JWI 530: Financial Management I

Assignment 2

Cost-Benefit Analysis

Parts A and B Due Sunday, Midnight of Week 9 (25% of Final Grade)

Overview

In this assignment, you will take on the role of a senior member of the finance team assigned to lead the investment committee of a health care equipment manufacturer. Your team is evaluating a "make-versus-buy" decision that has the potential to improve the company's competitiveness, but which requires a significant capital investment in new equipment. The assignment is organized into two parts:

Part A: Data calculations based on the information in the scenarios
Part B: Recommendations based on the calculations

Opportunity Details

The new equipment would allow your company to manufacture a critical component in-house instead of buying it from a supplier. This capability would help you stabilize your supply chain which has suffered from some irregularities and quality issues in the past. It could also positively impact profitability through the absorption of fixed costs since this new machine will have plenty of excess capacity. There may even be a possibility that the company could leverage this capability to create a new external revenue stream by providing services to other companies.

The company has been growing steadily over the past 5 years, and the financials and prospects look good. Your CEO has asked you to run the numbers. After doing some digging into the business, you have gathered information on the following:

- The estimated purchase price for the equipment required to move the operation in-house would be $700,000. Additional net working capital to support production (in the form of cash used in Inventory, AR net of AP) would be needed in the amount of $30,000 per year starting in year 0 and through all years of the project to support production as raw materials will be required in year 0 and all years to run the new equipment and produce components to replace those purchased from the vendor.
- The current spending on this component (i.e., annual spend pool) is $1,500,000. The estimated cash flow savings of bringing the process in-house is 16.67%, or annual savings of $250,000. This includes the additional labor and overhead costs required.
- Finally, the equipment required is anticipated to have a somewhat short useful life, as a new wave of technology is on the horizon. Therefore, it is anticipated that the equipment will be sold after the end of the project (the last year of generated cash flow) for $30,000. (i.e., the terminal value).

Input from Stakeholders

As part of your research, you have sought input from several stakeholders. Each has raised important points to consider in your analysis and recommendation. Some of the points and assumptions are purely financial. Others touch on additional concerns and opportunities.

1. **Angela**, your colleague from Accounting, recommends using the base assumptions above: 5-year project life, flat annual savings, and 10% discount rate. Angela does not feel the equipment will have any terminal value due to advancements in technology.

2. **Bob** from Sales is convinced that this capability would create a new revenue stream that could significantly offset operating expenses. He recommends savings that grow each year: 5-year project life, 10% discount rate, and a 10% annual savings growth in years 2 through 5. In other words, instead of assuming savings stay flat, assume that they will grow by 10% in year 2, then grow another 10% over year 2 in year 3, and so on. Bob feels that the stated terminal value of $30,000 is reasonable and uses it in his calculations.

3. **Carla** from Engineering believes we should use a higher Discount Rate because of the risk of this type of project. As such, she is recommending a 5-year project life and flat annual savings. Carla suggests that even though the equipment is brand new, the updated production process could have a negative impact on other parts of the overall manufacturing costs. She argues that, while it is difficult to quantify the potential negative impacts, to account for the risk, a 15% discount rate should be used. As an engineer, Carla feels that the stated terminal value is low based on her experience and recommends a $55,000 terminal value.

4. **Delilah**, the Product Manager, is convinced the new capability will allow better quality control and on-time delivery and that it will last longer than 5 years. She recommends using a 7 Year Equipment Life (which means a 7-year project and that savings will continue for 7 years), flat annual savings, and 10% discount rate. In other words, assume that the machine will last 2 more years and deliver 2 more years of savings. Delilah also feels the equipment will have an estimated terminal value of $20,000 at the end of its 7-year useful life as it will be utilized longer, thus having less value at the end of the project and savings.

5. **Edward**, the head of Operations, is concerned that instead of stabilizing the supply chain, it will just add another process to be managed and will distract from the core competencies the company currently has. He feels the company should focus on improving communication and supply chain management with its current vendor, and he feels confident he can negotiate a discount of 3% off the annual outsourcing cost of $1,500,000 if he lets it be known they are considering taking over this step of the process. As there is little risk associated with Edward's proposal due to no upfront capital requirements, a lower risk-free discount rate of 7% would be appropriate. Edward feels that any price reductions from the current vendor will last for five years. (NOTE: because there is no "investment," the Payback and IRR metrics are not meaningful. Simply provide the NPV of the Savings cash flows).

