Excel Case #1A: Maxi's Grocery Mart[1]
Economic Feasibility

Case Description and Instructions

SKILLS CHECK	
You should review the following areas:	
SPREADSHEET SKILLS	
✓ Absolute and Relative Cell References	✓ Protecting Cells
✓ Cell and Worksheet Formatting	✓ Range Names
✓ Consolidating Worksheets	✓ SUM, IF, @NOW, and other Functions
✓ Complex Formulas, including Present Value	

Case Overview

Since its opening almost 50 years ago, Maxi's Grocery Mart has continued to grow and evolve with the times. The family-owned business has survived many ups and downs and is currently experiencing a modest growth in business. Leroy Feronti, the current owner, wants to expand his family's business by renovating the grocery mart building. Mr. Feronti needs your help in evaluating the economic viability of the project and preparing documents required for procuring a bank loan. To do the first part, you will create an Economic Feasibility workbook (Part 1). The purpose of this workbook is to summarize and analyze the benefits and costs associated with the proposed renovation project. The preparation of an Economic Feasibility workbook requires you to design several worksheets, use a variety of formulas and functions, use basic cell and worksheet formatting, consolidate data from multiple worksheets into a summary worksheet, and produce a breakeven analysis that includes a line chart.

After this is complete, Mr. Feronti will need to arrange financing for the project. While Mr. Feronti has some personal funds available, he will need to procure a loan from the local bank. Before approaching the local bank, he would like to prepare and review several pro forma financial statements (Part 2). If Mr. Feronti decides to go forward with the renovation, he will use the pro forma financial statement as part of his loan application; and he asks you to prepare it for him. Preparation of the pro forma income statement requires you to design a worksheet with input and information sections, properly format the worksheet, construct formulas, perform what-if analysis, and generate a chart.

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[1] This case is based on Lisa Miller (2009), *MIS Cases Decision Making with Application Software*, Fourth Edition. Pearson Prentice Hall; Upper Saddle River, New Jersey.

Scenario Details for Maxi's Part 1 – Economic Feasibility

Maxi's Groceries is a popular, local grocery store providing a wide range of grocery products. In order to compete with national grocery chains, Mr. Feronti believes that a renovation is required to give his customers a quality shopping experience. The renovation project will involve updates to the lighting and flooring of the entire store, and the addition of 10,000 square feet of retail space that will be devoted to expanding fresh and natural foods. The renovation project will also allow Mr. Feronti to update the store layout, upgrade freezers and the fresh meats area, and improve the overall flow of the grocery store.

The proposed renovation will involve a number of tangible benefits and costs. The expanding offerings and improved access to products are expected to drive increased product sales. Table 1 summarizes Mr. Feronti's estimates of the increased sales.

Table 1: Yearly Recurring Benefits

Benefit	Approximate Dollar Value
Increased Annual Sales	$166,000

The renovation also will incur both one-time and recurring costs. From one of your business courses, you recall that one-time costs often occur during the start-up and development of a project, and recurring costs occur throughout the useful life of the project. The one-time costs for this project include design and engineering services, site preparation, construction costs, electrical, plumbing, and the costs associated with new lighting, flooring, shelving, and freezer equipment. Table 2 lists the one-time costs and their estimated dollar values.

Table 2: One-Time Costs

One-Time Costs	Approximate Dollar Value
Construction Costs	
Design/Engineering	$ 65,000
Construction costs	$ 175,000
Site Preparation	$ 35,000
Electrical	$ 40,000
Plumbing	$ 25,000
Miscellaneous	
Freezers	$ 25,000
Lighting	$ 7,000
Shelving	$ 12,000
Flooring	$ 16,000

Recurring costs of the renovation include the increase in annual maintenance, lighting and utilities costs, as well as increased supply, landscaping and signage costs. Table 3 summarizes these recurring costs.

Table 3: Yearly Recurring Costs

Recurring Costs	Approximate Dollar Value
Maintenance	$15,000
Lighting	$ 2,500
Utilities	$ 5,000
Property Tax	$ 1,000
Miscellaneous	
Supplies	$ 4,500
Landscaping	$ 4,000
Signage	$ 5,000
Other	$ 3,000

Design Considerations

Since the project is in the early stages of development, you want your workbook to be as flexible as possible so that additional costs and benefits, when identified, are easily added to the Economic Feasibility workbook. You decide that the Economic Feasibility workbook should contain at least four worksheets: One-Time Costs, Recurring Costs, Recurring Benefits, Economic Feasibility Summary (EFS).

