Valuing BUSINESS INTELLIGENCE

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Introduction

Whether considering a new business intelligence solution, creating dashboards or adding analytics, you wouldn't be alone in questioning the value created by these tools. Business Intelligence vendors promote the benefits and advantages of their tools, highlight the weaknesses of their competitors, but seldom quantify the value they create. You've probably read industry trends for business intelligence that promote its value but rarely describe how the value is created. In this paper I provide a methodology for deriving how business intelligence creates value based on business needs.

This paper clarifies the underlying goals and objectives of Business Intelligence to help identify its value, then builds on this definition and outlines a methodology for uncovering the value it creates. This methodology relies on gap analysis and decision support principles for evaluating the value potential for an organization. This methodology thus should (finally) provide managers with the justifications necessary for procuring the right business intelligence solution for creating and delivering the value expected by the business.

Business Intelligence Re-defined

So what is business intelligence and how does it create value? I believe the term "business intelligence" is too vague and imprecise a term that doesn't adequately describe the activities most people associate with it. Before we can understand its value to business intelligence, both implementers and consumers must agree upon a common definition of the final product and service. Asking various stakeholders about their understanding of the concept can be surprisingly revealing. To some, it represents a methodology for exposing a wealth of data locked up in databases. To others, it's a reporting tool with "essential" dashboards, ad-hoc reporting capabilities, and analytics. Others consider business intelligence a curse and money pit for delivering overly-detailed reports of highly questionable value. Business Intelligence professionals consider it many things – a report development tool, a metadata development tool, an OLAP cube, a data mart or data warehouse, an Extract-Translate-Load (ETL) tool, a dashboard, a set of business rules and business logic, a means for mining and aggregating data, etc.

But if business intelligence is to deliver value, every stakeholder of the service first must share a common understanding of its future promise and vision. All must clearly understand the value it provides beyond access to and reporting on vast amounts of data. Let's start by re-scoping Business Intelligence to be a discipline or major business function much like marketing and finance are disciplines. It isn't software or a set of tools. Instead, Business Intelligence is a business function with clear goals and a mission: to collect, analyze, evaluate, and disseminate relevant business intelligence information, metrics and status, for assisting leaders and managers in making *informed* decisions that change behaviors and move the business toward meeting goals, objectives and strategy.

I offer a new term, ***Business Decision Analytics (BDA),*** to better describe the methodologies, practices, processes, analytics, applications, systems and data associated with a company's Business Intelligence function.

Valuing Business Decision Analytics

Business Decision Analytics derives value by effectively supporting core value chain and cash flow management business decisions, strategy implementations and technology developments. Challenges faced by corporate managers today include how to maximize output and positive cash flow, minimize costs, improve efficiencies, assure governance, maximize plant, property, and equipment, extend IT investment longevity, and minimize risks. BDA could help you as it currently helps many managers today decide the best courses of action to take.

For corporate managers, BDA may drive potentially higher returns on investment by providing insights and actionable metrics necessary for managing the implementation of corporate goals, objectives and strategies. A merchandise analytics department of an on-line retailer reduced the number of required analytic reports from over one-hundred spreadsheets to just three new and focused on-line ad-hoc BDA reports – all by focusing on the decisions and desired outcomes of those reports. These reports went into production and significantly improved the department's saleable merchandise selection decisions. Most of the original reports were used infrequently, provided little actionable information, and required an unnecessary diversion of resources to find or create the "right" report. The improved reports combined information from a few critical reports and added new metrics that provided meaningful and actionable business decision analytics. The resulting BDA improved profit, eliminated unprofitable merchandise and reduced costs.

Business intelligence can attain maximum value by supporting high-impact and high value business decisions with intuitively simple and accurate information. Any other use of business intelligence risks value forfeiture. For example, an enterprise architecture group created a general report with hundreds of rows by tens of columns of data. The report's intent was to satisfy every department's data needs. But because the report was so broad and general, each receiving department had to expend countless additional hours each month to process the report *again*, to create value. The original report provided only marginal value since its intended purpose and goal was too vague. Each department still had to expend additional hours to re-process the data and gain value from the report.

Gap Analysis, Reintroduced

The key to valuing Business Decision Analytics is in valuing the gap between an ideal 'future' where "perfect" decisions are made with infallible supporting analytics, and the current reality where less than perfect decisions and analytics are the norm. The value of this gap represents the maximum achievable benefit from perfect decision making due to perfect analytics. Thus, if all went perfectly well in closing the gap, you would create value equivalent to the gap.

