

The Mandate for Business Analytics

As companies seek new advantage, they are looking to Business Analytics for higher returns from two primary investments sources—information and expertise.

Summary

This whitepaper will discuss the business environment that has evolved as enterprises continually seek to find and sustain a competitive advantage by creating an information advantage over their business rivals. In particular, it will describe the context for modern businesses' use of information technology and how it serves as a source of competitive advantage. As expected in a competitive environment, modern businesses have evolved to a state where prior advantages have been commoditized or competed away. As companies seek new advantage, they are looking to Business Analytics for higher returns from two primary investments sources—information and expertise. It is Business Analytics that is emerging as the tool to yield previously undiscovered insights and uncover unanticipated problems generating new business value.

As businesses move to pursue these previously unmined areas of opportunity, they find themselves limited and constrained by existing IT tools. The promise to deliver information is easily misinterpreted and extended as a promise to deliver analytics, but these attempts to force fit these tools and apply them to analysis tasks are misguided. It is an easy and increasingly common mistake to deploy the Business Intelligence (BI) infrastructure and user tools on analytic tasks that they are not architected to support. This unfortunate misapplication of the infrastructure is limiting the Return on Information and Return on Expertise that companies are rightfully pursuing through new investments in analytics. When timely data access is combined with specialized business expertise in a compelling user-experience, the enterprise can achieve a sustainable Information Advantage from Business Analytics.

1

As companies seek new advantage, they are looking to Business Analytics for higher returns from two primary investments sources—information and expertise.

Introduction

It is becoming increasingly apparent that we all compete from within information businesses. At some level, all businesses, whether they manufacture goods or provide services, compete in the global economy as information-driven enterprises. This has fueled the rapid development and deployment over the past few decades of various forms of Information Technology (IT). IT has become the source of many systems which have conferred relative advantage to early adopters. Examples include information systems such as Management Information Systems (MIS), Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Supply Chain Management (SCM), Business Intelligence (BI), etc. Each successive wave lays the foundation for incremental advantage. Each wave of information technology extends the enterprises' abilities to operate more efficiently or at lower cost, delivering competitive advantage as an information advantage.

As IT has matured and the level of competition has risen, many more companies have sought to acquire these same information technologies. Thus, it is not surprising that the IT tools and capabilities have become ubiquitous and commonplace, and have declined as a source of differentiation. This incremental upping of the ante is the basis of raising the bar to success, and it requires that companies constantly seek out new sources of advantage from their investments in information and expertise.

As any competitive enterprise has already recognized, there is a limit to how much cost or cycle time can be squeezed out of today's operations and a limit to how persistent this advantage will be as others adapt and improve along the same fronts. Enterprises are converging on similar (if not identical) information systems. Virtually all corporations populate data warehouses, monitor dashboards, and distribute reports. We have all evolved into using the same tools to support the enterprise, and while this infrastructure is incrementally improving over time (faster network switches, cheaper components, more powerful applications, etc.) there is little, if any, competitive advantage to be derived from it. In the case of BI, for example, the same "plumbing" and user tools are in place for users to access, format, and present information in a variety of desired layouts. This overall leveling of the playing field has forced enterprises to seek new sources of competitive advantage to operate more intelligently and more efficiently as they bring their products and/or services to market. All the low hanging fruit has been plucked. Solutions to problems that lead to real differentiation and benefit are not those that can be solved by the existing BI stack.

Business Intelligence: Monitoring the Steady State

The existing BI infrastructure works well to pipe and present information to business users in a standard format and layout. When everything in the business is going as planned, it may not be necessary to go any further than dashboards and formatted reports distributed periodically. However, in the competitive business environment, managers are seeking ways to apply their unique understanding of the business environment to achieve a deeper and more detailed understanding of the data that is presented in these reports, so they can act and make decisions by iterating between their experience and the facts.

The need for a richer data experience is even more acute if a particular metric or KPI is not performing to goal. This is the point at which most managers are frustrated by the limitations inherent with BI. While the BI infrastructure does allow some measure of query and exploration beyond what is presented in a formatted report, this is limited by what has been pre-calculated and pre-populated in the company's data warehouses. Users can perform some level of navigation (such as drill down, roll up, etc.), but anything more sophisticated is not possible. The problem lies in the fact that the Business Intelligence stack is not explicitly architected to support problem analysis and understanding. That is to say, BI is not architected to support Business Analytics.