You decide to construct the One-Time Costs, Recurring Costs, and Recurring Benefits worksheets first, because these worksheets have a simple design and can then be referenced by your EFS worksheet. These first three worksheets each contain two columns, with the first column identifying the items in the category, and the second column containing the dollar values associated with the items. Each worksheet totals the dollar values; these totals are then used in the Economic Feasibility Summary worksheet.

As Figure 1 shows, the Economic Feasibility Summary worksheet has a more complex design. As a summary worksheet, it consolidates data from the One-Time Costs, Recurring Costs, and Recurring Benefits worksheets, requiring you to reference specific cells on these worksheets.

Figure 1: Economic Feasibility Worksheet

	A	B	C	D	E	F	G	H
			Maxi's Grocery Mart					
			Store Rennovation Project					
			Economic Feasibility Summary					
			January 15, 2016					
Discount Rate		10%						Totals
Year		2016	2017	2018	2019	2020	2021	
		0	1	2	3	4	5	
Benefits								
Benefits	$ -		$ 166,000.00	$ 166,000.00	$ 166,000.00	$ 166,000.00	$ 166,000.00	
Present Value Factor			0.909	0.826	0.751	0.683	0.621	
Present Value of Benefits	$ -		$ 150,909.09	$ 137,190.08	$ 124,718.26	$ 113,380.23	$ 103,072.94	
Net Present Value of All Benefits	$ -		$ 150,909.09	$ 288,099.17	$ 412,817.43	$ 526,197.66	$ 629,270.60	$ 629,270.60
Costs								
One-Time Costs	$ (400,000.00)	$ -	$ -	$ -	$ -	$ -		
Recurring Costs	$ -		$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	
Present Value Factor			0.909	0.826	0.751	0.683	0.621	
Present Value of the Recurring Costs	$ -		$ (36,363.64)	$ (33,057.85)	$ (30,052.59)	$ (27,320.54)	$ (24,836.85)	
Net Present Value of All Costs	$ (400,000.00)		$ (436,363.64)	$ (469,421.49)	$ (499,474.08)	$ (526,794.62)	$ (551,631.47)	$ (551,631.47)
Overall Net Present Value								$ 77,639.13
Cash Flow Analysis:								
Yearly NPV Cash Flow	$ (400,000.00)		$ 114,545.45	$ 104,132.23	$ 94,665.66	$ 86,059.70	$ 78,236.09	
Overall NPV Cash Flow	$ (400,000.00)		$ (285,454.55)	$ (181,322.31)	$ (86,656.65)	$ (596.95)	$ 77,639.13	$ 77,639.13
Profitability Analysis:								
Project Estimated Yearly Profit	$ (400,000.00)		$ 126,000.00	$ 126,000.00	$ 126,000.00	$ 126,000.00	$ 126,000.00	

As part of the Economic Feasibility Summary worksheet design, you need to convey net present value. To do this, you must discount the recurring costs and benefits to their present values[2]. Although several ways exist to determine the present value of the benefits, you decide to calculate the present value factor (PVF) and then apply that factor to the recurring benefits and recurring costs. Since each year will requires a different present value factor, the worksheet must compute the PVF for each year. You decide to use the formula provided below to determine each year's PVF. In the following formula, "i" refers to the discount rate, and "n" refers to the year. The worksheet shown in Figure 1 assumes that the project's useful life is five years.

$$PVF = 1/(1+i)^n$$

Using the PVF, you determine the present value of a benefit or cost for a particular year by multiplying the value of the benefit or cost for that year by the PVF for that year. The net present value (NPV) of recurring benefits will be a summation of the present value of benefits up to and including the current year. Likewise, the NPV of recurring costs will be a summation of the present value of costs up to and including the current year. The *overall NPV* is the difference between the NPV of all benefits and the NPV of all costs. The cash flow section provides a summary of the cash flows on a yearly basis, as well as a summation of the overall NPV.

Although Mr. Feronti is the primary user of the Economic Feasibility workbook, other members of the store management team will have access to this workbook. Therefore, you decide that all cells (other than input cells) should be protected.

[2] Remember, money now is worth more than money later (because you could use it now to make more money). Think of the discount rate as an interest rate you would be paying on borrowed money. So a lower discount rate is good. In the end, your NET present value will be higher when the discount/interest rate is lower.

