ASSIGNMENT 1 – INTRODUCTION TO ACTUARIAL MODELING

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QS 1)

The steps taken by the company are as follows:

1. The objective is to make sure that the liabilities don't exceed the assets by 0.5%.
2. Then the company should analyze the data items required for the analysis i.e., the cash flow of the company every year which includes all the income and expenses.
3. Then the data is collected from the accountants or the person who maintains the cashflows of the company
4. Then the data is put into a spreadsheet or a database or a model, whatever company uses for further formatting and processing of the data.
5. Then the data is checked for any missing or inconsistent values or any errors.
6. Then the data is analyzed, which may include descriptive, inferential, or predictive analysis.
7. Then the data is modelled.
8. Then the results are checked with the objective to be achieved, and then repeating the process if required.

QS 2)

Yes, there are certain factors that can cause his probability to go wrong.

The factor based on which the stochastic model's assumptions can go wrong is it is a combination of immensely complex series of events but consists of only few parameters.

If one of the parameters not included, can cause a huge effect in the model, which further making the probability of the model go wrong

QS 3)

Stages to go through in identifying an appropriate model are:

- The objective is to construct a model for forecasting future mortality.
- Data is collected through the statics of death and survival over the last few years, geographic location of people, profession of the people and their demand, etc.
- Then the data is put on a spreadsheet or any other computing program.
- Then the data is predicted for the future mortality rates.
- Then the data is checked for any missing or inconsistent values or any errors.
- Then the data is analyzed, which may include descriptive, inferential, or predictive analysis.
- Then the data is modelled.
- Then the results are checked with the objective to be achieved, and then repeating the process if required.

Qs 4)

After the actuarial model is prepared, the key steps that should be taken in the documentation process are as follows:

All the details of the model should be explained thoroughly considering all the risks involved n the model like assumptions taken into consideration , output of an expert , objective of the model , basis on which model was chosen , etc

Qs 5)

Advantages:

- The study of the next 20 years of the product could be studied prior itself based on the probabilities and the analysis of the data
- The cashflows for the next 20 years could be generated thus giving the company a clear idea of successful the product will be based on the profit projected over the years.

Disadvantages:

- The assumption indicated by the model can go wrong as they are targeting only specific age group and its just one age group, so the risk involved increases.
- Human behavior towards the product cannot be accurately predicted by a computer which runs on algorithms, which increases the chance of the product to go unsuccessful.

Qs 6)

The reason for the difference in the outputs of the models is because:

- The new person assigned might have used different parameters in the model.
- He might have felt that the parameters used earlier were not appropriate in predicting the result.
- Since he was the only one working in the model, he changed the model in the way he wanted to get the desired results.

Qs 7) views on the model:

The parameters used in the model to estimate births and deaths in the new city is appropriate.

- But the only thing they might be forgetting is the geographic location of the are and the economic conditions of the people.
- Geographic location as in how large the schools will be, how far they will be from the students enrolling.
- And economic factors include scenarios like if there are international schools built in the city and a lower middle-class family moves in, so that family will not have access to such schools which will result in the number of students enrolling in the newly built schools

Qs 8)

To develop a model of sickness rates among employees of a company, the factors to be considered are:

- Mortality rates.
- Sickness rates (of numerous diseases)
- Geographic location
- History of family diseases
- Allergies
- Consumption of liquor / tobacco / drugs.