



Concepts Meet Reality...

Analytical Approach to Decision Making – and the Role of Context



Introduction

Analysis to support important and capital intensive decisions in the business world has been defined as somewhat of a ‘science and art’. Large and small corporations have been performing business cases with soft and hard numbers to justify a given direction or decision.

Our experience is that more often than not, the process of business case or business justification is really a mechanism to support a pre-determined decision or direction. A majority of the time the decisions have already been made in some manager, stakeholder or leader’s mind. These decisions based on ‘gut or intuition’ are generally good. One can even argue that the individuals driving the decision (assuming the absence of any obvious bias) have performed an informal analysis based on years of internalized experience or deep expertise on the topic.

The issue is that even if the decision is right – its chances of success are largely dependant on understanding the value drivers and risks that impact its probability and degree of success. Business Decision Analytics (BDA) is an approach to do just that. By following a rigorous methodology to frame the decision (including the risks) and to analyze it, BDA provides the ability to pick from competing options. It also provides the key levers to make the implementation of the decision successful.

Using current information to predict future results is not an exact science, but with a little help from powerful analysis tools , multiple scenarios with multiple variables can be evaluated and lower the likelihood of skewed results. The tenets of the BDA value proposition include:

- Providing an understanding of where and why value is created by a given decision
- Producing accurate value potential and risks of chosen alternatives
- Identifying, characterizing, and evaluating risk and uncertainty in the decision making process
- Achieving the optimal business outcome to align with corporate and departmental goals

The key to making a business decision analytics exercise successful, is in the process of reaching the right framework together with the client. Although there is a great deal of rigor required when creating a business case, the most critical aspect is developing a joint understanding of the process and end goals together with the client. The business decision is theirs after all, and structure or framework alone will not achieve a believable business case for the decision they have to make

Background

Current trends show modeling producing results further and further in the future. Based on current information alone, the amount of skew is directly proportional to the amount of time elapsed from the date the model was run. Making decisions on skewed data is a risky proposition for managers when millions of dollars are on the line. BDA attempts to put a confidence level on the information resulting from models resulting in an NPV used to determine ROI, Risk Analysis, and other derived financial values.

Additionally, from the analysis decision maker can derive the levers that control the 'degree of success' and decrease the probability of failure. For example, rigorous analysis from a software implementation business case can reflect a high probability of failure in the data conversion (the 'weak link') based on the high cost, volume and sensitivity of the data. This gives the implementation manager the knowledge to focus on that area more than he/she otherwise would.

Similarly the context of the decision is also very important in framing the right question. For example the business case for a disaster recovery project needs a very different approach after a natural or man-made disaster. The focus is on knowing the risks of failure and increasing the value of the project by managing the aspects of the solution that are highlighted by the Framing Tools.

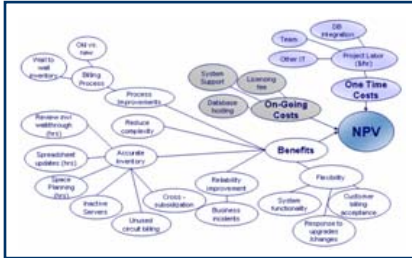


Figure 1. Influence Diagram

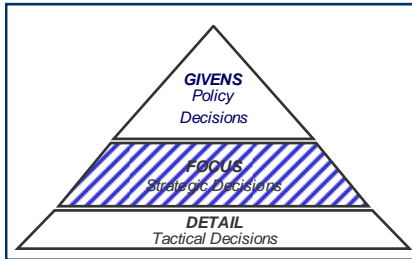


Figure 2. Decision Hierarchy

Strategy	Decision	Decision
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Figure 3. Strategy Table

Analysis

A good decision process is one that appropriately frames the problem, uses available information, incorporates the contextual variables, takes into account the implementation factors and provides the alternatives with associated probabilities and risks but most importantly results in a recommendation.

Framing Tools:

Framing Tools assist in better understanding of the problem, the motivations behind the problem, and the key influencers. Framing tools show the essence of a problem by giving a representation of the components of the value to assist with developing potential decision options. Proper use of the framing tools allow you to create a realistic scope, define decision inputs, and create a decision plan. The following are some examples of Framing Tools that assist in the decision making process:

Influence Diagram (figure 1)

- Capture all possible costs and benefits in visual format
- Facilitate and structure stakeholder interviews
- Communicate business case framework to management

Decision Hierarchy (figure 2)

- Provide the boundaries and scope
- Facilitate and structure stakeholder interviews within given framework
- Communicate business case framework to management

Strategy Table (figure 3)

- Take the focus decisions from the Decision Hierarchy and develop specific options and strategic themes for analysis