Information Specifications

Mr. Feronti wants to generate optimistic, realistic, and pessimistic views of the data, so he requests the ability to quickly change the discount rate. We will use a discount rate of 5% for the optimistic view, 10% for the realistic view, and 15% for the pessimistic view. To satisfy this requirement, you include an input cell on your Economic Feasibility Summary worksheet to hold the discount rate. Figure 1 shows that the discount rate is placed at the top of the worksheet. The discount rate is used in several formulas, so referencing this cell in a formula facilitates the economic feasibility analysis.

To summarize, as reflected in Figure 1, the Economic Feasibility Summary worksheet: summarizes the costs and benefits, shows the present values of the costs and benefits, calculates the overall net present value, and shows the yearly and overall cash flows for the renovation project. Mr. Feronti has one more request. He asks that the project's breakeven point be determined as this helps justify the project's viability and indicates how quickly Mr. Feronti can recover his investment in the project.

Implementation Concerns

To design the Economic Feasibility workbook described above, you will create a workbook consisting of at least four worksheets. You should create separate worksheets for the One-Time Costs, Recurring Costs, Recurring Benefits, and Economic Feasibility Summary (or EFS). Since the EFS worksheet consolidates data from three of the worksheets, you should create this worksheet last.

Although you are free to work with the design of your worksheets, each worksheet should have a consistent, professional appearance. You should also use proper formatting for the cells. For instance, dollar values should display with a dollar sign and be formatted to two decimal places.

Case Questions and Deliverables

Your instructor will provide specific directions for completing this case. In addition to an Excel Workbook, you may be asked to respond to specific questions that will require you to interpret the outputs of your workbook, to perform additional analyses by modifying key inputs, to create new charts or graphs, or to add additional worksheets.

Excel Case #1A: Maxi's Grocery Mart
Part 1 – Economic Feasibility

Instructions

Be sure to begin this assignment using the "starter file" from Blackboard! Download and save a copy of that file to begin your work.

Case Background and Scenario: Read the information about Excel Case #1A: Maxi's Grocery Mart to grasp the business situation you are to address. This first Excel assignment requires you to use and expand your Excel skills to address Mr. Feronti's request from PART 1 – ECONOMIC FEASIBILITY WORKBOOK.

Design Specifications:

1. All four pages need the current date where "Current Date Here" appears on your starter file.
2. Enter the Recurring Benefits (Table 1 above) in the appropriate worksheet. Use a function to total the recurring benefits. Create a range name for the amount of Total Recurring Benefits. Note that this "range" is just a single cell – the total amount.

   In general, when defining a range name, do not use spaces and keep the range name short. If you would like a longer range name, then use underscores to separate the parts of the name.

   Your Recurring Benefits worksheet should look similar to (except date!) Figure 2.

Figure 2: Recurring Benefits Worksheet

3. Do the same steps for the One-Time Costs and Recurring Costs (Tables 2 and 3 above) in the appropriate worksheets: 1) enter the amounts, 2) use a function to total each, and 3) create a range name in each of those sheets for the Total One-Time Costs and Total Recurring Costs, respectively. These worksheets should look similar to (except date!) Figures 3 and 4.

Figure 3: One-Time Costs Worksheet

	A	B
1	**Maxi's Grocery Mart**	
2	**Store Renovation Project**	
3	**One-Time Costs**	
4	**January 15, 2016**	
5	**One-Time Costs**	**Approximate Dollar Value**
6	**Contruction Costs**	
7	Design/Engineering	$ 65,000.00
8	Building costs	$ 175,000.00
9	Site Preparation	$ 35,000.00
10	Electrical	$ 40,000.00
11	Plumbing	$ 25,000.00
12	**Miscellaneous**	
13	Freezers/Refrigeration	$ 25,000.00
14	Lighting	$ 7,000.00
15	Shelving	$ 12,000.00
16	Flooring	$ 16,000.00
17	**Total One-Time Costs**	**$ 400,000.00**

Figure 4: Recurring Costs Worksheet

	A	B
1	**Maxi's Grocery Mart**	
2	**Store Renovation Project**	
3	**Recurring Costs**	
4	**January 15, 2016**	
5	**Recurring Costs**	**Approximate Dollar Value**
6	Maintenance	$ 15,000.00
7	Lighting	$ 2,500.00
8	Utilities	$ 5,000.00
9	Property Tax	$ 1,000.00
10	**Miscellaneous**	
11	Supplies	$ 4,500.00
12	Landscaping	$ 4,000.00
13	Signage	$ 5,000.00
14	Other	$ 3,000.00
15	**Total Recurring Costs**	**$ 40,000.00**

