



## Question 2.2

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

### EXAMPLE ANSWER

#### ANALYSING USING NUMERICAL TECHNIQUES – ASSESSING ASSET IMPAIRMENT FOR A RESTAURANT CHAIN DURING COVID-19

ABC Pte Ltd (“the Company”), a western restaurant chain in Singapore, engaged my firm’s affiliate (EFG Pte Ltd) in early 2021 to assess the potential impairment of its right-of-use assets and plant and equipment due to the severe impact of COVID-19. Government restrictions led to temporary closures, reduced dine-in capacity, and increased reliance on food delivery, significantly disrupting the Company’s operations. Concerned that the carrying value of these assets might be impaired, management requested an impairment test under Singapore Financial Reporting Standards 36 (SFRS 36) – Impairment of Assets.

As the director-in-charge, I was responsible for analysing the recoverable amount of the right-of-use assets and plant and equipment, which were assessed as a single cash-generating unit (CGU). To determine the recoverable amount, I used a Discounted Cash Flow (DCF) analysis to project future cash flows over a 5-year period. Given the uncertainty surrounding the pandemic, I developed three scenarios:

1. **Best-case scenario (10%):** Assuming rapid market recovery with dine-in capacity returning to near-normal levels within a year.
2. **Neutral scenario (70%):** Assuming a moderate recovery pace, with dine-in restrictions easing gradually over two years and sustained reliance on food delivery.
3. **Worst-case scenario (20%):** Assuming prolonged restrictions on dine-in services and slower market recovery, significantly affecting future revenue growth.

These probabilities were assigned after discussions with management and consideration of industry trends. I applied these probabilities as weights to derive a weighted average net cash flow for the DCF analysis.

My analysis began with gathering relevant financial data, including historical sales, operating expenses, and capital expenditures. I projected future cash flows under each scenario, factoring in the pandemic’s effects, such as reduced dine-in capacity and increased reliance on food delivery services.

To account for the heightened uncertainty, I applied a discount rate of 18.8%, an upward adjustment from the Company’s typical Weighted Average Cost of Capital (WACC), to reflect the increased risk. This rate was applied to discount the weighted average cash flows, giving the

present value of the future cash flows over the 5-year forecast. A terminal value was also estimated beyond the forecast period to reflect the long-term outlook. The DCF analysis revealed that the recoverable amount of the CGU, under the weighted scenarios, was Singapore Dollars (S\$) 2,193,226, significantly lower than the carrying value of S\$3,092,708. This indicated potential impairment, particularly in the worst-case scenario, where the recoverable amount was further reduced.

To validate the results, I performed a sensitivity analysis, adjusting the key assumptions like the discount rate and recovery pace. A 1% increase in the discount rate, from 18.8% to 19.8%, reduced the recoverable amount by S\$117,713, illustrating the impact of changes in assumptions on the impairment calculation. The results indicated that the carrying value of the CGU exceeded the recoverable amount, leading to an impairment write-down of 29.08% in the 2020 financial statements. This adjustment ensured compliance with SFRS 36 and provided a true reflection of the Company's financial position amidst the challenges posed by COVID-19.

In addition to presenting the results, I shared the Excel model with management, allowing them to explore different scenarios and understand the impact of changes in assumptions. This transparency helped management make informed decisions and plan for potential risks.

## EXAMPLE ANSWER

### **Situation: Improving Revenue Forecasting at XYZ Education Group Through Numerical Analysis**

#### **Introduction**

Particularly in the education sector, where financial stability directly affects the capacity to provide quality services, accurate revenue forecasting is essential for any organisation. I was responsible for enhancing the precision of XYZ Education Group's revenue forecasts in my capacity as Senior Group Business Analyst and Strategist. This was crucial for the organisation to ensure that its financial planning was in accordance with its strategic objectives. I employed a variety of numerical methods to analyse historical data and predict future revenue sources, which ultimately resulted in more informed decision-making and financial stability.

#### **Background**

XYZ Education Group was witnessing revenue fluctuations, which were primarily attributable to seasonal fluctuations in student enrolment and the introduction of new courses. The revenue forecasting model that was previously in place was based on simplistic historical averages, which frequently resulted in inaccurate predictions of future revenue, particularly in the presence of substantial changes in market conditions or the introduction of new academic programs. Due to these inaccuracies, the management faced difficulties in planning for resources, effectively allocating budgets, and making strategic investments.

I was assigned the responsibility of creating a more sophisticated forecasting model that could incorporate these variables and offer a more precise prediction of future revenues, in recognition of the necessity for a more sophisticated approach. The objective was to develop a model that was not only precise but also adaptable to changes in the market and the organisation's offerings.

#### **Detailed Analysis Using Numerical Techniques**

I began the process by gathering and analysing the historical revenue data for the previous five years, which included comprehensive classifications by course type, enrolment season, and other pertinent factors. I utilised time series analysis, a numerical method that enables the identification of cyclic behaviours, seasonal patterns, and trends in data over time. This method was especially beneficial in comprehending the seasonal fluctuations in student enrolment, which were substantial revenue generators.

To capture the fundamental patterns in the revenue data, I developed a model that utilised SQL and Excel. This model included moving averages and exponential smoothing techniques. The exponential smoothing method enabled the forecast to be more responsive to recent market changes by giving more weight to recent observations, while the moving average method served to smooth out short-term fluctuations and highlight longer-term trends.

I integrated a regression analysis into the model to account for the introduction of new courses and their impact on revenue. This method facilitated the quantification of the correlation between various variables, including enrolment rates, course pricing, and marketing expenditure. By

examining the historical impact of these factors on revenue, I was able to more precisely predict their future impact. The regression model also enabled me to evaluate various scenarios, including the impact of variable levels of marketing investment, on revenue forecasts.

In addition to these methodologies, I implemented a sensitivity analysis to evaluate the potential effects of modifications to critical assumptions, including adjustments to course fees or enrolment growth rates, on the overall revenue forecast. This analysis was essential in identifying potential hazards and ensuring that the forecasts were robust under various scenarios.

## **Outcome and Reflection**

The organisation's revenue predictions were substantially enhanced by the improved forecasting model that I developed. The model was capable of accommodating seasonal fluctuations, the influence of new courses, and fluctuations in market conditions, thereby offering a more dependable foundation for financial planning and decision-making. Consequently, the management was in a better position to make informed strategic investments, optimise budgeting, and allocate resources effectively.