

Assignment

① Steps in a modelling process -

- Develop a well defined set of objectives
- Plan the modelling process
- Collect the data required
- Analyse the necessary data
- Define parameters
- Clean the data
- Exploratory data analysis
- ~~to~~ Modelling the data
- Communicating the results
- Monitoring the process

② Stochastic Models are the types of models that recognises the random nature of the input components.

Range of outputs remains the same just the cause & impact differs in stochastic models from deterministic models (opposite of stochastic models).

Based on risk appetite, the business owner can decide how much risk they can bear.

③ In assessing the suitability of a model, it is important to consider -

- The objective of model

- Validity of the model
- Validity of the data used.
- Validity of assumption
- Possible errors

4) Data

- Judgements needs to be made as to relevance of the observed data to the future environment.
- Such may result from past observation, current observations/events & expectation of future changes.
- Where observed data are considered suitable for producing the parameter for a chosen model. Statistical methods can be used to fit the data.

Parameters

- The complexity of the model is determined by the complexity of the relationship between the various parameters.
- A set of mathematical or logical assumptions needs to be developed to build a model.
- Future events like investments returns, inflation etc. also affect those relationships.

5) Advantages of modelling -

-) long time frames can be studied in compressed time.
-) Future policies can be compared to see the best suited requirements for policies.
-) In a model of a complex system we can reduce variance without changing the mean value.
-) It helps in faster & quicker data understanding.

Disadvantages of modelling:-

-) Model development requires a considerable investment of time & expenditure.
 -) Heavy investments are required to build models.
 -) As a rule, models are more useful for comparing the set of results of input variations than for optimising outputs.
- 6) In a stochastic model, the output is an estimate.

In a stochastic model more than one run of the model is necessary because for any given set of inputs, each run gives an estimate output.

Perhaps in this situation, the new student is unaware of the inputs given by the old actuarial student. Therefore the estimates differ from each other.

7) The model used for building the new town is only taking one set of parameters. Hence it is a deterministic model, appropriateness of such a model is a question to say the least, because of validity of assumption & credibility of data.

8) Parameters the company must take into consideration are -

Logical assumptions -

- Sick leaves ~~and~~ are excluded from holidays.
- Age of employee
- Hygiene & immunity of employee

Complexity of model -

- Diet insuitability
- Financial condition of employee
- Social contact

Future events -

- Natural disasters
- Pandemic