4. Now move on to the Economic Feasibility Summary worksheet. A template has already been created labeling the rows and columns needed in this worksheet. You must insert the appropriate formulas and functions required to provide the information Mr. Feronti has requested (see the "Information Specifications" on page 5 above). ***See the last page of these instructions for guidance on the formulas and functions!*** Your end goal is for your Economic Feasibility Summary sheet to look like Figure 1 on page 4 above.

5. Make sure each cell is formatted correctly (currency, number, decimal places, etc.). As a final touch to bring out the bottom line of this feasibility analysis, highlight 2 cells: the cell containing the Discount Rate (which is 0.10), and the cell containing the Overall Net Present Value. You can choose the color to fill these cells, but make it the same color for both cells and choose a color that stands out from the blue and white of the rest of the sheet. Make sure everything (except current date) matches Figure 5 below!

Figure 5: Economics Feasibility Summary Worksheet

	A	B	C	D	E	F	G	H
	Maxi's Grocery Mart							
	Store Rennovation Project							
	Economic Feasibility Summary							
	January 15, 2016							
Discount Rate		10%						**Totals**
Year		2016	2017	2018	2019	2020	2021	
		0	1	2	3	4	5	
Benefits								
Benefits	$ -		$ 166,000.00	$ 166,000.00	$ 166,000.00	$ 166,000.00	$ 166,000.00	
Present Value Factor			0.909	0.826	0.751	0.683	0.621	
Present Value of Benefits	$ -		$ 150,909.09	$ 137,190.08	$ 124,718.26	$ 113,380.23	$ 103,072.94	
Net Present Value of All Benefits	$ -		$ 150,909.09	$ 288,099.17	$ 412,817.43	$ 526,197.66	$ 629,270.60	$ 629,270.60
Costs								
One-Time Costs	$ (400,000.00)		$ -	$ -	$ -	$ -	$ -	
Recurring Costs	$ -		$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	
Present Value Factor			0.909	0.826	0.751	0.683	0.621	
Present Value of the Recurring Costs	$ -		$ (36,363.64)	$ (33,057.85)	$ (30,052.59)	$ (27,320.54)	$ (24,836.85)	
Net Present Value of All Costs	$ (400,000.00)		$ (436,363.64)	$ (469,421.49)	$ (499,474.08)	$ (526,794.62)	$ (551,631.47)	$ (551,631.47)
Overall Net Present Value								$ 77,639.13
Cash Flow Analysis:								
Yearly NPV Cash Flow	$ (400,000.00)		$ 114,545.45	$ 104,132.23	$ 94,665.66	$ 86,059.70	$ 78,236.09	
Overall NPV Cash Flow	$ (400,000.00)		$ (285,454.55)	$ (181,322.31)	$ (86,656.65)	$ (596.95)	$ 77,639.13	$ 77,639.13
Profitability Analysis:								
Project Estimated Yearly Profit	$ (400,000.00)		$ 126,000.00	$ 126,000.00	$ 126,000.00	$ 126,000.00	$ 126,000.00	

6. After all this work to get the formulas and the formatting of this Economic Feasibility Summary right, you don't want Mr. Feronti or anyone else to corrupt it. You want to make sure the data cells in the Economic Feasibility Summary sheet are locked and protected. By default, Excel "locks" all cells in a worksheet, but the locking is not activated unless you indicate you want to "protect" the worksheet. In this application, we want to lock all the cells **except Discount Rate** (0.10); we want to leave that cell unlocked so Mr. Feronti can run some what-if scenarios using various discount rates. *After unlocking the Discount Rate cell*, "Protect Sheet" on the Economic Feasibility Summary sheet. HINT: Use the Review tab.

7. Mr. Feronti would like to know approximately when the project should break even. To address this request, prepare a line chart that shows the breakeven point of the project. You will need to copy 3 rows from the Economic Feasibility Summary sheet to your new worksheet:

   a. Copy to your new worksheet the cells in the "Year" row, including the label "Year" through the last year (year 5)
   b. Copy the "Net Present Value of All Benefits" label
   c. Copy the "Net Present Value for All Costs" label

   At this point, complete formatting, including the two header lines with current date, so that your worksheet looks similar to Figure 6.

