2023
Revenues		
Cut Flowers	\$30,000	\$40,000
Arrangements	\$70,000	\$95,000
Total Revenues	\$100,000	\$135,000
Cost of Goods Sold:	\$25,000	\$40,000
Gross Margin	\$75,000	\$95,000
Overhead Expenses:		
Administrative	\$10,000	\$10,000
Labor (wages)	\$30,000	\$35,000
Rent	\$12,000	\$12,000
Interest	\$8,000	\$7,000
Depreciation	\$5,000	\$5,000
Other	\$4,000	\$6,000
Total Overhead Expenses	\$69,000	\$75,000
Total Expenses	\$94,000	\$115,000
Net Income	\$6,000	\$20,000

	2022	2023
Rate of Return on Assets (ROI)	3.5%	6.6%
(Net Income + Interest Expense)/Total Assets		
Operating Expense/Receipt	81.0%	76.3%
(Total Expenses - Interest - Depreciation)/Total Revenues		

Financial Analysis - Homework

Use the information on the attached financial statements to identify the strengths and weaknesses of this restaurant business. Calculate the main financial ratios on each balance sheet and income statement. Compare the ratios to the appropriate benchmark, and look at the trend in ratios over the past 3 years.

Restaurant Business

	2020		2021		2022	
	Ratio	Rating	Ratio	Rating	Ratio	Rating
Liquidity (Current Ratio)						
Solvency (Debt/Asset)						
Profitability (ROA)						
Financial Efficiency (Op. Exp/Rec)						

How would you rate this restaurant's overall financial condition?

Liquidity

Solvency

Profitability

Financial Efficiency

Overall

Restaurant Balance Sheet

As of: August 30

Assets	2020	2021	2022
Current Assets			
<u>Cash</u>	<u>\$10,000</u>	<u>\$28,000</u>	<u>\$25,000</u>
<u>Food & Drink Inventory</u>	<u>\$75,000</u>	<u>\$68,000</u>	<u>\$70,000</u>
<u>Supplies</u>	<u>\$25,000</u>	<u>\$23,000</u>	<u>\$26,000</u>
<u>Accounts Receivable</u>	<u>\$15,000</u>	<u>\$14,000</u>	<u>\$12,000</u>
Total Current Assets	<u>\$125,000</u>	<u>\$133,000</u>	<u>\$133,000</u>
Non-Current Assets			
<u>Building & facilities</u>	<u>\$750,000</u>	<u>\$750,000</u>	<u>\$750,000</u>
<u>Equipment</u>	<u>\$325,000</u>	<u>\$320,000</u>	<u>\$315,000</u>
Total Non-Current Assets	<u>\$1,075,000</u>	<u>\$1,070,000</u>	<u>\$1,065,000</u>
Total Assets	<u><u>\$1,200,000</u></u>	<u><u>\$1,203,000</u></u>	<u><u>\$1,198,000</u></u>

Liabilities

Current Liabilities			
<u>Operating Loan</u>	<u>\$60,000</u>	<u>\$50,000</u>	<u>\$55,000</u>
<u>Wages Payable</u>	<u>\$12,000</u>	<u>\$14,000</u>	<u>\$15,000</u>
<u>Accrued Interest</u>	<u>\$7,500</u>	<u>\$5,200</u>	<u>\$6,300</u>
Total Current Liabilities	<u>\$79,500</u>	<u>\$69,200</u>	<u>\$76,300</u>
Non-Current Liabilities			
<u>Mortgage Remaining</u>	<u>\$350,000</u>	<u>\$294,000</u>	<u>\$225,000</u>
<u>Equipment Loans Remaining</u>	<u>\$75,000</u>	<u>\$48,000</u>	<u>\$22,000</u>
Total Non-Current Liabilities	<u>\$425,000</u>	<u>\$342,000</u>	<u>\$247,000</u>
Total Liabilities	<u>\$504,500</u>	<u>\$411,200</u>	<u>\$323,300</u>
Net Worth (Owners Equity)	<u>\$695,500</u>	<u>\$791,800</u>	<u>\$874,700</u>
(Total Assets - Total Liabilities)			
Total Liabilities & Net Worth	<u><u>\$1,200,000</u></u>	<u><u>\$1,203,000</u></u>	<u><u>\$1,198,000</u></u>

