

# Assessing the True Value of Business Analytics

Creating a Disciplined  
Evaluation Framework

White Paper

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*Aligning Business and IT To Improve Performance*

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## Introduction

In recent decades the share of corporate capital spending that goes to information technology in North America and Europe has increased rapidly. In the United States, for example, it grew from 5 percent of total business investment in 1980 to 16 percent in 2008. Clearly, IT and the business processes it enables have become an essential part of the fabric of running a corporation. In particular, in recent years business analytics have become an increasingly important part of how information technology delivers value to businesses.

Business analytics are an approach to data analysis that provides a deeper understanding of what is happening in a company, market, industry or economy. These techniques include longstanding methods such as ratio analysis (for example, using balance sheet or income statement ratios or production-related defect rates), leading economic indicators such as housing starts or inventory changes, as well as customer churn, sales pipeline analysis, workforce optimization, purchasing analysis and risk analysis, among many others. Financial statement analyses are centuries old and management accounting – the use of accounting information for alerts and decision support – became codified as a discipline early in the 20<sup>th</sup> century. The purpose of business analytics has always been to provide users with timely, reliable information they can use to make the right decision sooner and more consistently.

In recent years analytical methods have grown more sophisticated, incorporating advanced statistical approaches to detect relationships, correlations and trends. This has become both more important and more necessary as the volume of data available has increased and as successful companies have used advanced analytics to their advantage.

**The availability of broader data sets and more sophisticated analytical tools enables corporations to ensure that individuals make decisions that are aligned with the company's strategy and objectives.**

Companies today increasingly use predicative analytics as well. The term covers a variety of techniques including statistics and data mining designed to successfully predict future events. Such approaches typically rely on models that use patterns and relationships in historical and transactional data to identify opportunities and risks to a business. These models also enable decision-makers to assess potential outcomes so they can explore alternatives.

This availability of broader data sets and more sophisticated analytical tools has made it possible for those using them to make better decisions faster. It also enables corporations to ensure that individuals make decisions that are aligned with the company's strategy and objectives rather than just with a department's or individual's aims.

Executives and managers at all levels have come to rely on business analytics to inform them about what's going on in their business, why it's happening and what's likely (or unlikely) to happen next. Analytics allow these managers to make better decisions faster and thus use their time more effectively, focusing more of their attention on issues that matter. Just as a company's performance will in part be determined by how well it manages its outlays for its physical plant, its ability to manage its investments in business analytics can have an important impact on its competitiveness and profitability. As the IT capital budget has grown, so has the importance of effective governance to ensure that resources are channeled to the most productive investments. This is especially important in challenging economic environments such as the one businesses have recently experienced.

Good governance of the capital investment in business analytics is not simply a matter of clamping down on spending. It involves assessing the full range of benefits and costs associated with potential investments to choose the best set of investment options in a given period.

Among those options, productivity improvements – increasing output,

**Companies' ROI assessments may not evaluate improved effectiveness adequately or may underestimate the total cost of ownership.**

decreasing cost or some combination of the two – are the simplest and easiest of the benefits to understand and can be the easiest to quantify in a return on investment (ROI) analysis. However, enhanced productivity is not the only source of the value delivered by IT investments. Applying business analytics also can enhance effectiveness by providing individuals and organizations with a better understanding not only of how well they are performing but also why, as well as

guidance on the best course of future action. For example, analytics tools can continuously monitor the details of the business but request attention from managers only when something out of the ordinary occurs. This allows them to focus their efforts efficiently on things that matter while ensuring that they are made aware of decisions needed to keep the business functioning optimally and are provided with the information they need to make those decisions. Software thus enhances their effectiveness by enabling them to make better decisions faster and more consistently.

Unfortunately, Ventana Research finds that companies' ROI assessments of their IT capital spending often are simplistic. They overlook two important elements in evaluating whether the investment satisfies a specific minimum rate of return or maximum payback period requirement. First, companies may not evaluate adequately the improved effectiveness that software can deliver, focusing instead solely or largely on efficiency improvements. And secondly, in evaluating vendor proposals they may underestimate the total cost of ownership of a software package.

