



Question 2.2

Using your recent work experience, demonstrate how you have used numerical techniques to analyse a business or professional situation.

EXAMPLE ANSWER

PREPARATION OF FEASIBILITY STUDY FOR A CLIENT PLANNING TO MOVE INTO ANOTHER BUSINESS ACTIVITY

My firm was approached by BB Lighting Ltd, a manufacturer of light bulbs, to advise them on changing their principal activity from manufacturing light bulbs to manufacturing safety matches. BB Lighting was suffering net operating losses in its current business activity mainly due to much cheaper Chinese electrical equipment readily available in the market. For this reason they were contemplating a shift to manufacturing of safety match-sticks which required less investment and had good profit margins due to their export potential to the US, Europe, Africa and the Middle East.

I determined that the planned change of principle business activity required a Cost-Benefit Analysis working based on the analysis of projected relevant cash flows. The planned shift of business required the determination of terminal cash flows from the disposal of the existing business asset infrastructure and subsequently an initial investment (with competing uses) that would generate projected relevant cash inflows and outflows. I, therefore, decided to prepare a feasibility report for the planned project based on a 7-Year financial statement model constructed in MS-Excel. I then subjected the resulting net projected relevant cash flows to multiple capital budgeting techniques to assess if the planned change would be worthy from a financial point of view or otherwise. Finally, I supported the workings with industry benchmark information and publicly available information on the economic forecast for the next 10 years (e.g. the State Central Bank's fortnightly analysis on the economy, Stock Exchange Market Analyses, investment analyst reports etc).

To create the model, I first identified all current and projected relevant cash flow sources (i.e. disposal of old asset infrastructure, investment in new asset infrastructure, working capital requirements, future revenues from the new investment and operating costs) all adjusted for the effects of taxation. I based each working of a relevant cash flow source on a set of clearly defined assumptions. The assumptions were categorised into macro and micro level assumptions. Since the project clearly involved non-diversifiable risk (mainly due to dicey economic conditions) I used a RADR Discount Rate (Risk adjusted Discount Rate) that was based on the CAPM (Capital Asset Pricing Model). I used historical market returns of similar projects to calculate the beta-coefficient of the asset investment. I also used the historical market return data to assess the sensitivity of the expected project return by calculating the standard deviation of the returns on similar projects. The resulting yearly net cash flows were then discounted using the RADR rate to calculate the Payback Period and NPV. A separate working was made for calculating the IRR of the project.

With the financial statement model workings and their results complete, I turned my focus on supporting them with qualitative information obtained from publicly available information referred to above.

The findings gleaned from the results of my report helped the client reach a more insightful decision by balancing the risk-adjusted quantitative workings with the qualitative aspects of the planned shift in principal business activity.

EXAMPLE ANSWER

PREPARATION OF FEASIBILITY STUDY FOR THE PROJECT OF MACHINES' INTERNAL TRANSFER

FGH is a technology company listed on the Stock Market in 2017. Nearly half of its revenue was from the Asian market. In order to support the business expansion in the market, FGH management decided to build a new factory in Country Z in late 2018. The construction period was around 5 years.

As part of management's planning, they decided to transfer some of the idle machines from sister companies to the Country Z site. I reviewed Country Z site's fixed asset write-off report in Year 2020 and I found management wrote off 5 sets of machines which were transferred internally from other sites, but those machines still had up to 2 year's residual useful lives. I asked management for their plan and understood that management planned to transfer a few more machines from other sites in coming few years but did not have proper financial analysis as how they would like to utilize the internally transferred machines to maximize their operational capacity. I was alerted by this information that management might have the same issue without properly analysing the cost and benefit of transferring the machines and later writing them off from their accounts as a scrap without achieving any business benefit. Considering more machinery was to be internally transferred soon, management sought my advice on how to perform the cost and benefit analysis on potential machine transfers.

Based on the background information, I considered creating a feasibility study. The aim was to help the management make informed decision-making. The feasibility study should focus on what the transferred machines' minimum useful lives in Country Z should be, whilst also considering the effect of time value of currency. To meet this purpose, I selected the discounted cash flows plus payback period method to analyse the costs and benefits of machines transferred. To implement the method, I first discussed the matter with the facility team to ascertain the transferred machines' remaining useful life in Country Z's site, and sales team for the sales forecast data in Country Z's site for the coming 3 years. Then I identified all current and projected cash inflow and outflow sources associated to the transferred machines, including the machines' net booking values (before being transferred), cost of transportation-to-Country Z, the expenditure for asset improvement (if any), the estimated salvage value of the machines, revenues and overhead cost allocated among the machines according to managerial accounting report, considering the effects of taxation. I then used the market interest rate as the discount rate, which was used by FGH executive management for the feasibility report when setting up the Country Z site. Based on the above data, I created the discounted cash flow and payback period method module as below:

Discounted payback period (in years) = $\frac{\text{the original value (residual value + transportation + improvement expenditure)}}{\text{annual net cash inflow after the effects of discount rate}}$. The model result meant, before the management decided to transfer the machines to Country Z site, the management should make sure that the internally transferred machines estimated useful lives in Country Z site should be longer than, or at least equal to the discounted payback period.

I put this numerical model in MS-Excel as a feasibility study working file to demonstrate the numerical method and shared it with management. With this numerical analysis tool, management was able to perform feasibility studies on asset transfers. They benefitted a lot from it in making informed decisions with justified numerical analysis.