ESTIMATING COST WITH ADVANCED ANALYTICS

Trexin helped a large manufacturer create a statistical model to simulate and analyze the estimation uncertainty of a global ERP deployment.

BUSINESS DRIVER

A large global company needed to plan the rollout of a new ERP system to hundreds of manufacturing sites throughout the world. It was faced with many unknowns and risks, based on the large variations of size, product lines, systems, and staff across all the sites. This made it difficult to create planning cycle budgets, timelines, and resource estimates, both for the rollout as a whole and for each site individually.

Estimating the cost and resource hours in a scenario like this carries significant uncertainty. There are potentially hundreds of relevant factors for each site that impact the rollout, and formulating estimating calculations on this much information is complex. Adding to the risk, the information known about each site was deemed incomplete and/or suspect. Any individual site estimate may be too small or too large, and the grand total for the whole company may be wildly inaccurate.

Facing the dilemma of estimating with unreliable results versus not creating planning estimates at all, the company engaged Trexin to develop an estimating model that would incorporate uncertainty and risk with statistical techniques.

APPROACH

Trexin began by performing exploratory data analysis on the source input data. Analysis revealed that the existing data set, which was known to be suspect in some ways, yielded enough information to form the basis for a realistic model.

In collaboration with SMEs from the organization, Trexin created a set of formulas that yielded an initial model structure. Trexin then iteratively refined them with the client. Next, Trexin created a model that included a Monte Carlo simulation, drawing from 10,000 random samples of model inputs in a tunable triangular distribution. Monte Carlo simulation is often used when there is significant uncertainty around an estimate, as a way to derive a more nuanced view than simply producing a point estimate.

Trexin produced a highly "tunable" model in both desktop and web platforms. The model allows the client to change the model parameters, distributions, and data inputs and view the simulation results in near real-time. The platforms also allow the client to change the model structure itself, if needed in the future, providing maximum value in case of future refinements.

Global company needs estimating model for ERP rollout that accounts for risk using statistical techniques

The team performs data analysis on source input data

The team creates formulas that yield initial model structure

The team creates a Monte Carlo simulation model with a tuneable triangular distribution that is highly user-editable
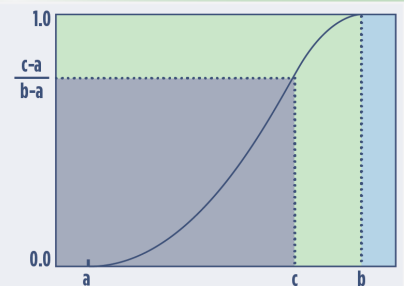
RESULTS

The model provided the client with a deeper understanding of its data, an initial best estimate with which to refine and plan this very large effort, a more nuanced view of the estimate, a way to "interrogate" the model to uncover new insights into the planning process, and a way to rapidly change the model if needed.

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