Improving efficiency certainly can be an important reason for making IT investments. In the first decades of business computing, increasing efficiency

by automating manual tasks was the primary source of value. Today, however, IT capital spending, especially for business analytics software, usually delivers its value not just by making existing processes more efficient but by making the business more effective. Indeed, a key rationale for software investments may be to provide executives and managers with a deeper knowledge of events sooner and greater visibility into the developments driving future operations. Since the benefits companies expect to derive from their IT investments have evolved well past simple efficiency, it's important that companies develop and use assessment methods that evaluate their value in those terms.

Similarly, no software evaluation is adequate if it fails to identify and assess all of the lifecycle costs of owning and using software. Any such assessment of a proposed investment must include two categories of costs. One is up-front costs, including licensing, implementation, hardware and other acquisition and deployment expenses. The other is continuing costs, including the ongoing maintenance and other fees charged by the software vendor as well as all internal costs of supporting and administering the software. In some cases a much lower initial licensing fee that on the surface may appear attractive can be more than offset by implementation expenses and ongoing maintenance and support costs.

## Consider All Sources of Value

Capital spending governance is a longstanding core management discipline aimed at ensuring that organization makes the best possible investments in the business. Investing wisely can deliver a sustainable competitive advantage, but the reverse also is true: poor allocation of resources can undercut a corporation's strategic position. All capital investment analyses involve quantifying the required resources and the benefits accruing to the company from the investment and establishing a measure of the cost/benefit ratio. Those conducting such analyses use evaluation methods, usually net present value, internal rate of return and payback period or, less conventionally, ranked projects and real options analysis. These enable executives to make more informed and objective choices. But of course the value of any of these measures depends on whether it captures all material sources of value and cost and measures them accurately.

**Capital investment assessments must be realistic and rigorous. It's important to not be a starry-eyed optimist and overstate the advantages. The reverse is also true: Ignoring or systematically undervaluing potential benefits will harm a company's prospects.**

Assessments must be realistic and rigorous; the performance of the company is at stake. It's important to not be a starry-eyed optimist and overstate the advantages. The reverse is also true: Ignoring or systematically undervaluing

potential benefits will harm a company's prospects, especially if competitors do a better job of determining the ways an investment can provide value.

Investments in analytics can generate three basic sources of value:

- An increase in the IT department's efficiency,
- A gain in business efficiency and
- Improved business effectiveness.

Let's consider these in order.

### ***Sources of IT Efficiency***

One important reason to invest in new analytics tools or applications is to enhance IT department efficiency and therefore generate cost savings. Examples of how this can be achieved include vendor consolidation, which can reduce annual maintenance costs, or replacing home-grown solutions with packaged analytics, since the latter may cost less to support and maintain than the former. In each case, the investment will enable a company to reduce its annual maintenance fees, cut the internal cost of

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enhancing or upgrading the software, or some combination of the two. New analytic software also may eliminate the need for manual staging or manipulation of data by the IT department.

Improving IT efficiency is an important source of value, one that will be especially beneficial if a company is using a heterogeneous array of legacy and home-grown applications across multiple business units. Organizations are likely to focus heavily on this value element if the software

investment under consideration is part of a broader effort such as creating an analytics center of excellence or shared analytical services if the main rationale for doing so is to get IT costs down. Or it may be prompted by the challenge of maintaining multiple development environments in a scattered IT landscape.

Especially if the project is championed and managed by the IT department, the assessment likely will stop here, since the evaluation is looking only at refining an existing deployment rather than considering whether to invest in making a new, broader set of analytics capabilities available in the full range of business units and departments. This would be a mistake.

### ***Sources of Business Efficiency***

Another source of value from analytics is enhancing business efficiency. This comes in many forms. For instance, as organizations gain better perspective on revenue opportunities and cost drivers they are able to make more optimal decisions that can shorten sales cycles. Amazon's redefinition of the

book publishing supply chain using the Internet and logistics management technologies enabled it to cut the costs of getting books to people and substantially increase the choices available to buyers wherever they're situated. The online retailer now uses analytics to discern each customer's tastes based on his or her buying and browsing history and applies this understanding in actively presenting customers with items from its vast range of available products in order to encourage and facilitate incremental sales.