Figure 6: Breakeven Analysis Formatting

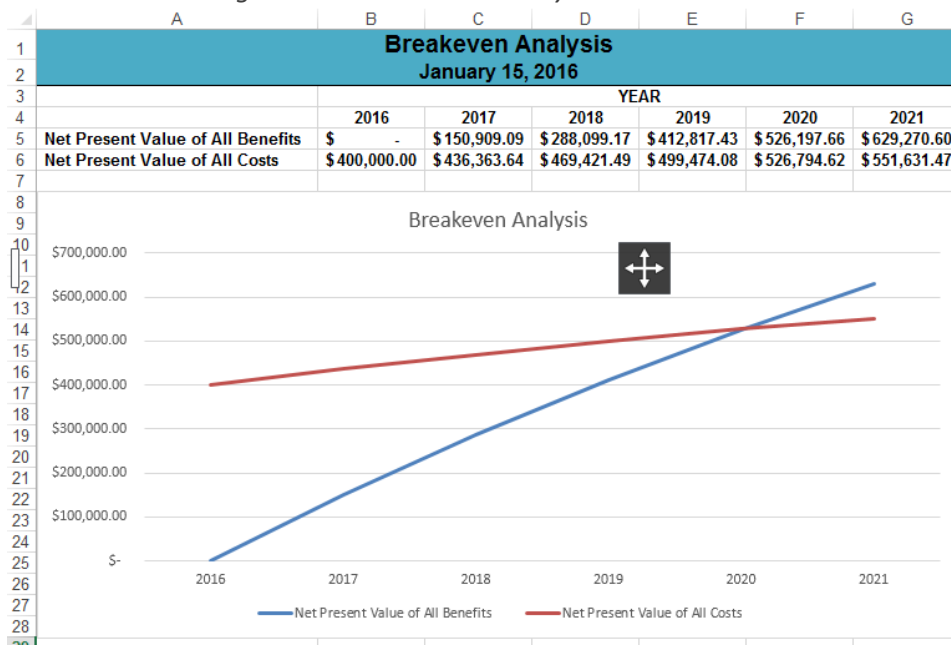|	A	B	C	D	E	F	G
1	Breakeven Analysis						
2	January 15, 2016						
3				YEAR			
4		2016	2017	2018	2019	2020	2021
5	Net Present Value of All Benefits						
6	Net Present Value of All Costs						

To make this "dynamic" (i.e., so that your chart will change as the data on the EFS sheet changes), use a simple formula to reference the cells with values for Year 0 for the two "Net Present Value …" rows on the EFS. Then you can simply drag the formula across for Years 1 through 5. *For charting purposes, remove the negative signs on the "Net Present Value of All Costs" values by multiplying the formula by -1 (if you don't, your two lines will never intersect!).* BEFORE you insert the chart, make sure the content of this new worksheet looks like Figure 7.

Figure 7: Breakeven Analysis Data

	A	B	C	D	E	F	G
1	Breakeven Analysis						
2	January 15, 2016						
3				YEAR			
4		2016	2017	2018	2019	2020	2021
5	Net Present Value of All Benefits	$ -	$150,909.09	$288,099.17	$412,817.43	$526,197.66	$629,270.60
6	Net Present Value of All Costs	$400,000.00	$436,363.64	$469,421.49	$499,474.08	$526,794.62	$551,631.47

When you have your worksheet looking like this, create a line chart (Insert tab) below the data. Be sure to add an appropriate chart title. Rename this worksheet to "Breakeven Chart (based on 10%)". Your completed worksheet should look similar to Figure 8.

Figure 8: Breakeven Analysis Worksheet

Finally, Mr. Feronti has asked how the projections will vary if the discount rate is 5% vs. 10% vs. 15%. You have designed your Economic Feasibility Summary (EFS) sheet to make it easy to answer this question.

  a. Rename your Economic Feasibility Summary sheet to "EFS Base Case (10%)."
  b. Now copy this sheet to a new sheet and name the new sheet "EFS (5%)." In this new sheet, change the Discount Rate value to .05. Notice that changing the discount rate changes most everything, including a different projected Overall Net Present Value (see Figure 9).