	2020	2021	2022
Current Ratio	<u> </u>	<u> </u>	<u> </u>
(Current Assets/Current Liabilities)			
Debt/Asset Ratio	<u> </u>	<u> </u>	<u> </u>
(Total Liabilities/Total Assets)			

Income Statement

Restaurant

For the Years Ending December 31

	2020	2021	2022
Revenues			
Food Sales	\$450,000	\$550,000	\$575,000
Beverage Sales	\$240,000	\$270,000	\$265,000
Total Revenues	\$690,000	\$820,000	\$840,000
Cost of Goods Sold:	\$425,000	\$435,000	\$440,000
Gross Margin	\$265,000	\$385,000	\$400,000
Overhead Expenses:			
Administrative	\$25,000	\$35,000	\$35,000
Labor (wages)	\$80,000	\$82,500	\$85,000
Rent	\$40,000	\$45,000	\$45,000
Interest	\$22,000	\$20,000	\$18,000
Depreciation	\$15,000	\$15,000	\$15,000
Other	\$10,000	\$12,000	\$9,000
Total Overhead Expenses	\$192,000	\$209,500	\$207,000
Total Expenses	\$617,000	\$644,500	\$647,000
Net Income	\$73,000	\$175,500	\$193,000

	2020	2021	2022
Rate of Return on Assets (ROA)			
(Net Income + Interest Expense)/Total Assets			
Operating Expense/Receipt			
(Total Expenses - Interest - Depreciation)/Total Revenues			

Financial Analysis – Homework (KEY)

Restaurant Balance Sheet

As of: August 30

Assets	2020	2021	2022		2020	2021	2022
Current Assets							
<u>Cash</u>	<u>\$10,000</u>	<u>\$28,000</u>	<u>\$25,000</u>	Current Ratio	<u>1.6</u>	<u>1.9</u>	<u>1.7</u>
<u>Food & Drink Inventory</u>	<u>\$75,000</u>	<u>\$68,000</u>	<u>\$70,000</u>	(Current Assets/Current Liabilities)			
<u>Supplies</u>	<u>\$25,000</u>	<u>\$23,000</u>	<u>\$26,000</u>	Debt/Asset Ratio	<u>42%</u>	<u>34%</u>	<u>27%</u>
<u>Accounts Receivable</u>	<u>\$15,000</u>	<u>\$14,000</u>	<u>\$12,000</u>	(Total Liabilities/Total Assets)			
Total Current Assets	<u>\$125,000</u>	<u>\$133,000</u>	<u>\$133,000</u>				
Non-Current Assets							
<u>Building & facilities</u>	<u>\$750,000</u>	<u>\$750,000</u>	<u>\$750,000</u>				
<u>Equipment</u>	<u>\$325,000</u>	<u>\$320,000</u>	<u>\$315,000</u>				
Total Non-Current Assets	<u>\$1,075,000</u>	<u>\$1,070,000</u>	<u>\$1,065,000</u>				
Total Assets	<u><u>\$1,200,000</u></u>	<u><u>\$1,203,000</u></u>	<u><u>\$1,198,000</u></u>				
Liabilities							
Current Liabilities							
<u>Operating Loan</u>	<u>\$60,000</u>	<u>\$50,000</u>	<u>\$55,000</u>				
<u>Wages Payable</u>	<u>\$12,000</u>	<u>\$14,000</u>	<u>\$15,000</u>				
<u>Accrued Interest</u>	<u>\$7,500</u>	<u>\$5,200</u>	<u>\$6,300</u>				
Total Current Liabilities	<u>\$79,500</u>	<u>\$69,200</u>	<u>\$76,300</u>				
Non-Current Liabilities							
<u>Mortgage Remaining</u>	<u>\$350,000</u>	<u>\$294,000</u>	<u>\$225,000</u>				
<u>Equipment Loans Remaining</u>	<u>\$75,000</u>	<u>\$48,000</u>	<u>\$22,000</u>				
Total Non-Current Liabilities	<u>\$425,000</u>	<u>\$342,000</u>	<u>\$247,000</u>				
Total Liabilities	<u>\$504,500</u>	<u>\$411,200</u>	<u>\$323,300</u>				
Net Worth (Owners Equity)	<u>\$695,500</u>	<u>\$791,800</u>	<u>\$874,700</u>				
(Total Assets - Total Liabilities)							
Total Liabilities & Net Worth	<u><u>\$1,200,000</u></u>	<u><u>\$1,203,000</u></u>	<u><u>\$1,198,000</u></u>				