Business managers and executives use analytics to make better decisions. For example, they can determine which of several options is the least expensive. The answer may not always be obvious if there are differences in the short- or long-run costs, or in more complex situations where a more expensive item saves considerably more through reduced preparation costs, or where volume discounts earned from a vendor by another department would make the purchase of a costly item far less expensive than an alternative. Having the ability to quickly assess a broad set of data to make an accurate, informed decision can reduce expenses, sometimes significantly.

Having the right set of business analytics also can increase the productivity of knowledge workers by automating what otherwise requires manual calculations or by making all necessary data readily available. Properly structured, analytics gives such users of analytics software the ability to work without having to have ongoing IT department involvement – another productivity booster.

**Analytics can enable business managers and executives to make better decisions, increase the productivity of knowledge workers and help companies better identify promising business opportunities.**

Analytics also can help companies better identify the most promising business opportunities. By focusing their efforts on these, they can increase sales and marketing productivity. Analytics can identify unnecessary costs by comparing expenses in various parts of the business to find inefficiencies or duplicate spending for products or services. Activity-based costing can more accurately measure the true economic cost of products or services. Activity-based management uses this analysis, for example, to identify opportunities to improve efficiency or to set more appropriate sales incentives based on more accurate measures of economic profitability.

### ***Sources of Business Effectiveness***

The third source of value is business effectiveness. Efficiency is about doing things the right way; effectiveness is about doing the right things. Both are important, and both must be considered in making business decisions. After all, reducing the cost of manufacturing a defective product is not a winning strategy, but neither is a quality-at-any-cost approach. Often, organizations enhance efficiency by making incremental improvements to a product,



service or process. In contrast, an attempt to improve effectiveness almost always involves throwing out many assumptions about how something will be done. The invention of the practical cargo container to replace break bulk stevedoring completely transformed the transportation of goods and has been a keystone of the development of global trade. Dell's decision to sell directly to consumers, the emergence of on-line brokerage businesses such as E-trade and Wal-Mart's purchasing and supply chain innovations are all examples of how companies were able to redefine their business system using technology to differentiate and attain a competitive advantage.

While enhanced IT efficiency alone may provide enough justification for a project, the definitive reason for investing in analytics is to improve business performance. One aspect of this is improving visibility and insight. Visibility is

**The definitive reason for investing in analytics is to improve business performance.**

the ability to access relevant information quickly and in context. Thus, supply chain visibility is the ability to know when needed the location and status of the physical components, from raw materials to finished goods, as they move from suppliers through the stages of production to delivery to customers. "Insight" occurs when executives and managers gain a deeper understanding of the underlying causes of a situation or the likely outcome of a course of action under consideration. It is particularly valuable in a world of data clutter because in

today's complex business environment it can be difficult to discern meaning and the implications of decisions. Improving visibility and insight results in:

- better situational awareness by executives and managers
- a deeper understanding of the factors driving the situation and how best to deal with them
- being able to define and assess the impact of multiple courses of action for contingency planning purposes
- the acceleration of informed decision-making
- the ability to make consistently better decisions sooner.

Each of these will translate into a concrete improvement. Almost all will take the form of higher revenues, lower costs and expenses, reduced risk or some combination of these three. Here are some additional examples of potential sources of value:

Higher customer value	Greater production yields
Improved product mix (margins)	Better order fulfillment
Better sales pipeline conversion ratio	Faster collections
Enhanced customer retention	Lower production costs
More accurate demand forecasts	Reduced risk/impact of risks
More successful segmentation	Anticipate market changes sooner
Greater understanding of real costs	More efficient asset utilization.

Today there are far more opportunities for every part of the business to use analytics than ever before. The scope of useful business data that companies have collected and thus have available has expanded considerably over the



past two decades. New applications have proliferated, enabling corporations to acquire more and more detailed information about a wide range of corporate functions. Over this period, corporations – especially larger ones – have deployed software applications to manage a wide range of business functions. These applications not only manage and automate processes, they capture a wide range of data about almost every aspect of the business. ERP software not only captures debits and credits; it also can store details such as the terms and conditions of the transaction. CRM software centralizes customer data and the details of interactions with them. Supply chain software catalogs a wide range of data about the movement of products and materiel through an organization and the time intervals and durations associated with such movements. Maintenance software can tell you about repair frequencies and, from a risk management standpoint, any delays or deferrals of that maintenance.