Figure 9: EFT (5%) Worksheet

	A	B	C	D	E	F	G	H
1				Maxi's Grocery Mart				
2				Store Rennovation Project				
3				Economic Feasibility Summary				
4				January 15, 2016				
5	Discount Rate	5%						Totals
6	Year	2016	2017	2018	2019	2020	2021	
7		0	1	2	3	4	5	
8								
9	Benefits							
10	Benefits	$ -	$ 166,000.00	$ 166,000.00	$ 166,000.00	$ 166,000.00	$ 166,000.00	
11	Present Value Factor		0.952	0.907	0.864	0.823	0.784	
12	Present Value of Benefits	$ -	$ 158,095.24	$ 150,566.89	$ 143,397.04	$ 136,568.61	$ 130,065.34	
13	Net Present Value of All Benefits	$ -	$ 158,095.24	$ 308,662.13	$ 452,059.17	$ 588,627.78	$ 718,693.13	$ 718,693.13
14								
15	Costs							
16	One-Time Costs	$ (400,000.00)	$ -	$ -	$ -	$ -	$ -	
17	Recurring Costs	$ -	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	
18	Present Value Factor		0.952	0.907	0.864	0.823	0.784	
19	Present Value of the Recurring Costs	$ -	$ (38,095.24)	$ (36,281.18)	$ (34,553.50)	$ (32,908.10)	$ (31,341.05)	
20	Net Present Value of All Costs	$ (400,000.00)	$ (438,095.24)	$ (474,376.42)	$ (508,929.92)	$ (541,838.02)	$ (573,179.07)	$ (573,179.07)
21								
22	Overall Net Present Value							$ 145,514.06
23								
24	Cash Flow Analysis:							
25	Yearly NPV Cash Flow	$ (400,000.00)	$ 120,000.00	$ 114,285.71	$ 108,843.54	$ 103,660.51	$ 98,724.30	
26	Overall NPV Cash Flow	$ (400,000.00)	$ (280,000.00)	$ (165,714.29)	$ (56,870.75)	$ 46,789.76	$ 145,514.06	$ 145,514.06
27								
28	Profitability Analysis:							
29	Project Estimated Yearly Profit	$ (400,000.00)	$ 126,000.00	$ 126,000.00	$ 126,000.00	$ 126,000.00	$ 126,000.00	
30								

  c. Finally, copy your EFS Base Case 10% sheet to a new sheet and name the new sheet "EFS (15%)." In this new sheet, change the Discount Rate value to .15. Note the new projected Overall Net Present Value at this discount rate (see Figure 10).

Figure 10: EFT (15%) Worksheet

	A	B	C	D	E	F	G	H
1				**Maxi's Grocery Mart**				
2				**Store Rennovation Project**				
3				**Economic Feasibility Summary**				
4				**January 15, 2016**				
5	Discount Rate	15%						Totals
6	Year	2016	2017	2018	2019	2020	2021	
7		0	1	2	3	4	5	
8								
9	Benefits							
10	Benefits	$ -	$ 166,000.00	$ 0.00	$ 166,000.00	$ 166,000.00	$ 166,000.00	
11	Present Value Factor		0.870	0.756	0.658	0.572	0.497	
12	Present Value of Benefits	$ -	$ 144,347.83	$ 125,519.85	$ 109,147.69	$ 94,911.04	$ 82,531.34	
13	Net Present Value of All Benefits	$ -	$ 144,347.83	$ 269,867.67	$ 379,015.37	$ 473,926.41	$ 556,457.75	$ 556,457.75
14								
15	Costs							
16	One-Time Costs	$ (400,000.00)	$ -	$ -	$ -	$ -	$ -	
17	Recurring Costs	$ -	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	$ (40,000.00)	
18	Present Value Factor		0.870	0.756	0.658	0.572	0.497	
19	Present Value of the Recurring Costs	$ -	$ (34,782.61)	$ (30,245.75)	$ (26,300.65)	$ (22,870.13)	$ (19,887.07)	
20	Net Present Value of All Costs	$ (400,000.00)	$ (434,782.61)	$ (465,028.36)	$ (491,329.00)	$ (514,199.13)	$ (534,086.20)	$ (534,086.20)
21								
22	Overall Net Present Value							$ 22,371.54
23								
24	Cash Flow Analysis:							
25	Yearly NPV Cash Flow	$ (400,000.00)	$ 109,565.22	$ 95,274.10	$ 82,847.05	$ 72,040.91	$ 62,644.27	
26	Overall NPV Cash Flow	$ (400,000.00)	$ (290,434.78)	$ (195,160.68)	$ (112,313.64)	$ (40,272.73)	$ 22,371.54	$ 22,371.54
27								
28	Profitability Analysis:							
29	Project Estimated Yearly Profit	$ (400,000.00)	$ 126,000.00	$ 126,000.00	$ 126,000.00	$ 126,000.00	$ 126,000.00	
30								

8. At this point, your Excel file should consist of 7 worksheets named as follows and moved into the correct order (see Figure 11).