Income Statement Restaurant

For the Years Ending December 31

	2020	2021	2022
Revenues			
Food Sales	\$450,000	\$550,000	\$575,000
Beverage Sales	\$240,000	\$270,000	\$265,000
Total Revenues	\$690,000	\$820,000	\$840,000
Cost of Goods Sold:	\$425,000	\$435,000	\$440,000
Gross Margin	\$265,000	\$385,000	\$400,000
Overhead Expenses:			
Administrative	\$25,000	\$35,000	\$35,000
Labor (wages)	\$80,000	\$82,500	\$85,000
Rent	\$40,000	\$45,000	\$45,000
Interest	\$22,000	\$20,000	\$18,000
Depreciation	\$15,000	\$15,000	\$15,000
Other	\$10,000	\$12,000	\$9,000
Total Overhead Expenses	\$192,000	\$209,500	\$207,000
Total Expenses	\$617,000	\$644,500	\$647,000
Net Income	\$73,000	\$175,500	\$193,000

	2020	2021	2022
Rate of Return on	7.9%	16.3%	17.6%
(Net Income + Interest Expense)/Total Assets			
Operating Expens	84%	74%	73%
(Total Expenses - Interest - Depreciation)/Total Revenues			

Restaurant Business Overall Financial Analysis

	2020		2021		2022	
	Ratio	Rating	Ratio	Rating	Ratio	Rating
Liquidity	1.57	Good	1.92	Very Good	1.74	Good
Solvency	42%	A little high	34%	Good	27%	Very Good
Profitability	7.9%	Good	16.3%	Excellent	17.6%	Excellent
Financial Efficiency	84%	Too high	74%	Average/Good	73%	Good

Financial Analysis- Student Driven Activity

Student Driven Learning Activity: Have students complete the financial breakdown chart independently. After completing have them divide into 4 groups and assign each one of the areas of the financial analysis. The students need to develop ways to reinforce the concepts to the rest of the class. It can be through examples they come up with on their own, visuals, etc...

Financial Analysis Breakdown

Areas	Definition	What financial sheet to use	Ratio equation	Needs to be greater than (minimum):	Ideal Ratio:
Liquidity					
Solvency					
Profitability					
Financial Efficiency					

Financial Analysis Reading

Now that you know the basics of financial statements (balance sheets, income statements, enterprise budgets, cash flow statements), it's time to use them to make better management decisions. We don't create these statements just to create them and keep them in a folder – we use them to identify the strengths and weaknesses of our business. This allows us to improve our business so that it can continue well into the future.

Think about Greta's Green Grocery for a minute. How does she know if she has a problem in her produce section? Obviously, she looks at the vegetables to be sure they are high quality. If Greta looks in her produce section and sees that the lettuce is wilted and turning brown, she knows she has a problem. And now that she knows she has a problem she can come up with ways to solve the problem. Maybe she is buying produce that is too old. Maybe her cooling system isn't keeping the produce at the proper temperature. Maybe her prices are too high and the produce is staying on the shelf too long. By simply looking at the produce Greta gathers important information that will help her improve her business. That's the goal of financial analysis – improving the “money side” of the business.

There are two main forms of financial analysis: **Ratio analysis** and **Trend analysis**. Remember when we said that financial records are similar to the medical records your doctor uses to look at your health? Well, your doctor is also doing ratio analysis and trend analysis. Ratio analysis is where we calculate financial ratios and compare them to “benchmarks.” Your doctor compares your heart rate (pulse) to the average heart rate (benchmark) for healthy people. In this case, the doctor might use a benchmark of 70 beats per minute – if your heart rate is higher than this, say 90 beats per minute, that might indicate that you have a health problem.