More open standards have made this data far more accessible than once was the case. In addition, the increased processing power and the continued push to make sophisticated applications more accessible has given managers greater ability to tame these vast stores of data and access to the power of analytic software to derive meaning from it. Executives and managers today can have better visibility into business conditions as well as a greater ability to consider options and the implications of each in formulating their decisions.

**By themselves, reports are a blunt instrument; analytical applications can derive far greater value from all of the available data across the organization, and companies can add new analytics as changing circumstances require new evaluations.**

Having the right reporting system is a key to managing effectively. However, to realize the full value of your company's investments in business intelligence and reporting you need more than just simple reports. By themselves, reports are a blunt instrument; analytical applications can derive far greater value from all of the available data across the organization by providing deeper insight and greater visibility. Companies can return to this vast well of data, adding new analytics as changing circumstances require new evaluations.

Thus, if your company's customers purchase products or services on a regular basis, you can know their buying patterns – their order frequency, amounts, even the specific items. With this knowledge, you can alert account managers if the customer is overdue to place an order or if the amounts purchased are either higher or lower than expected.

These exception management capabilities are one of the deep sources of value that analytics applications provide to users. Information technology has enabled organizations to operate in a leaner fashion not just by automating manual processes but also because they permit executives and managers to focus their attention on the issues that require their skill or judgment to resolve an issue or take advantage of an opportunity.

One reason business analytics is gaining greater attention is because in addition to easier-to-use tools, a much wider range of analytic applications are now available. These applications combine specific, in-depth business knowledge and expertise with the underlying analytic engine. Applications exist for sales organizations, marketing, manufacturing, logistics, finance, and human resources – the full spectrum of activities in a company operating in almost any industry. Managers can monitor trends and exceptions in the sales pipelines, keep tabs on the responsiveness of marketing offers, examine the real impact of weather on manufacturing yields or store traffic and so on. They can quickly deliver business value by achieving the improvements listed above.

Using better analytic software also can deliver business value because it enables executives and managers to quickly identify the sources of opportunity or the root causes of a business issue. Getting to the numbers behind the numbers gives them a better understanding so they can make better decisions faster and more consistently.

Having a good understanding of historical data is valuable, but applying predictive analytics can make it even more so. Predictive analytics utilize a range of statistical and data mining techniques to predict future outcomes more accurately. Analytic applications that can perform predictive analyses are becoming much more accessible to a wider group of business users beyond the Ph.D.s and highly trained specialists who were the earlier users.

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Connecting people with a deep understanding of business with software that can coax out deeper forward-looking insights can provide a company with a significant competitive advantage.

By using analytic algorithms to assess historical data, companies can develop more accurate models. These models can be used to maximize the value of customers (by improving retention or increasing up-sale opportunities), minimize business risks and reduce fraud. Models also can diminish business risk when used for contingency planning: What are the biggest drivers of profitability in this division and what happens when those factors change? What are the best courses of action the company can take to mitigate those risks? Are there signs the company can monitor that will serve as an early warning that a specific risk factor appears likely to happen?

In the end, it's important to focus on the purpose of any investment. In the case of analytics, your company may find it takes too long or requires too much effort to provide decision-makers with better information. In this case, the value in being able to use analytics to sort through a wide range of data is not in being able to play around with more numbers faster and more

flexibly, but rather to enable good managers to make better decisions faster and more consistently.

## Understanding Cost Drivers

One benefit companies often achieve by operating more intelligently is avoiding costs. A potentially important part of building the business case for analytics therefore involves understanding the finer points of cost drivers in your company. Cost drivers, as the name implies, are those factors that cause costs to be incurred. Simple, obvious examples of direct cost drivers include the number of hours of direct labor or pounds of material to produce a product. To reduce the total cost of direct labor or materials or labor you would need to trim the hours or pounds per unit – a straightforward efficiency improvement.

