# **REPORT**

The estimated purchase price for the equipment required to move the operation in-house would be $900,000. 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 $40,000 per year starting in year 0 and through all years of the project to support production as raw materials will be required in year o 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 20% or annual savings of $300,000. 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 $50,000. (i.e. the terminal value).

As part of your research, you have sought input from a number of 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. Albert, your colleague from Accounting, recommends using the base assumptions above: 5-year project life, flat annual savings, and 12% discount rate. Albert does not feel the equipment will have any terminal value due to advancements in technology.

2. Betty from Sales is convinced that this capability would create a new revenue stream that could significantly offset operating expenses. She recommends savings that grow each year: 5-year project life, 12% 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, and then grow another 10% over year 2 in year 3, and so on. Betty feels that the stated terminal value of $50,000 is reasonable and used it in his calculations.

3. Cassie from Engineering believes we 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. Cassie suggests that even though the equipment is brand new, the updated production process could have anegative 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. Being an engineer, Cassie feels that the stated terminal value is low based on her experience, and is recommending a $75,000 terminal value,

4. David, the Product Manager, is convinced the new capability will allow better control of quality and on-time delivery, and that it will last longer than 5 years. He 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 12% discount rate. In other words, assume that the machine will last 2 more years and deliver 2 more years of savings. David also feels the equipment will have an estimated terminal value of $25,000 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. Ellen, the head of Operations, is concerned that instead of stabilizing the supply chain, it will justadd another process to be managed, and will distract from the core competencies the company currently has. She feels the company should focus on improving communication and supply chain management with its current vendor, and she feels confident he can negotiate a discount of 2% off of the annual outsourcing cost of $1,500,000 if she lets it be known they are considering taking over this step of the process. As there is little risk associated with Ellen’s proposal due to no upfront capital requirements, a lower risk-free discount rate of 7% would be appropriate. Ellen 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)

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: Albert #2: Betty #3: Cassie #4: David #5: Ellen N/A N/A N/A

**Answer**

Refer to the below attached images, for the much detailed answer.

**Final Summary:**

Net Present
Internal Rate of
Scenario
Nominal Payback
Discounted Payback
Value
Return
# 1: Albert
3 years & 7 months
4 years

Initial cashflows analysis
Year
0
1
Equipment Working Cash flow
cost
capital cost savings
$ -900,000 $ -40,000 $
$
$ -40,000

**A. Nominal Payback:**

Alberts assumptions
Nominal Payback computation
Equipment Working
Year
cost
capital
Cash flow
Net cash flow
Payback
cost sav

Bettys assumptions
Nominal Payback computation
Equipment Working
Year
cost
capital
Cash flow
Net cash flow Payback
cost savi

**Cassies
assumptions
Nominal Payback computation
Equipment Working
Year
cost
capital
Cash flow
Net cash flow
Payback
cost sav**

**Davids assumptions
Nominal Payback computation
Equipment Working
Year
cost
capital
Cash flow
Net cash flow
Payback
cost savi**

**B. Discounted Payback:**

**Alberts
assumptions
Discounted Payback Computation
Equipment Working
Year
cost
capital
Discounted
Cash flow
cost savings
Net**

**Bettys assumptions
Discounted Payback
Computation
Equipment Working
Year
cost
capital
Discounted
DCF @ 12%
Present value
Cas**

**Cassies
assumptions
Discounted Payback Computation
Equipment Working
Year
cost
capital
Discounted
DCF @ 15%
Present value
Ca**

**C. Net Present Value:**

**Alberts assumptions
Net Present value (NPV) computation
Equipment Working Cash flow
Year
cost
capital cost savings
Net cash**

**Bettys assumptions
Net Present value (NPV) computation
Equipment Working Cash flow
Year
Net cash flow
cost capital cost
savi**

**a
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e
Cassies assumptions
Net Present value (NPV) computation
Equipment Working Cash flow
Present
Year
Net cash flow DCF @ 1**

**Davids assumptions
Net Present value (NPV) computation
Equipment Working Cash flow
Year
cost capital cost savings
Net cash f**

**a
с
Ellens assumptions
Net Present value (NPV) computation
Cash flow cost Net cash
Present
Year
DCF @ 7%
savings
flow
value**

**D. Internal Rate Of Return:**

**Alberts assumptions
Internal Rate of Return (IRR) computation
Equipment Working Cash flow
Year
cost
capital cost savings
Pre**

**Bettys assumptions
Internal Rate of Return (IRR) computation
Equipment Working Cash flow
Year
cost
capital cost savings
Pres**

**Cassies assumptions
Internal Rate of Return (IRR) computation
Equipment Working Cash flow
Year
cost
capital cost savings
Pre**

**Davids
assumptions
Internal Rate of Return (IRR) computation
Equipment Working Cash flow
Year
cost
capital cost savings
Pres**