Step 1: List your decisions

To avoid coloring the future vision with your perceived current limitations, first describe in writing what the "perfect" future would look like, then address the present. Although it requires an investment of time and energy, begin by listing decisions you currently make that require collecting and analyzing supporting data. Don't be concerned (yet) about the quality of information, where or how you will obtain it, or the relative importance of each decision – simply identify the decisions you make. How to factor this investment of energy into ROI, prioritizations and identifications of metrics will soon follow. For now, just jot down:

- The decisions
- The frequency of each decision (i.e., daily, monthly, quarterly, etc.),
- The critical information and metrics needed to render each decision,

- A brief description justifying why the decision is important.

Be sure to include decisions you wish to make but can't, or decisions that too often turn out wrong because of unavailable or poor quality information. These decisions likely will associate to an opportunity cost and a measurable, quantifiable gap. I will describe shortly the gap value is the value BDA can deliver.

While identifying needed but missing BDA, the marketing vice president of an on-line retailer needed to know which tracking ads generated the most profitable sales. The current information infrastructure didn't provide the tools or information needed for supporting the assessment. This executive intuitively understood by correlating ad costs to website traffic resulting in purchases and total revenue generated from those purchases, she could identify ads that created value and maximized marketing strategy. The value created by improved BDA equaled the bottom line increases resulting from additional sales and improved advertisement efficiencies.

Step 2: What is the value of your decisions?

Valuing decisions isn't easy. However, by investing moderate effort, using best estimates and educated guesses when the data isn't available, you should be able to derive a reasonable value estimate of past decision results and lost value or opportunity costs. Begin by reviewing a particularly important recurring decision. For each instance of the decision, identify the negative outcomes of that decision. Include an estimated dollar value for the outcomes' impact.

For example, let's say you're responsible for purchasing merchandise. Let's assume you made four decisions during the last quarter to purchase different products for retail sales. Of those four decisions, one of the products exceeded profitability expectations, one met expectations, and the other two drastically underperformed. Upon closer examination, you discover the marketing intelligence given to you was flawed. Had the marketing intelligence been accurate, the "met expectations" and underperforming decisions instead would have exceeded your expectations, and each product could have earned greater-than-expected profit for the company. The cost of improper decisions, in this case attributable to flawed market intelligence, would be the profit that could have been earned by exceeding sales expectations on all four products less the profit actually earned. To estimate the years' lost profit, you multiply this value by the number of remaining quarters, and multiply fourth quarter results to accommodate known holiday sales increases.

Carefully evaluate important and high value decisions, and analyze their impact from inadequate information. Higher-value decisions have a narrower margin of error with a greater consequence. If the information isn't available, use your best guess judgment. Table 1 provides examples of improper decisions and possible impacts that could result from inadequate supporting information.

Improper decisions can result in actual costs (i.e., excess resources) and foregone value or opportunity costs as well (i.e., revenue lost from demand exceeding capacity). Lost opportunity costs represent opportunities that could have created revenue or decreased costs. For example, say you purchase scrap metal from various global sources, separate the metals, purify and reduce them to pure ingots of various metals, then resell the ingots on the spot market. With the right BDA, you could take advantage of exchange rates, international spot metal pricing, and timely inventory management, resulting in your earning a substantial profit instead of suffering a debilitating loss. This BDA must supply real-time open market pricing, materials costing and metals process operations information at the touch of your finger, along with an alert mechanism that indicates the optimum decision path. The consequence of operating without this BDA would be lost profit.

Table 1 - Decision Impact Examples

Improper Decision	Result	Impact
Human Resource Utilization		
- Under-staffed	Demand exceeds capacity	Lost revenue, lost profit
- Over-staffed	Capacity exceeds demand	Increased cost, reduced profit
Capital Resource Utilization		
- Under-used	Capacity exceeds demand	Reduced efficiency, increased cost
- Over-used	Demand exceeds capacity; increased breakage	Reduced efficiency, lost revenue, lost profit
Uncollected Receivables	More cash held by debtors	Reduced cash flow, reduced profit (if not collected)
Product Management		
- Wrong product features	Lost investment dollars	Increased costs, reduced profit
- Underestimated demand	Demand exceeds capacity	Lost revenue, lost profit
Asset Retirement		
- Before useful end-of-life	Unnecessary capital expenditures	Unnecessary added debt load and interest expenses
- Beyond useful end-of-life	Excess maintenance and repair expenses	Increased and unexpected costs, reduced cash flow

Adjusting for reality

Accurate business decision analytics increases the probability of meeting your desired goals. However, making perfect decisions with perfect supporting information isn't realistic. You might attain 80% of ideal using BDA. But external factors such as inflation, unexpected increases in shipping costs, company politics, etc., can impact your decisions and account for variability in the final results. Therefore, I recommend adding a decision efficiency factor to each value.