Some drivers are relatively easy to spot, but others are not, usually because the connection between the driver and the cost incurred is indirect or may not be easy to identify. Business analytics can make it possible for companies to uncover the drivers of avoidable costs that may be hard to find just by eyeballing data or might take longer to identify using other methods such as employee interviews. For example, how much is it worth for managers to be able to isolate the cause of a cost issue three days sooner? Or what if you could use analytics to shorten the time-to-market by three weeks, meaning that rented facilities and equipment could be returned sooner? If it costs your company, say, \$12,000 to acquire a customer and the purpose of deploying a predictive analytics application is to raise customer retention from X% to Y%, how much is that worth? If it turns out that your current cost allocation methods are inaccurate (and therefore pricing and sales incentives are wrong), what is the value of improving the allocation methodology? If the answer is even tenths of a percentage point of revenue, the impact on company's performance will more than justify the investment in analytics.

**What if you could use analytics to shorten the time-to-market by three weeks, meaning that rented facilities and equipment could be returned sooner?**

Because the business impact of analytics may not always be obvious, it's important in developing a business case to consider opportunities to use analytics to identify hidden or indirect cost drivers or find ways to address a cost-related issue sooner.

## Consider All Costs of the Investment

Good IT investment governance – the process by which a company allocates its capital budget optimally – requires a complete understanding of costs as well as benefits. Unfortunately, companies routinely overlook important costs.

The reason for examining total lifecycle costs, which includes both upfront and continuing costs, is to be able to compare investments on an apples-to-apples basis over the total period under consideration. The reason to undertake this is that some options may require additional purchases to be workable (hence, “total”) and the cost profiles may be different over time.

Software in particular is prone to having hidden costs; vendors may be happy to give away some things if they believe that over the long run they will make money. For instance, one application that you are considering may be “free” but only in the sense that it’s included in some other suite of products that the company already owns. However, for it to be usable, your company may need to buy additional licenses of other software, or the “free” part of the contract may apply only to a limited number of users. Moreover, the initial software license may be free but there are likely to be annual maintenance fees for technical support and upgrades. Some software will run on existing hardware while others will require additional capacity or different technology. Over time, for different options the sum of all of these costs can be significantly different. Only by considering all of them can a company make a reasonable judgment on which is the optimal investment.

## Use a Disciplined Evaluation Framework

A framework is a conceptual structure that allows for a consistent and rigorous analysis of an issue. A useful framework speeds problem-solving and makes the process more reliable because it guides the user through a methodical examination of all of the relevant elements. Does your company have a disciplined software evaluation framework? Whether it does or not, here are three key questions to ask yourself – where the answer is “no,” you must address this issue.

- **Does your company have all the right people involved in the specification and assessment process?**  
Applying the framework well requires that all the right people are involved. In this case you will need line-of-business, Finance and the IT department involved from the start to ensure that all requirements and viewpoints are reflected in the purchasing process.
- **Is everyone up-to-date on what’s possible?**  
Very likely the IT department will know the answer from a technical standpoint. However, it’s often the case that business people are not current on how state-of-the-art translates into capabilities that will allow them to operate more effectively and efficiently. It’s important for people on the business side of the evaluation team to find out what’s feasible and how it can solve day-to-day business issues.
- **Does your company have the right process to use a disciplined framework?**  
Ensure your framework supports the proper recognition and weighting of cost and benefit factors.

A disciplined evaluation framework provides the necessary control for ensuring that all of the benefits and costs have been incorporated into an assessment. When applied to all capital projects, and especially IT, it allows

your company to make the best set of choices available and maximize its return on investment.

## Conclusions and Recommendations

Business analytics investments are more important than ever for business competitiveness and profitability. They are becoming increasingly essential to maximize a company's return on investment. However, organizations must assess the value of the investment properly. This means understanding how analytic software can affect both efficiency and effectiveness – not just the impact on the IT department's operations but how business analytics can be used to improve business operations. And that understanding must extend beyond just the immediate impact to the full lifecycle of the investment.

To assure this will happen, companies must have and use a disciplined investment evaluation framework that incorporates all sources of value and a comprehensive set of lifecycle costs. They must incorporate the perspectives of both the IT department and business. Especially in the case of analytics software, people in line-of-business units must play a key role in developing and evaluating this investment to ensure that all aspects of the investment are considered.

## About Ventana Research

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