Trend analysis is where we look at the financial ratios over a period of time, say 3-4 years, to see if we can see trends. Are we becoming more profitable over time? Is our equity (net worth) improving or getting worse over time? Your doctor looks at your medical records to see how your current heart rate compares to your heart rate from last year and the year before. If she sees that your heart rate is getting higher each year, that might indicate that you have a potential problem.

Financial analysis looks at four main areas of your business finances. Those four areas are:

- Liquidity

Liquidity refers to the business' ability to pay its bills on time without having to sell some of its productive assets (land, machinery, etc.)

- Solvency

Solvency refers to how the value of its assets compares to the value of its liabilities. If its liabilities are greater than the value of its assets we say that the business is “insolvent” – it can't repay all of its loans by selling its assets.

- Profitability

Profitability analysis shows us if the business is making money after paying all of its expenses.

- Financial Efficiency

Financial Efficiency analysis helps determine how good we are at controlling our costs and how good we are at using our assets to generate revenues.

Let's do some basic financial analysis for Greta's Green Grocery. The starting point for financial analysis is looking at Greta's balance sheet and income statement:

Greta's Green Grocery

Balance Sheet

July 1, 2023

Assets		Liabilities	
Current Assets		Current Liabilities	
Inventory of Produce	\$5,000	Wages Payable	\$2,000
Inventory of Crafts	\$15,000	Sales Tax Payable	\$1,500
Cash in the cash registers	\$2,000	Accounts Payable	\$25,000
Cash in her checking account	\$45,000	Portion of Mortgage	
Accounts Receivable	\$10,000	due this year	\$25,000
Total Current Assets	\$77,000	Total Current Liabilities	\$53,500
Non-Current Assets		Non-Current Liabilities	
Land	\$100,000	Mortgage Remaining	\$185,000
Building	\$250,000		
Refrigerators & Freezers	\$75,000		
Office equipment & furniture	\$5,000		
Total Non-Current Assets	\$430,000	Total Non-Current Liab.	\$185,000
		Total Liabilities	\$238,500
		Net Worth	\$268,500
Total Assets	<u>\$507,000</u>	Total Liab. & Net Worth	<u>\$507,000</u>

**Greta's Green Grocery
Income Statement
For the year 2022**

Revenues:

Produce	\$325,000
Crafts	<u>\$175,000</u>
Total Revenues	\$500,000

Operating Expenses:

Produce	\$150,000
Crafts	<u>\$80,000</u>
Total Operating Expenses	\$230,000

Overhead Expenses:

Business License	\$1,000
Utilities (electricity, water, etc.)	\$15,000
Liability Insurance	\$5,000
Supplies	\$10,000
Interest on her loans	\$14,000
Labor	\$70,000
Office Expenses	\$6,000
Property Taxes	\$15,000
Advertising	\$25,000
Professional Fees (lawyer, accountant)	\$4,000
Depreciation	<u>\$30,000</u>
Total Overhead Expenses	\$195,000

Total Expenses **\$425,000**

Net Income (Profit) **\$75,000**

Liquidity Analysis

The balance sheet is the main source of information for liquidity analysis. Specifically, we look at the Total Current Assets and the Total Current Liabilities. Current liabilities show us the debts of the business that will be paid within the next year. Current assets show the value of all the business' assets that will be sold or used within the next year. Ideally, we would like to have more in Current assets than we have in Current liabilities. To make this comparison easier we calculate the Current Ratio:

$$\text{Current Ratio} = \text{Total Current Assets} / \text{Total Current Liabilities}$$

This ratio tells us how many dollars we have in current assets for every one dollar that we have in current liabilities. For example, a Current Ratio of 2.0 indicates that we have \$2 of current assets for every \$1 of current liabilities on the day of the balance sheet. When the Current Ratio is greater than 1.0 we say that the business is "liquid", which is good! That is, a business that is liquid should be able to pay its obligations without having to sell any non-current assets. A business that is not liquid may have trouble paying their bills on time.

The benchmark for the Current Ratio is 1.0. We like to see this ratio GREATER than 1.0. Higher is better when it comes to the Current Ratio. Most lenders would like to see the Current Ratio close to 2.0.

