

An Experimental Evaluation of Monte Carlo
Simulation in MIS Project Decisions

by

John B. Wallace, Jr.

University of Florida

The paper describes the methodology and results of an experimental application of Monte Carlo Risk Analysis to the process of selecting and controlling Management Information System development projects. The investigator tested hypotheses concerning tradeoffs among sophistication of the risk analysis simulation programs, alternative techniques for estimating benefits of an MIS, and managerial acceptance of the results of simulation programs as guides to project decisions.

The experiment was conducted using four different computer programs (two Monte Carlo and two non Monte Carlo) and three benefit-estimation paradigms (incorporating the managerial viewpoint, the management science viewpoint, and the opportunity-cost viewpoint, respectively) as applied to two actual MIS development projects. The data of the experiment were collected using structured interviews and taped de-briefing sessions.

Throughout the experiment, management increasingly asked for and relied on the simulation programs as decision aids. In the introductory stages, the managerial acceptance of Risk Analysis was not sensitive to the sophistication of the simulation approach. The deterministic computational packages have the advantage of manually reproducible computations and relatively inexpensive compilation and execution. The opportunity-cost paradigm found greater acceptance than the other two, but no paradigm was best in all contexts. In general the techniques tested in the experiment were cost/effective on the decisions.