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Research Papers

The Computer, Which Creates a Dynamic and Robust Tool for Decision Making

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Abstract

The increasing amount of data, available not only from your financial department but from personnel, marketing and operations, facilitates monitoring and tracking various small business firm indicators. However, the quantity of data can be overwhelming at times. This is especially true when trying to make a decision with conflicting information.

One of the best ways to make complicated decisions, where a lot of data is available, is to use computer modeling techniques. A computer model, which is a specific set of variables and their interrelationships designed to represent a situation, helps assess data and simplify the decision-making process. Computer modeling is fast becoming one of the preferred methods in making decisions.

Computer modeling is no longer relegated to the financial department. In fact, computer modeling is an asset in every functional area: in human resources when deciding to hire additional personnel and at what level, in payroll for calculating bonuses, in marketing when deciding on which industries to target, in operations for determining capacity and growth scenarios, in strategic planning for identifying potential partners, and in finance when deciding on which potential clients have a low risk of defaulting on their fees. Using available data or estimates, computer modeling is helping small business firms make better decisions.

A variety of computer modeling tools are available: spreadsheets like Excel, Lotus and Quartro-Pro; databases such as Access, Fox-Pro and DBASE; programming languages like Visual Basic, C++.

There are four basic steps in building a computer model:

State the problem. The first step in computer modeling is to determine the exact problem and state it as a question. For example, Mr. X is the managing partner of a small business firm. His firm is growing so fast that he has more work coming in the door than the staff can handle. He needs to hire additional people, but he doesn't know at which level. Should he hire a senior attorney, junior attorney, paralegal, secretary or clerk?

All of his employees claim to be very busy and need more help. But Mr. Mr. X realizes that fast growth may go hand-in-hand with bloated growth and inefficiency. He doesn't want to hire more people just because his current employees

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are busy. He would like some way to demonstrate the appropriate level of person who should be hired, so that he can grow efficiently and still maintain his high profit margin.

The second step is to define and collect the data. Critical to answering the question, which has been posed, is to develop a list of relevant data that will affect the decision. In this case, Mr. x needs to know from all the employees who are doing work for the firm, what tasks they perform and how much time they spend on each task every day. Although gathering this information may be a daunting project, the results will be well worth the effort.

Next, choose the modeling tool. Select the tool based on your customization needs and the amount of data that you will be processing. If the data is voluminous, a database may be necessary; however, if you have a small project, a spreadsheet may be the tool of choice. If an off-the-shelf tool suits your needs, then by all means, use it. But if you require a considerable amount of customization, then a commercial tool may not suffice and you may have to create the model yourself or outsource the work.

In our example, Mr. x selects the flexible Excel spreadsheet, because it's easy to use with good explanatory graphs that can be developed.
Build the model. Now you are ready to start building your computer model, which will answer the question that you posed. There are six components of a model:

1. Input sheet, where the user enters and modifies the data.
2. Results sheet, which indicates the numerical conclusions based on the inputted data.
3. Charts and graphs are the visual representations of the results.
4. Changing variables and "What if?" scenarios.
5. "Sanity check," which determines if the inputs and calculations make sense.
6. Usability -- the menus, macros and other automation features that make using computer model easy and simple.

A major advantage of the computer model for the small business firm is its ability to answer complicated questions. If you are stymied by a question that appears unanswerable, chances are that a computer model can assist your assessment and provide a solution to your dilemma. As more unknowns become facts and as assumptions change to reality, the computer model evolves and adapts, which creates a dynamic and robust tool for decision-making

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