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A-41

INTRODUCTION TO ACTUARIAL MODELS
ASSIGNMENT 1.

(1) The steps that will be considered while development of the project are as follows:

i) The objectives for this model would be to make sure that the liabilities do not exceed the 99.5% probability.

ii) The next step is to process the model by taking the data and checking the validity of the data.

iii) The parameters that need to be considered in the model are likely to be older liability, income purchase sales statements, profits and loss, interest rate etc.

iv) When the above parameters are taken into consideration, the simulation language will be more preferable and therefore, we can come to more accurate and precise result.

v) The experts and real world should also be included as they can guide us to the development of a well working model.

vi) We are then supposed to perform the model script and run the programm and write the views.

vii) We are then supposed to check what output we get during the worst situation. Here the worst situation could be that the probability of liabilities could be much greater than 0.5%.

viii) We then need to change the interest

rate, inflation rate and other parameters and see if we are getting the desirable output or not.

ix) Then verify the model followed by all the professional guidance.

x) The results should be communicated and seen that the prepared model can be used to estimate the company capital during the worst scenarios, i.e Hyperinflation and bankruptcy.

(2) The factors that could cause the probability to be inaccurate are as follows:

i) the data that is provided might have a lot of outliers which could cause the probability to go up.

ii) the probability could be random

iii) Since the model is stochastic it might need a lot of attempts to connect the model with the statistical theory.

iv) the data provided might not be credible.

v) There may be huge risk on the investment project

vi) Variations in the interest / inflation rate

vii) The pricing method of the model could be a major factor as well.

(3) the stages I would go through in identifying an appropriate model are as follows:

i) the main objective of the model would

be to determine the future mortality of a small country.

ii) We will then take data from hospital, funeral places, insurance companies, government bodies, etc.

iii) Then the parameters such as gender, age, health policies, past mortality rates would be taken into consideration.

iv) The the data should be verified, such as if there is any error or whether any value is missed.

v) Then go for cleaning the data.

vi) The data will then be transformed in which it can be used for the model i.e. descriptive, inferential and predictive.

vii) The interest rate and population rate will be assumed. And then, the data would be modeled and communicate the results.

viii) The model will then be finalised after verification by model expert.

④ The key items that I would include on the documentation of model are as follows:

i) the frequency of the data

ii) the validity of the assumptions

iii) the validity of the model for the purpose to which is to be put.

iv) the objectives of the modelling

v) the validity of the data to be used.

vi) the parameter which are taken into consideration
vii) type of the model.

(5) The advantages of this strategy are as follows:
i) The model is cheap and easy to implement.
ii) The model can be adapted easily to different ~~population~~ projected populations.
iii) The model takes into account future changes in the population.
iv) The model is simple to understand and communicate.
v) The past data on consumption rates are likely to be fairly accurate.
vi) The model takes into account the major source of variation in consumption rates, specifically age.
vii) The model would help estimate the total supply they would need in order to meet the demand.
viii) The model would also help the investors to calculate the project appraisal while investing in the project.

The disadvantages of this strategy are as follows:
i) In case there is any technological advancement that occurs during the 20 years then the assumption would go completely wrong.
ii) Consumption may be sensitive to pricing, which may change in the future.
iii) Factors other than age may be important

in determining consumptions, eg expenditure on advertising.

iv) Past trends in consumption by age may not be a good guide to future trends.

v) Unforseen event such as competitors launching new products, or the nation becoming increasingly health-aware may affect during future consumption.

vi) Exploitation of past age-specific consumption rates may be complex and can be done in different ways.

(6) The possible reasons for the model giving different output are as follows:

i) The assumptions used by both the people might be different.

ii) There might be miscommunication because of which the assumptions written by the earlier student would be mistaken by the other one so he developed a different model.

iii) The model might not be relevant due to regulatory changes.

iv) There might be change in the economic policies of the country so the model had to be changed.

(7) The approach which is used to develop the model is appropriate as the best estimate

of the future & probability of the model should be received by the age distribution, fertility rates and mortality rates as it would provide an estimate of the amount the population is projected to grow in the yrs.
Another factor that would be taken into consideration is the measures taken by the government to control the population and the adoption rate on the town as it would also increase the population.

(3) i) The data shouldn't have a lot of variance
ii) The assumptions should be made clear while developing the model.
iii) General trends in sickness at the national level may need to be built in.
iv) The ease of communication of the model
v) Whether the company has made any previous attempts to model sickness rates among its employees, if yes, how successful were they.
vi) The definition of sickness and level of benefits under the scheme.
vii) The data should be taken from a proper source.
viii) The objectives should be defined well.