Business Analytics: Addressing Critical Situations

Analytics is a broadly used term that has many meanings to different people. Some vendors classify their query and reporting features as analytic tools based on their graphical presentation of facts. Some pure-play analytic companies offer sophisticated statistical capabilities that allow highly trained individuals to construct predictive models for various purposes. For this discussion, I restrict the meaning of Business Analytics to tools and methods that give the business users (i.e. decision makers) insight and understanding of not just *what* happened, but *why* it happened, with the purpose of using this insight to prescribe action.

Business Analytics marries the business professional's broad knowledge of the business environment and business processes, taking as input the descriptive information (or facts) delivered by the BI stack enabling the user to reach insights that can be prescriptive to guide subsequent actions and decisions. Business Analytics has a specific purpose of melding information and expertise to guide business action. This is the basis for a clear and sustainable Information Advantage that makes the enterprise intelligent and responsive in the face of unexpected events and unanticipated changes.

The importance of Business Analytics as a source of Information Advantage is being recognized for its transformational potential. From a business professional's perspective, data was previously locked away in difficult-to-access databases (or in the specialized brains of expert users) that required specialized knowledge and skills to obtain. Data access was reserved for IT users who ran specialized queries and reports as requested or to department heads who scratched their heads over the problem of better leveraging and disseminating the expertise of their most knowledgeable workers. The biggest underutilized computing resource in an organization is the minds of its information workers. Due to a variety of barriers (technical and otherwise) the IT department became the gatekeeper of corporate data and enterprise information. Once the business data is extracted, it is often summarized (and consequently obfuscated), further frustrating efforts of the business professional to effectively apply her specialized expertise in understanding the issues and formulating a response.

A similar situation describes the business professional's access to analytics. Currently, almost all analytics is performed 'offline' by an analyst who has specialized statistical education and training. The power and value of analytics cannot be reserved for this small sub-segment of the enterprise. Companies that recognize that business professionals possess both the general business knowledge and the specific domain expertise that must guide decision making on all levels will enjoy a distinct Information Advantage over those that do not. Just as BI brought *data* access to the business professional in a usable way, BA will bring *analytics* to the business user in a usable package. Some have described BI as providing a Return on Information; building on this, Business Analytics will provide a Return on Experience by making analytics business friendly.

Business Analytics has a specific purpose of melding information and expertise to guide business action.

The ability to marry the data from databases with the expertise from business professionals is transformational to the enterprise that can bring these assets together. For the first time, managers with a deep understanding of the business will have both access to (near) real-time data, along with the analysis tools to iteratively interact with enterprise data, to generate insights and understanding of business situations. The business professional will be empowered to ask and answer questions about the business not previously possible simply because it had required months to obtain the data and/or the only analytic tool available was a spreadsheet. Empowering knowledge workers in such a large scale by pushing the information access and business analytic tools into the hands of the users best suited to understand and take action to improve the business will lead to distinct Information Advantages beyond what is possible under the current infrastructure.

The importance of Business Analytics as the source of Information Advantage and the next wave of competitive advantage can be witnessed in numerous places. Every company that creates, stores, or processes data has already started offering analytic products and services that promise greater understanding and insight. Oracle, SAS, SAP, Microsoft, and others all recognize that the commoditized BI stack can no longer provide a competitive advantage. The potential of BA is much more promising for delivering high-impact decisions that can confer an Information Advantage to companies that have empowered their managers and business professionals with Business Analytic tools.

What's Wrong with the Existing Infrastructure?

While the BI infrastructure can serve as a foundation for the emerging BA value proposition, the requirements are different from what the BI vendors are able to provide. (See Table 1 below for a comparison of the Business Analytics and Business Intelligence value propositions.) While BI satisfied the need to know what was happening across multiple facets of the enterprise's operations, this was largely positioned for monitoring and long-term planning purposes. Managers received aggregated reports on how their departments were performing along their pre-defined key performance indicators (KPI's) and operational metrics. Once the reports were generated and the decision makers could see what had occurred, these outputs were used to initiate strategic, long-term discussions.

No one can refute the benefit of knowing these facts. Everyone from the Board of Directors on down now had easy (even scheduled and automated) access to business facts on a level that makes sense for the audience. This has become so ingrained that today it is getting codified and mandated via various corporate governance and compliance requirements, especially for public companies (e.g. Sarbanes Oxley for finance and accounting). However, as business professionals increasingly need to see why things occurred, the limitations of the BI stack are becoming apparent. Business professionals must begin to move to solve problems that are not naturally addressable by the tools in the BI stack.