Let's calculate the Current Ratio for Greta's business. Her Total Current Assets are \$77,000 and her Total Current Liabilities are \$53,500 on the day of her balance sheet. That means Greta's Current Ratio is:

$$\text{Current Ratio} = \$77,000 / \$53,500 = 1.4$$

Greta's business can be considered to be liquid. Her Current Ratio is greater than 1.0. Her ratio signifies that she has \$1.40 in current assets (cash, accounts receivable, inventory) for every \$1 of debt that she will pay within the next year. For a trend analysis we would compare Greta's Current Ratio from the previous years to 1.4. If her Current Ratio is either increasing or holding steady around 1.4, she is in good shape when it comes to liquidity. If her Current Ratio is falling over time, that would tell us that she is having some financial problems – we would have to look deeper to find the actual problem.

Solvency Analysis

We also use the balance sheet to examine the Solvency of the business. Solvency analysis compares the value of all of the assets of the business to the total amount of debts. A business that has more assets than liabilities is said to be "solvent"; a business whose assets are worth less than its liabilities is "insolvent." Needless to say, we want our business to be solvent!

We use the Debt/Asset Ratio to look at the solvency of a business. In a nutshell, the Debt/Asset ratio tells us the percentage of our assets that are "owned" by the lenders. For example, a Debt/Asset Ratio of 40% tells us that we owe the lender an amount that is equal to 40% of our total assets. Looking at this from the other side, it also tells us that we have paid for (we "own") 60% of our assets outright.

There are two benchmarks for the Debt/Asset Ratio. Ideally, we like to see the Debt/Asset Ratio less than 40% for most businesses. If our ratio gets much higher than 40% we are in a much riskier position because we owe so much to the lenders. The maximum we ever want to see our Debt/Asset Ratio is 70%. When our Debt/Asset Ratio is higher than 70% the business owes so much money to its lenders that most of the

revenues of the business will be used to make the large loan payments – that doesn't leave much money for our operating expenses and for our own salary!

Greta's Debt/Asset Ratio is calculated using her Total Assets of \$507,000 and her Total Liabilities of \$238,500. That means her Debt/Asset Ratio is:

$$\text{Debt/Asset Ratio} = \$238,500 / \$507,000 = 47\%$$

How would you rate Greta's solvency? Her ratio of 47% says that she owes \$0.47 of debts for every \$1 of assets in her business – or, that her lenders "own" 47% of her business and she owns 53% of the business. Because her Debt/Asset Ratio is higher than 40% I would rate her solvency as "okay, but not great" – she would be in a less risky situation if her Debt/Asset Ratio were lower; but, she's not in "the danger zone" with a Debt/Asset Ratio greater than 70%.

When we look at Greta's historical financial records we can see her Debt/Asset Ratio over the past 4 years:

July 2013	57%
July 2014	53%
July 2015	49%
July 2016	47%

Using trend analysis, what can you say about Greta's solvency over time? Greta's Debt/Asset Ratio is steadily falling over the past 4 years. That is a good sign. Although her Debt/Asset Ratio is slightly higher than our 40% benchmark, this shows that her solvency is improving each year. As a manager or as a lender, I would not be too concerned about Greta's solvency.

Profitability Analysis

Okay, let's admit it – most managers are primarily concerned with earning profits. And I can't blame them. After all, a business must earn profits year in and year out to be able to stay in business. If it doesn't earn profits, it can't pay its operating expenses or repay all of its loans – and those are not good! So we need to look closely at the profitability of a business.

Remember that profits are simply "revenues minus expenses". In the enterprise budget lesson we looked at short-run and long-run profits:

Short-run Profits = Return Above Variable Costs aka Gross Margin

Long-run Profits = Return Above Total Costs

On the Income Statement we simply referred to the Net Income (or Profit) of the business. It shows how much of your revenues are left over after you pay all of your expenses. Net Income is a useful number – we can easily see if our profits increased or decreased since last year. But it's hard to know if that Net Income is good for the size of a business. To do this we calculate the Rate of Return on Assets, or the ROA of the business.

$$\text{ROA} = (\text{Net Income} + \text{Interest Expense}) / \text{Total Assets}$$