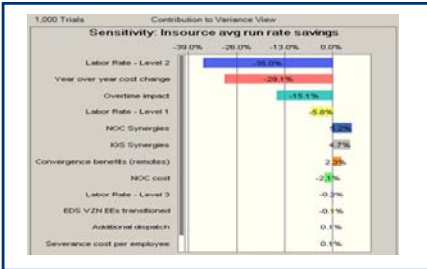


Figure 4: Tornado Diagram

One Time Cost - Data	Used %	Used value	10	50	90
Severance					
Severance cost per employee	42.1%	\$ 42,178	\$ 32,466	\$ 42,178	\$ 63,210
Num of Employees Severed	45	65	65	65	65
Technician Cost					
Level 1	4%	\$ 41	\$ 31,21	\$ 40,89	\$ 47,48
Level 2	4%	\$ 41	\$ 43,39	\$ 48,47	\$ 60,59
Level 3	4%	\$ 41	\$ 60,56	\$ 67,89	\$ 72,52
Transition Cost					
Upfront Costs - Transition	2.04%	\$ 2,044,275	\$ 2,000,000	\$ 2,104,275	\$ 3,000,000
Dispatch Peak Impact (Hours Converted to PTEs)	1.50%	\$ 1,500	0.5	1.5	2.5
Overline Impact (percentage of total capacity)	2%	\$ 2,000	0%	2%	3%
ISS-Other Ops Synergies	2%	\$ 2,000	0%	2%	4%
NOC Synergies - Impact to Cost	2%	\$ 2,000	0%	2%	4%
Annual Change in Cost	3%	\$ 3,000	1%	3%	5%
Convergence Benefits from Remote Sites	0%	\$ 0	0%	1%	2%
NOC cost	1.50%	\$ 1,500,000	\$ 1,400,000	\$ 1,500,000	\$ 1,700,000

Figure 5: Probabilistic Value Model

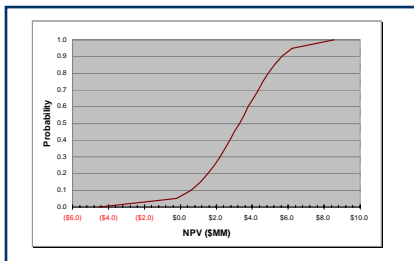


Figure 6: S-Curve

Evaluation Tools

Evaluation tools are tools that can be applied to each available option to evaluate the financial value (or ranges) of each option to combine w/ subjective and contextual data to make the final decision. Both deterministic and probabilistic calculations are used to assign a confidence quotient to a specific decision option based on a value of inputs. These inputs make calculations based on uncertainty ranges that are placed on the analysis. The ranges allow for an analysis to be completed giving confidence to a particular outcome. The following are a subset of tools utilized for decision evaluation:

Tornado Diagram (figure 4)

- Graphically depict how much each variable contributes to the uncertainty in calculations
- Show which variables are most important to the value of the project

Probabilistic Value Model (figure 5)

- Calculate values based on provided information
- Data provided from Probabilistic Calculations and experts' estimations used to make decision in Clear Cause for Action phase

S-Curve (figure 6)

- Represent graphically value distribution across a probability range
- Can show the P10, P50, P90 ranges

“It really gives you a way to put a range on cost/benefits so you put a ‘reality check, factor in the estimates.”

- Jonas Georgsson, Enaxis Consulting

The combination of the Framing Tools and the Evaluation Tools when used appropriately provide (in majority of cases) – not only the answer to the question of which option to pick but also a clear path of action once the decision has been made.

Risk analysis is a difficult yet key aspect of decision making. When using information for analytical modeling, it is difficult to determine which piece of information incurs the most risk due to the nature of the information. Tornado diagrams graphically depict how much each variable contributes to the uncertainty in calculations and show which variables are most important to the value of the project (see figure 1). By using a probabilistic approach utilizing a Tornado Diagram, the riskiest information provided for your NPV can easily be identified. Jonas Georgsson, Principal with Enaxis noted, “It really gives you to way to put a range on cost / benefits so that you put a ‘reality check’ factor in the estimates.”

BDA has been in practice for some time and the positive results thus far have been proven in real business situations. Seeing the benefits of being able to single out a particular variable on the outcome has allowed analysts to see the value of the framework in practice. Georgsson notes that BDA provides a frame for “good decision making in the face of uncertainty.”

Conclusion

BDA is not intended to be a mold into which all decision processes can fall. What differentiates BDA from other decision making activities lies with the ability to fit BDA to the decision at hand. The idea is to be less pushy and more adaptable with the analytics involved to the specific requirements surrounding this issue.

The use of BDA in decision making provides a framework for utilizing a probabilistic and deterministic approach to provide certainty for otherwise uncertain variables.

- The trend towards modeling further in the future requires certainty to be applied to decisions
- BDA compliments the existing experience and knowledge of decision makers

BDA provides decision makers the opportunity to set parameters and ranges for proposed decisions. Leveraging past experience to set applicable parameters and ranges provides for confidence in a strategic decision with results that are able to be reproduced.

The value decision of BDA is more certainty of information used for the decision making process. This certainty in turn leads to more informed decisions knowing the framework around which it was created.



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