Business Analytics	Business Intelligence
Driven by business professional	Initiated by IT
Detailed	Aggregated
Business professionals that need to take action	Information consumers that need to know
Why it happened	What happened
Framework for answering any question that may arise	Answers to well-defined, pre-posed questions
Flexible, iterative, responsive	Prescribed, routinized, static
Analysis as a means to understand	Reports as an end product

Table 1. Comparing and Contrasting Business Analytics and Business Intelligence

BI Falls Short as an Analytic Framework

BI originated as an IT solution to pipe the information that business professionals were requesting with increasing frequency. It evolved as a way to free the IT department from the lengthy process of constructing custom queries on behalf of the business professional every time she had a slightly different question to explore. In practice, BI created an entirely parallel but separate data repository with its own structure, query language, and end-user tools. While constructing this parallel data universe or 'sandbox' for business users afforded advantages such as speed (subsets of pre-aggregate data), relative ease of use (high level, graphical query), and the ability to define business rules and logic into the data structure, this parallel data space has many downsides as well. Building, maintaining, and administering multiple data repositories has a host of drawbacks such as redundancy, data integrity, latency, etc.

However, the crux of the problem lies in using the BI stack to perform analytics, a purpose for which it is not suited. Business Intelligence relies on repetitive, pre-posed questions. The infrastructure can quickly serve up answers to the standard questions that business professionals commonly ask. The metrics or numbers are calculated in advance and stored for quick access when they are needed. Pathways and relationships between and among these metrics must be pre-defined, to give the user any ability to navigate up and down pre-defined aggregations, or across to pre-defined related facts. The Business Intelligence infrastructure performs beautifully when all the relationships are known in advance, these relationships remain constant, and the environment is static. Unfortunately, although these conditions can be approximated in a planning environment, they are totally inappropriate for the more dynamic operating world.

The shortcomings of misapplying existing BI tools for analysis are especially critical when something unexpected occurs. When faced with an aberration from the norm, the business professional/decision maker will naturally turn the query towards why the event occurred in order to formulate an informed response. This event will trigger the need for analysis. Clearly, this type of question cannot be pre-posed and the answer does not exist in the BI solution's 'sandbox' data structures. The speed and responsiveness of the BI stack is predicated on the narrow perspective of *a priori* enquiry paths. Often in a competitive environment, what makes an event significant is that it is unanticipated. Any event of significance will not be one that the business user will have anticipated; by definition, the BI infrastructure will fail in these critical situations. Relying on BI in this case can be compared to peering at data through a tunnel at a time when the user needs sweeping panoramas of the internal and external data environment. Only when the business user can see the forest *and* the trees will he be able to detect the patterns that precipitated the unexpected outcome, predict their future occurrences, and take the steps to avoid or control them.

7

The Business Intelligence infrastructure performs beautifully when all the relationships are known in advance, these relationships remain constant, and the environment is static.

End User Tools

In addition to the limited perspective provided by BI, there is the lack of appropriate tools that the business user can draw on to perform the actual analysis of the data. There are certainly a number of analytics and statistics tools available for desktop use, but none of these is purposed for Business Analytics. Universally these tools, often academic in their origins, are designed and implemented for the highly trained analyst roles that exist only at large companies or governmental entities which perform market research, risk analyses, portfolio management, etc. None of the business professionals being asked to make informed decisions has the tools to perform even simple analyses, irrespective of data availability.

In order to generate an Information Advantage, a Business Analytic tool must provide a user environment that facilitates merging of data immediately and interactively with the user's expertise. Few, if any, of these tools are concerned with capturing and leveraging these two simultaneously to increase the enterprise's Return on Experience. It is often the case that users resort to using woefully inappropriate tools for data analysis purposes. Perhaps the biggest admission that the BI stack cannot meet the needs of the analytic user is that the only option they offer is to port the available data into a spreadsheet such as Excel, and users tolerate the inherent limitations of using this spreadsheet tool for a task for which it is not designed. This flow from BI (data access) to the Excel environment (spreadsheets) is not designed to meet the specific needs or opportunities that the business professional has when performing business analyses. Even when the analysis is forced into the spreadsheet environment because it is the only solution that exists, the resulting situation leads to islands of analytic activity not suited for distribution, collaboration, or institutional learning.

