101

REPORT SERIES

Smart Companies in the 21st Century: The Secrets of Creating Successful Business Intelligence Solutions

Wayne Eckerson



Executive Summary

Smart companies in the 21st century use business intelligence (BI) solutions to gain a clearer picture of their internal operations, customers, supply chain, and financial performance. They also derive significant ROI by using BI to devise better tactics and plans, respond more effectively to emergencies, and capitalize more quickly on new opportunities. In short, they are using BI to become intelligent about the way they do business.

BI solutions create learning organizations by enabling companies to follow a virtuous cycle of collecting and analyzing information, devising and acting on plans, and reviewing and refining the results. To support this cycle and gain the insights BI delivers, organizations need to implement a BI system comprised of data warehousing and analytical environments.

Smart companies recognize that the systems that support BI solutions are very different from other systems in the company. Well-designed BI systems are adaptive by nature; they continually change to answer new and different business questions. And the best way to adapt effectively is to start small and grow organically. Each new increment refines and extends the solution, adjusting to user feedback and new requirements.

Like a sprawling redwood forest, the best BI solutions take years to mature, expanding in breadth and depth over time. It is no coincidence that the value of a BI solution grows exponentially with the number of users and applications it supports.

However, not all BI solutions succeed. Even before a project begins, there are telltale signs indicating whether it will succeed, struggle, or fail. It's important that organizations understand the key indicators of success so they can surmount the challenges associated with every BI project. This report shows that successful BI solutions have the following characteristics:

- 1. Business sponsors are highly committed and actively involved in the project.
- 2. Business users and the BI technical team work together closely.
- 3. The BI system is viewed as an enterprise resource and given adequate funding and guidance to ensure long-term growth and viability.
- 4. Firms provide users both static and interactive online views of data.
- 5. The BI team has prior experience with BI and is assisted by vendor and independent consultants in a partnership arrangement.
- 6. The company's organizational culture reinforces the BI solution.

These and other traits signal success, but don't guarantee it. In the end, each organization needs to devise a plan and execute it. Ultimately, smart companies in the 21st century succeed by making sure the business—not the technical team—drives the BI solution and is accountable for its success.

About the Author



WAYNE ECKERSON is the director of research for The Data Warehousing Institute (TDWI), the leading provider of high-quality, in-depth education and research for data warehousing and business intelligence professionals worldwide. Eckerson oversees TDWI's research services and coordinates its BI Strategies education program.

Eckerson has written and spoken on data warehousing and business intelligence since 1994. He has published in-depth reports and articles about data integration, data quality, customer relationship management, online analytical processing (OLAP), Web-based analytical tools, analytic applications, and portals, among other topics. In addition, Eckerson has delivered presentations at industry conferences, user group meetings, and vendor seminars. He has also consulted with vendor and user firms.



Smart Companies in the 21st Century: The Secrets of Creating Successful Business Intelligence Solutions

by Wayne W. Eckerson

Research Sponsors

Actuate Corporation arcplan, Inc. Business Objects Cognos Inc. Crystal Decisions, Inc. Informatica Corporation MicroStrategy, Inc. Oracle Corporation

Table of Contents

2
3
4
4
5
6
7
9
1
1
3

The Profile of Success	14
Creating the Profile	14
Business Leadership	14
Alignment	17
Enterprise View	20
Budgets	22
Culture	23
Analytics	25
Project Team Competencies	27
Partnerships	28
Summary—Characteristics of Success	31
Guidelines for Success	32
Conclusion	35

Research Methodology

Report Scope. This report is designed for business executives who are evaluating whether to fund a business intelligence solution or who want to ensure the success of an existing solution. The report provides an overview of business intelligence concepts and components and then examines key indicators of BI success. **Methodology**. The research for this report is based on a survey that TDWI conducted in April 2003, as well as interviews with BI "experts" including enduser organizations, BI consultants, industry analysts, and report sponsors.

Survey Methodology. TDWI contacted BI professionals in its database and 101communications' database. (TDWI is a business unit of 101communications.) It also contacted BI professionals in lists from BetterManagement.com, Intelligent Enterprise magazine, and CIO magazine. In total, 686 people responded, 540 of which were qualified to complete the entire survey. Respondents were disgualified from taking the survey if they indicated that they work for a BI vendor or are a professor or student. Respondents were also disqualified if they said their organizations had no plans to deploy BI solutions. Branching logic accounts for most of the variation in the number of respondents answering each question. Multi-choice questions and rounding techniques account for totals that don't equal 100 percent.

