

ITAM ASSIGNMENT- 1

Q1.

- Make sure you're aware of the legal obligations.
 - Define the model's scope, including which variables should be represented stochastically.
 - Create a model development plan, including how it will be evaluated and tested.
 - Consider a variety of models before deciding on and describing your preferred strategy. This could entail interactions with specialists on the underlying stochastic processes if necessary.
 - Collect any relevant data, such as previous losses or insurance policy details.
 - Make a choice regarding the parameters. Economic factors should be able to alter based on market data. Employees must be consulted on other matters, such as spending and claim payouts.
 - Right now's "worst-case" situations Discuss the estimates with the persons who came up with them, particularly to get their perspective on the possibility of events occurring.
 - Decide on the modelling software that will be utilised.
 - Assemble computer programmes
 - Check if the model works as expected in basic, defined instances to debug the software.
 - Verify that the output is realistic. Here are some examples of probable outcomes: i. average outcomes (how do these compare with business plans)
- ii. To what extent do worst-case situations have a chance of happening?
- Determine the model's sensitivity to small parameter changes.
 - Calculate how much money you'll require.
 - Report your findings to your superiors. Document.

Q2.

- The data provided may contain numerous outliers, raising the probability;
- The data provided may not be valid;
- The data provided may contain numerous outliers, raising the probability;

Q3.

- The purpose of a model is to forecast the future mortality of a small country.
- Hospitals, government institutions, funeral homes, insurance companies, and other sources can provide us with information.
- We can use parameters like age, gender, past death rate, and health policy in this model.
- Next, double-check the data to see if there are any missing values or if there is a problem with double-counting.
- Clean up the data after that.
- Convert the data into a model-friendly format, such as descriptive, inferential, or predictive.
- Assume that the interest rate and population rate are both constant while you model the data and report the results.

- When the model has been inspected by a model professional, finish it.

Q4.

Instructions on how to utilise the model in detail

- The output of the model was subjected to validation tests.
- Definition of input data
- Any weaknesses in the model that have been uncovered (e.g. potential unreliability).
- The following criteria were used to define the model's shape: (For example, deterministic or stochastic.)
- Reference any research articles or interactions with relevant specialists.
- An overview of the model's results.
- Your name, as well as your educational and professional credentials.
- The goal or goals of the model.
- The assumptions that the model is based on.
- Suggestions about how to improve or expand the model.

Q5.

Advantages

- The model is simple to understand and communicate.
- Age is a major source of variation in consumption rates, which the model takes into account.
- The model is easy to implement and economical.
- Data on consumption rates by age is likely to be accurate in the past.
- The model is easily adapted to a variety of expected demographics OR takes future demographic variations into account.

Disadvantages

- Consumption patterns by age may not be a reliable prediction of future patterns.
- Extrapolating past age-specific consumption rates can be difficult or complex, and it can be done using a number of different ways.
- Economic conditions, such as whether or not there is a recession, may have an impact on chocolate consumption.
- Other factors, such as advertising expenditure, may influence consumer behaviour.
- Future price changes may have an impact on consumption.
- Because a person's ability to consume a certain number of Scrummy Bars is likely to be limited, a rapid increase in consumption rates is unlikely to be sustained for an extended period of time.
- Future population forecasts by age may be erroneous due to future fertility, mortality, and migration trends.
- The sensitivity of total demand to changes in the predicted population or variances in future consumption trends from those employed in the proposed strategy's model is not tested.
- Unexpected events, such as competitors releasing new products or the country becoming more health-conscious, could influence future consumption.

- Scrummy Bar consumption may differ by cohort rather than age, and the model does not take this into consideration.

Q6.

Some possible causes for why the model yielded varied findings are as follows:

- Because the prior student's assumptions were unclear to the new one, he devised a new model.
- There may not be enough communication written by the previous student who created the model.
- Due to regulatory changes, the model may no longer be applicable.
- Because the country's economic policies can vary, the model had to be adjusted.

Q7.

The age distribution, fertility rates, and mortality rates provide the best estimate of the future and likelihood of the future, as they provide an estimate of the amount the population is expected to grow year on year.' The government's efforts to control the town's population and adoption rate should also be included in the model, as both of these things would increase the population.

Q8.

- The type of sickness data that the company currently has. The model can only be as sophisticated as the data allows.
- Have there been any past attempts by the company to model sickness rates among its staff, and if so, how effective were they?
- The model's complexity, such as whether it should be stochastic or deterministic. More complicated models will be more expensive to develop and operate, but there may be decreasing rewards as time goes on.
- It's possible that national sickness trends will need to be factored in.
- The scheme's definition of sickness and the amount of benefits payable.
- Does the organisation intend to change the demographics of its workforce? Is it, for example, aiming to hire more people in their fifties and sixties?
- The model's communication abilities.
- The amount of money and resources available to build the model.
- Personnel capability. Will it be necessary to hire outside consultants?
- Who is going to use the model? Will they be able to grasp and apply it?
- Does the model need to communicate with models for other aspects of the business (for example, data from other systems)?
- The independence of sickness rates should be investigated; for example, in the event of an epidemic, claims cannot be considered independent.