PART A: Data Calculations

Using the data presented above (and ignoring the extraneous information), for this profit and supply chain improvement project, calculate each of the following (where applicable):

- **Nominal Payback**
- **Discounted Payback**
- **Net Present Value**
- **Internal Rate of Return**

Scenario	Nominal Payback	Discounted Payback	Net Present Value	Internal Rate of Return
#1: Angela				
#2: Bob				
#3: Carla				
#4: Delilah				
#5: Edward	N/A	N/A		N/A

Submission Requirements

Present your calculations and results either in an Excel Spreadsheet or in Word (using tables and headers to organize the information in a way that is clear and easy to read). Be sure to show your detailed calculations. If you get something wrong, you may still be able to get partial credit.

Part B: Recommendations

After completing the calculations for all scenarios, create a brief memo to the CEO outlining your committee's recommendations. You may organize the memo as you see fit, but it must include the following:

- A clear opening statement of your recommendation for or against the project.
- A brief synopsis of the processes and factors that led to your recommendations.
    - What information did you gather, and how did you get it?
    - From whom did you seek input, and why?
- A summary of the strategic benefits and risks in pursuing (or not pursuing) this project, including:
    - Highlights of the main data points that support your position
    - Acknowledgment of the data points that oppose your argument
    - Identification of open/unresolved items
- Identification of the scenario that, from a purely financial perspective, represents the most accurate estimate of the anticipated results and your rationale as to why.
- Identification of non-financial elements that need to be considered for the recommended scenario.
- Any assumptions in project economics can have a significant impact on the result. Identify 3 financial elements/assumptions in your analysis that would make this project financially unattractive. Be as transparent and candid as possible. What would have to be true for this to be a bad investment?
- A summary restating your recommendation and key action items.

Submission Requirements

- Your memo should be no more than 2 pages, single-spaced, using 10- or 12-point font.
- Focus on the rationale for your recommendations.
- Include key numbers to support your recommendations but do not re-present all your calculations.

RUBRIC

25% of Course Grade	Assignment 2				
Criteria	**Unsatisfactory**	**Low Pass**	**Pass**	**High Pass**	**Honors**
1. Correct answers for the investment recommendation scenarios. **Weight: 25%**	Does not demonstrate understanding, either by not submitting or by calculating 8 or fewer answers correctly.	Partially demonstrates understanding by calculating 9 to 10 answers correctly.	Satisfactorily demonstrates understanding by calculating 11 to 12 answers correctly.	Demonstrates a high level of understanding by calculating 13 to 14 answers correctly.	Demonstrates exemplary understanding by calculating 15 or more answers correctly.
2. Show work for calculation for the investment recommendation scenarios **Weight: 20%**	Does not show work and/or has significant errors and shortcomings of process, order and calculation of metrics.	Incorrectly demonstrates process, order and calculation and has many errors.	Demonstrates basic level of understanding of process, order and calculation, but may have some errors.	Shows process, order and calculation that mostly supports generation of the required metrics.	Fully and completely Completely shows process, order and calculation of the required metrics.
3. Analyze the investment opportunity leveraging the supplied data sets, and provided clear, well-reasoned recommendations to the CEO. **Weight: 45%**	Does not submit, or incompletely analyzes the investment options and does not address the key questions or explain recommendations.	Provides minimal, basic analysis and recommendations addressing 3 or fewer of the required memo components and options.	Provides good analysis and recommendations addressing at least 4 of the required memo components and options.	Provides excellent analysis and recommendations addressing all required memo components and all 5 options.	Provides exemplary analysis and recommendations addressing all required memo components and all 5 options; includes additional insights drawing on learning from outside sources demonstrating excellent business sense.
4. Professionally communicates with clear writing; concise and free of mechanical errors. **Weight: 10%**	Written communication does not flow, and/or fails to justify or express recommendations; multiple mechanical errors; much of the communication is difficult to understand.	Written communication is basic; fails to clearly connect conclusions and assertions to data; has several mechanical errors making parts of the text difficult to understand.	Written communication flows well but lacks conciseness or clarity in places; assertions and conclusions are generally justified and explained; contains several minor grammatical errors.	Written communication flows well; concisely and clearly expresses recommendations in a manner that rationally and logically develops the topics; there are a few mechanical errors.	Written communication is excellent; concisely and clearly expresses recommendations in an exemplary manner that rationally and logically develops the topics; free of mechanical errors.