We get this information from the Income Statement and the Balance Sheet. For Greta's business the ROA is:

$$\begin{aligned}\text{Net Income} &= \$75,000 \\ \text{Interest Expense} &= \$14,000 \\ \text{Total Assets} &= \$507,000 \\ \text{ROA} &= (\$75,000 + \$14,000) / \$507,000 = 17.5\%\end{aligned}$$

What does 17.5% mean? The easy way to think about ROA is that every \$1 of Greta's assets is earning \$0.175 of profit. Now we need to know – is that good or bad? For ROA, the higher the number, the better! There are a few benchmarks for ROA:

- We want ROA to be greater than 0% -- that means we made some profits
- We want the ROA to be greater than the interest rate (APR) on our liabilities
(Remember the saying "If it costs more than it's worth, don't do it"? If the APR is greater than the ROA, the cost of the interest is greater than the profits we will earn.)
- Ideally, we would like for the ROA to be greater than 6%.

How would you rate Greta's ROA of 17.5%? Assuming that most of her loans have an interest rate (APR) of 5%, we can easily say that Greta's ROA is very good! It is greater than 0%; it is greater than her APR; and it is greater than 6%. Greta's business seems to be very profitable!

Again, we should look at her ROA over the past 3-4 years to look for trends. If her ROA is holding steady around 17.5% or increasing over time, she is doing a great job managing the profitability of her business. If her ROA is decreasing over time that would indicate that she may have some potential problems. We should look at her financial efficiency to try to uncover the actual reason for her decreasing profitability.

Financial Efficiency Analysis

Financial Efficiency refers to how well we are using our financial assets. The more efficiently we use our resources, the greater the chance that we will be able to earn profits. One of the most commonly used ratios for Financial Efficiency is the Operating Expense/Receipt Ratio. This ratio estimates how much money we are spending for operating expenses (variable expenses) to generate one dollar of revenue. We calculate this ratio as follows:

$$\text{Operating Expense/Receipt Ratio} = (\text{Total Expenses} - \text{Interest} - \text{Depreciation}) / \text{Total Revenues}$$

All of this information comes from the income statement. Let's calculate this ratio for Greta's business:

$$\begin{aligned}\text{Total Expenses} &= \$425,000 \\ \text{Interest Expense} &= \$14,000 \\ \text{Depreciation} &= \$30,000 \\ \text{Total Revenues} &= \$500,000\end{aligned}$$

$$\text{Operating Exp./Rec. Ratio} = (\$425,000 - \$14,000 - \$30,000) / \$500,000 = 76\%$$

This tells us that Greta is spending approximately \$0.76 on operating expenses to generate \$1 of sales revenue. That leaves her with \$0.24 to pay for her interest, depreciation, and her salary. As you can see, the lower this ratio, the better! The benchmark for the Operating Expense/Receipt Ratio is 75%. We like to see the ratio be less than 75%. When it gets up near 85% the business may have problems paying its bills on time, and there won't be much money left over for Greta to live on!

Because Greta's ratio is close to the benchmark of 75% we can say that she is doing a good job of controlling her costs but she could do slightly better. If she wants to improve this ratio she needs to find ways to spend less money on her operating expenses or she needs to find ways to increase her sales revenues. A trend analysis over the past 3-4 years will give Greta a better idea of how she is doing on cost control. We would hope to see her ratio holding steady around 76% or decreasing over time. If her ratio is increasing over time she will need to determine why this is happening.

Summary

After we calculate these ratios we should go back and look at the financial condition of the entire business. We need to look at how the business rates in each of the four main areas: Liquidity, Solvency, Profitability, and Financial Efficiency. An easy way to do this is to create a chart that shows your ratings for each area. Let's do this for Greta:

Greta's Green Grocery	
Financial Analysis	
Liquidity	Good, could improve slightly
Solvency	Average, needs to improve
Profitability	Strong. Excellent job!
Financial Efficiency	Average, could improve slightly
Overall Rating	Better than Average

This chart helps us see where Greta should focus her management efforts. The 2 main areas where she can improve are Financial Efficiency and Solvency. Now she knows where to look to solve her problems and improve her business!

Financial analysis is a powerful tool for managers and lenders. Managers can determine how they can make their business stronger and safer. Lenders can identify the risks of lending money to the managers – thereby helping the managers!