Figure 11: Order of Completed Worksheets

One Time Costs	Recurring Costs	Recurring Benefits	EFS (5%)	EFS Base Case (10%)	EFS (15%)	**Breakeven Chart (based on 10%)**

9. You are to create a brief memo (1 page maximum) to answer the following questions based on your EFS worksheets and the Breakeven Chart. To prepare your memo, use the standard memo template from MGMT 330 (included in your Blackboard assignment folder).

    a. It is not uncommon for a construction project (any project for that matter!), to run over budget. Assuming a discount rate of 10%, and that the one-time costs of the project are 15% higher than estimated, what is your recommendation to Mr. Feronti about going ahead with the renovation? Why?

    b. Considering the pessimistic (15%), realistic (10%), and optimistic (5%) discount rates, and potential changes to the estimated costs and benefits of the renovation, give your recommendation with an explanation as to whether or not Mr. Feronti should do the renovation project.

Case Deliverables: *Submit your Excel workbook and MS Word Memo through Blackboard.*

THIS WILL HELP YOU WITH THE FORMULAS!

Benefits	Enter 0 for year zero (benefits would only accrue in the future) For years 1 to 5, use the formula **=range_name** (inserting YOUR range name from your Recurring Benefits worksheet!)
Present Value Factor	Use the PVF formula found on page 4 above. Some hints, *i* is the cell containing the discount rate and **n** is the cell containing the Year (e.g., 0, 1, 2) for which the Present Value Factor is being calculated. Remember to think about relative and absolute referencing when you are creating this formula. What cell references do you need to stay the same and what cell references do you need to change when you copy this formula for the remaining years? Also, you will need to use the exponentiation (or "to the power of") function!
Present Value of Benefits	Create a formula: **=Present Value Factor * Benefits**
Net Present Value of All Benefits	For each year, the formula will be a running total: **= Net Present Value of Benefits** Previous Year **+** **Present Value of Benefits** for Current Year
Total column for Net Present Value of All Benefits	This is the cumulative total of Net Present Value of All Benefits, so this is the value that you have in Year 5. Insert a reference to that cell.
One-Time Costs (**enter as negative!**)	This pertains only to Year 0. Enter the formula **=range_name** (insert your range name from One-Time Cost sheet) For years 1 to 5, enter 0.
Recurring Costs (**enter as negative!**)	Enter 0 for year zero (recurring costs would only accrue in the future) For years 1 to 5, use the formula **=range_name** (insert your range name from Recurring Costs sheet)
Present Value Factor	Same as the Present Value Factor formula used for Benefits.
Present Value of the Recurring Costs	Create a formula: **= Present Value Factor * Recurring Costs**
Net Present Value of All Costs	For year 0, the formula just refers to the cell containing the One-Time cost figure. For years 1 to 5, the formula will be a running total: **= Net Present Value of All Costs** Previous Year **+** **Present Value of Recurring Costs** for Current Year
Total column for Net Present Value of All Costs	This is the cumulative total of Net Present Value of All Costs, so this is the value that you have in Year 5. Insert a reference to that cell.
Overall Net Present Value	Create single formula (you are ADDING because the costs are already represented in the sheet as negative values)**:** **= Net Present Value of All Benefits +** **Net Present Value of All Costs**
Yearly NPV Cash Flow	For year 0, just refer to the One-time costs (your range name for that). For years 1 to 5, create a formula: **= <u>Present</u> Value of Benefits + <u>Present</u> Value of Recurring Costs** NOTE: looking at current year ONLY.
Overall NPV Cash Flow	Running total of Yearly NPV Cash Flow, like you did your Total for <u>Net</u> Present Value of All Benefits (and All Costs) above.
Estimated Yearly Profit	**=Benefits + One-Time Costs + Recurring Costs**