Capabilities to Meet Business Professional's Needs and Time Constraints

Meeting the specific needs of this emerging class of business professional will be critical for any tool providing Business Analytics capabilities. The business professional approaches the analysis task with a different set of requirements than traditional analysts who perform long-range planning and modeling rather than tactical decision making. This type of knowledge worker has unique domain expertise and business skills that can and need to be applied to analyzing problems. The need for an easy-to-experience solution will be even more critical when addressing this broad market of business professionals. Take, for example, a Sales Manager who is responsible for the deals that drive divisional revenue. This manager may not devote large amounts of time to analyzing raw data that can have an impact on his field representatives' success rate in pursuing and closing deals. However, this Sales Manager can benefit immensely from Business Analytics tools that lower the hurdles preventing him from availing these insights.

The tools must package and present the analytic capabilities in an appropriate environment where the business professional can apply his expertise. Much like the BI stack presents information in a user-appropriate format, so must BA present insights and decisions to users in a business-friendly package giving the business professional confidence to perform analyses when faced with unforeseen situations.

One important dimension to consider is that Business Analytics aims to affect business operations which are, by nature, very time critical. Perhaps it is

obvious that the faster the analysis can be performed, the more valuable it can be; however, one should consider the logical extreme: if an analysis takes too long or is too cumbersome to perform, its value is reduced to zero irrespective of whether it is performed because the window to act will have passed. In this case, the value of the analysis approaches zero and opportunity cost soars. For this reason Business Analytics must occur independent of an IT development cycle. By enabling business professionals to iteratively ask and answer questions independently of an IT development cycle, the enterprise arms its information workers with the capability to answer questions that were previously impossible to ask (much less answer) using the existing infrastructure.

A significant requirement for the BA stack to meet these users' needs is to provide thought-like interactivity and responsiveness with data. Answering the business professionals' questions involves slicing and viewing many data sources from multiple perspectives. The added benefit of this capability is that it invites users to interact and explore all the data available to them. Under the predefined structure of the BI stack, the opportunity for gaining understanding and uncovering knowledge is slim to none. With the BA stack enabled and the right set of end user tools, the opportunity for learning and generating insight is immediately available to a large number of users across the enterprise. Similar to how BI brought data access to all who wanted it, BA will bring analytics to all who want understanding (and control) of the business environment.

Conclusion

Providing users with a business-friendly analytic environment that embraces multiple sources of data, is easy to experience, invites exploration, and is unshackled from the IT development cycle will furnish unprecedented analytic power and an Information Advantage to a population of users that has been underserved. The integrative, panoramic perspective and deep experience of the business user can be joined with the sharply focused tools of analytics to yield results with meaningful and immediate impact on the business.

Although it is simple and seductive to deploy the existing BI infrastructure into analysis tasks, the perils of doing so are numerous. Many of the capabilities of BI sound similar to the capabilities of BA, and the vocabulary they share compounds an already blurry distinction. The BI and BA stacks are distinctly architected to deliver different value proposition to the enterprise and the users. Enterprises should reserve the BI stack for its intended purpose of data access and monitoring, and simultaneously deploy a BA infrastructure to provide tools and an analytic experience for their business professionals. Recognizing the difference and deploying the appropriate tools is how the information-driven enterprise will sustain an Information Advantage over competitors and establish a competitive advantage in the marketplace.

The integrative, panoramic perspective and deep experience of the business user can be joined with the sharply focused tools of analytics to yield results with meaningful and immediate impact on the business.



About Spotfire

For thousands of business users faced with day-to-day decisions, Spotfire analytics offers the platinum user experience for visually interacting with information. Distinguished by its intuitive ease and analytic power, Spotfire software rapidly reveals unseen threats and illuminates new opportunities, creating unprecedented economic value. Spotfire's customers include industry leaders among the Global 2000 that have deployed Spotfire analytics to gain an information advantage over their competitors. For more information, visit <http://www.spotfire.com>.

Spotfire® DecisionSite®

Spotfire, Inc.
212 Elm Street
Somerville, MA 02144 U.S.A.
Telephone +1.617.702.1600
Fax +1.617.702.1700
Toll-Free +1.800.245.4211

Spotfire AB
(European Headquarters)
Första Långgatan 26
SE-413 28 Göteborg, Sweden
Telephone +46.31.704.1500
Fax +46.31.704.1501

Spotfire Japan KK
(Japanese Headquarters)
Kinokuniya Bldg. 7F, 13-5,
Hatchobon 4-chrome
Chuo-Ku, Tokyo 104-0032 Japan
Telephone +81.3.5540.7321
Fax +81.3.3552.3166

www.spotfire.com

