

## Answers to the Case Study Question

Suppose I have been hired as the CFO of Bebida Sol. I will follow the question's guidance and first figure out the project's relevant cash flows based on the information mentioned in the case. Then, I will calculate the NPV, IRR, and other relevant quantitative indicators, and finally, I will give Antonio a specific recommendation on whether or not to take the project.

Therefore, the answer is organized according to the following structure. In **part 1**, I give a detailed description of the relevant cash flow. Then, the specific calculations of quantitative indicators are made in **part 2**. The final recommendations are given in **part 3**.

### 1. Relevant Cash Flows for Project

All cash flows relevant to decision-making must be included to determine if a project is worth taking. Here, I treat the consultant's market study cost, the potential rental value of the unoccupied annex, the interest charges, the erosion of existing soda sales, and other relevant cash flows.

#### *Consultant's Market Study Cost*

The market study cost the company five million pesos, which Pedro paid shortly after its completion. However, it would not be considered as a relevant cash flow in the capital budgeting analysis because it has incurred and become a sunk cost. When evaluating whether to take the project, costs that have been incurred are no longer relevant!

#### *Rental Value of the Unoccupied Annex*

Given that the firm received an offer to lease the space for 60,000 pesos a year, that amount would be lost if the project were undertaken. Based on this, the rental value of the unoccupied annex represents the opportunity cost and should be treated as a negative cash flow.

#### *Interest Charges*

The new project will require 20% debt financing at a 16% interest annually, which is related to the financial decisions rather than the investment decisions. In the calculation of free cash flows, financing items such as interest would not be considered because the weighted average cost of capital (WACC) would be calculated and used to discount all future free cash flows, which have taken interest into account. The impact of interest will be doubled if we subtract interest to get free cash flow. I will use the 18.2% weighted average cost of capital for this project directly.

### ***Erosion of existing soda sales***

The market study suggested that the new Hola-Kola might erode the sales of the firm's existing products (the regular sodas), and the potential erosion could cost the firm as much as 800,000 pesos of after-tax cash flows per year. This loss is highly correlated with the Hola-Kola project and can be regarded as the cost of this project, so it would be a negative cash flow.

### ***Other Relevant Cash Flows***

There are three components of working capital that were cited in the project: inventory, accounts receivable, accounts payable, and. They can be calculated as follow:

- Inventory = (600,000 liters @ 1.8 pesos per liter) = 1,080,000 pesos
- Accounts Receivable = Sales (600,000 liters @ 5 pesos per liter @ 12 months) / 365 \* Average Collection Period = 4,438,356 pesos
- Accounts Payable = Raw Materials Cost (600,000 liters @ 1.8 pesos per liter @ 12 months) / 365 \* Average Payment Period = 1,278,247 pesos

So, we can get the total working capital requirement as:

$$1,080,000 + 4,438,356 - 1,278,247 = 4,240,110 \text{ pesos.}$$

This means the equivalent amount of cash needs to be invested for this purpose. Hence, the change in working capital is a negative cash outflow of 4,240,110 pesos. In addition to working capital, the project involves other key cash flows:

- **Equipment Costs:** Requires an initial investment of 50 million pesos to acquire the new equipment, which can be sold after five years for 4 million pesos. Since the equipment will be fully depreciated by the end of Year 5, the sale of the equipment will generate a taxable capital gain of 4 million pesos.
- **Operational Costs:** Including expenses for raw materials, direct labor, and energy costs.
- **Fixed general administrative and selling expenses:** 300,000 pesos per year.
- **Overhead Costs:** 1% of sales.
- **Depreciation:** Although straight-line depreciation is stated in the case, companies always depreciate the maximum amount allowed by law in earlier years to take advantage of the time value of money and benefit from tax savings.

## 2. Calculations of Indicators

According to the free cash flows obtained in part 1, we will be able to calculate NPV, IRR, payback period, and profitability index and make investment decisions based on these quantitative indicators. Please refer to Excel [Hola-Kola PCF Answer.xlsx](#) for the detailed calculation procedure, and only a brief description of the process and results is given here.

### NPV

The formula of **NPV** is

$$NPV = -C_0 + PV = -C_0 + \sum_{t=0}^5 \frac{C_t}{(1+r)^t}$$

Using Excel, I can calculate the NPV by function `=C60+NPV(H12,D60:H60)`, and get

$$NPV = -1,716,061.$$

The NPV is negative, which indicates that This negative NPV indicates that the project will result in a loss for the company.

### IRR

The formula of **IRR** is

$$-C_0 + \sum_{t=0}^5 \frac{C_t}{(1+IRR)^t} = 0$$

Using Excel, I can calculate the NPV by function `=IRR(C60:H60)`, and get

$$IRR = 16.86\%.$$

The IRR is 16.86%, which is less than the WACC (18.2%), indicating that this project is not able to cover the cost.

### Payback Period

The formula of the **Payback Period** is

$$\text{Payback Period} = T - 1 + \frac{\text{Cumulative Cash Flow}_{T-1}}{PCF_T}.$$

Where the  $\text{Cumulative Cash Flow}_{T-1} < 0$  and  $\text{Cumulative Cash Flow}_T \geq 0$ . I can compute the Payback Period = 3.41, showing that this project can get the break-even point at 3.41 years when ignoring the effect of discounting.

### **Discounted Payback Period**

The formula of the **Discounted Payback Period** is similar to the **Payback Period**:

$$\text{Discounted Payback Period} = T - 1 + \frac{\text{Discounted Cumulative Cash Flow}_{T-1}}{\text{Discounted PCF}_T}$$

Where the Discounted Cumulative Cash Flow at  $T - 1$  is  $< 0$  and at  $T$  is  $> 0$ . But we can't find the  $T < 5$  meeting this requirement, which means the project will never recover its investment when accounting for the effect of discounting.

### **Profitability Index**

The formula of the **Profitability Index** is:

$$\text{Profitability Index} = \frac{PV}{C_0}$$

The function in Excel is `=NPV($H$12,D60:H60)/C60`, thus we can get

$$\text{Profitability Index} = 0.97,$$

which is less than 1. This also indicates that the project cannot make profits.

### **3. Conclusion**

Through the above analysis, based on the quantitative indicators (NPV, IRR, payback period, and profitability index) that I have calculated, it can be clearly stated that the **Hola-Kola project would cause some losses to the company** under the given conditions. Therefore, as a CFO, I should **strongly discourage Antonio from taking the project!**

carbonated soft drink