This weighting factor is your judgment of realistically achievable value from BDA, and should be based on your collective experience with uncontrollable external influences, culture and politics. Each metric may have a different multiplicative weighting factor that reduces the "perfect" to a realistic "ideal" value.

How much do your decisions cost?

Generating the information to support your current decisions cost time and resources. For example, a government agency manager recently revealed his staff easily spends 80 hours or more each quarter generating a mandated progress report. This report supports a set of decisions that influences future decisions. Not only were hours spent creating the report, the personnel creating the report were diverted *away* from their normal customer service tasks. These performance reports today incur production and customer service decline costs. Thus, a future BDA that reduces or eliminates costs for producing reports also will reduce the cost of customer service declines.

Are your decisions based on valid metrics?

Improving the value of metrics for decision making is another way to demonstrate the value of BDA. While evaluating decisions, analyze the accuracy of supporting metrics and information. Each decision should require no more than three to five metrics, and a mere glance at the BDA

should rapidly convey the intended information and indicate any required action. If not, the BDA likely is hindering rather than helping. To be actionable, BDA must (1) quickly pinpoint a problem needing correction, (2) indicate mandatory actions to take, and (3) indicate who needs to be engaged. All three conditions are mutually inclusive and must be an integral part of the "perfect" decision making future.

The cost of information overload

Another situation many managers face is receiving far more information than useful. Information overload can be just as taxing as not enough information. In an example cited earlier, replacing over one-hundred spreadsheet-based reports with focused, on-line ad-hoc BDA reports significantly improved decisions. Reducing the number of reports and increasing the remaining reports' action-ability allowed decision makers to quickly analyze facts and information, improve decision quality, produce and better outcomes. The resulting BDA improved profits and reduced costs.

Step 3: Organize Your List

The list of decisions, frequencies, supporting metrics, narratives of importance for each, values and "costs", and associated weighting factors collected in your analyses should allow you to reasonably estimate BDA value. The last step is to organize this decision information into a business case and assign decision prioritizations based on achievable *and* perceived value to the department or company. This list is a defensible justification of achievable, expected value BDA can provide and can be used as a business case for a BDA or business intelligence solution implementation. Table 2 provides a template for listing and calculating the value of decisions for supporting a BDA purchase.

Table 2 - BDA Value Justification Template

Decision #	Decision	Supporting Metrics	Priority	Justification of Priority	Perfect Value ($) Each Decision	Frequency	Perfect Value ($)	Weighting Factor	Realistic Value ($)
					=P	=F	=P x F	=W	=P x W
								Total Expected Value:	= Sum

Next Steps

You now have a prioritized list of metrics identified for decisions and values assessed for purchasing a BDA or business intelligence solution. It's now the appropriate time to evaluate BDA solution costs that promise to deliver these metrics in a format you define and for a return on value you expect. Working backwards using your company's ROI calculation method, you can compute the maximum cost to pay for any BDA solution. You now are well-positioned and informed for engaging your favorite BDA solution vendor or integrator and challenge them to meet the value expectations you carefully defined!

Summary

I've re-categorized Business Intelligence as a discipline, arguing that the term is vague and imprecise. Instead, I introduce Business Decision Analytics as an alternative, business-friendly term that values key business decisions. Since business decisions have measurable monetary value, net financial value gains in decisions using improved BDA information should be directly attributed to BDA. The value of a BDA solution therefore is equal to the net gain in value of all high-value decisions when the BDA provides information that directly improves these decisions. This assessment evaluates the benefit side of the ROI equation and defines the means to set a value expectation for any business intelligence solution. With this value expectation, the executive now can (1) constraint the cost of BDA based on expected value, (2) define the expected value of the finished product, and (3) define the metrics needed frm the first release of the BDA solution.

About the Author

Bill DeGeneres is a Senior Consultant and Practice Manager with Wells Landers Group. He has over 25 years of experience as an Enterprise Business Architect and leader who solves tough problems with creativity and pragmatism. He has led business and IT teams in creating business alignment and engineering change, providing transformational leadership for adopting change, and leading executive and operational management teams in architecting and building actionable enterprise information management (EIM) and business intelligence (BI) solutions. His strength in leading development teams has helped clients to create Enterprise Business Architectures and EIM/BI Architectures, manage IT Portfolios, align Businesses, analyze ROI, develop Change Process Management best practices, manage Product Portfolios, implement Business Intelligence solutions, develop and implement best practices.

Bill has coached and led implementation teams, and developed best practices and processes for creating corporate strategy, business alignment, reporting, and program governance. His degrees include a B.S., Physics, from the University of California at Los Angeles, and M.B.A. from the University of Denver, Daniels College of Business.