Method	Monte Carlo simulation

Description

Monte Carlo simulation belongs to the stochastic simulation methods, in which random numbers are used to calculate scenarios within certain ranges. Further types of simulation methods are static, dynamic and deterministic simulations, which are selected according to the complexity of the structure to be simulated. Today, almost exclusively stochastic and dynamic methods are used to assess risks or make decisions under uncertainty. Using Monte Carlo simulation and synthetic data, the effects of different decisions and their probability of occurrence can be estimated. It is a calculation method to simulate extreme cases, but also to secure everyday decisions. Thus, it is usable for the most diverse industries.

Basic procedure

1. Determine uncertainty factors (number and ranges)
2. Determine the number of calculations
3. Calculation of the probability function using random values
4. Representation of the distribution of results

Prerequisites/Aids

- Monte Carlo Simulation Program
- Probability function

Effort

Depends on the number and size of the ranges of uncertainty factors.

Advantages	Disadvantages
• Probabilities taken into account • Good graphic representability	• The user must recognize correlations and model them accordingly.

• High degree of flexibility	

Related Literature
Bauerfeind, T. (2013): Simulation procedures as effective risk management, applications for investment strategy decisions, Protinus, Family Office Forum, Wiesbaden Wolf, K. (2009): Monte Carlo Simulation: Use in Corporate Planning, Controlling Vol. 21, No. 10 (2009), pp. 545-552 Rudolf, M. (2000): Monte Carlo Simulation in Risk Management, Economics Studies: Wist; Journal for Education and University Contact Vol. 29, No. 7 (2000), p. 381- 387