Survey Demographics. A majority of the qualified survey respondents (54 percent) are corporate IT professionals. The remainder are independent consultants (29 percent) and business sponsors/users (17 percent). A majority of respondents work at large companies with revenues in excess of \$500 million. Most respondents are based in the United States and work in a range of industries, the largest portion being consulting and financial services. On average, respondent organizations have had a BI solution in place for 3.6 years. (See the illustrations at right for breakouts.)



The Need for Business Intelligence

Today's Business Climate. Today's business environment is brutal and uncompromising. Globalization has spawned bigger, more powerful competitors. Customers are more sophisticated and selective, demanding higher levels of service, quality, and customization. Deregulation has opened once hidebound industries to rough-and-tumble competition while new privacy regulations require firms to overhaul the way they collect and use customer information. The economic slowdown is squeezing profits and slowing capital investments just as the pace of business is accelerating into the realm of "real time."

In this climate, companies that work "smarter" have a competitive advantage. Rather than react to crises and opportunities, these organizations anticipate them. They also see and capitalize on opportunities before the competition; identify and resolve problems before they escalate into crises; and reengineer internal processes, products, and services to enhance customer satisfaction and loyalty.

Smart Organizations. The secret weapon that these "smart" organizations wield is information—more specifically, highly integrated information that empowers workers with new insights about what drives the business and how to optimize business processes to better meet strategic goals and objectives. In short, smart companies in the 21st century use business intelligence to increase their corporate agility and meet the needs of today's fast-paced and demanding marketplace.

The ROI of BI. Business intelligence (or BI for short) is not hype. Organizations around the world and in many different industries have been reaping the benefits of BI for years. For example:

- A major airline estimates it generated \$40 million in new revenue and saved \$31 million in costs last year from just four of the 35 applications running in its BI environment.
- A major distributor of electrical construction products generates \$9 million in cost savings and new revenues from an enterprisewide BI solution. The firm expects a payback of \$70 million by 2004.
- A state department of finance and revenue has closed its tax compliance gap by \$10 million a year while optimizing customer satisfaction, thanks to a new BI solution.
- A major electronics retailer attributes \$1.3 million a year in fewer out-of-stock situations to a BI solution. The same solution also saves \$2.3 million a year in inventory costs due to more accurate supplier shipments.
- A major automobile manufacturer generated a 2,000 percent ROI on a financial BI solution that saved the firm millions of dollars by identifying repossessed vehicle loans more quickly.

These are just a few of the many successful BI solutions at work today. However, it would be misleading to suggest that every BI solution generates substantial business value or return on investment. Not all companies succeed with BI. It takes a considerable amount of money, time, and business and technical leadership to create and sustain a BI solution that delivers real value. Unfortunately, many executives underestimate the commitment they and their organizations need to make to ensure success.

The good news is that most organizations eventually succeed, even if they fail initially. In a recent TDWI conference survey, only 18 percent of "stalled" BI projects were canceled out-

Organizations Must Work "Smarter" to Stay Ahead

"Smart" Companies Use Business Intelligence

Not All BI Projects Succeed, Initially right. The rest were given another chance after a restructuring of the project with new sponsors, project managers, consultants, or funding levels. With the benefit of hard-earned experience, most BI teams can deliver substantial value.

Report Overview. This report provides an overview of BI concepts and strategies for business executives who want to transform their organizations into "smart companies" in the 21st century. It uses survey data to define the key attributes of successful BI solutions, giving executives and organizations a benchmark against which to compare themselves. It then identifies critical success factors and pitfalls to avoid when creating a BI solution that delivers real benefits.

Understanding Business Intelligence

The "Data Refinery"

TDWI likens business intelligence to a "data refinery." To understand this analogy, think of an oil refinery. It's designed to take a raw material—crude oil—and process it into a multiplicity of products such as gasoline, jet fuel, kerosene, and lubricants. In the same way, a BI environment takes another raw material—data—and processes it into a multiplicity of information products. (See illustration 1).

A BI System Creates Many Information Products **From Data to Information.** More specifically, a data warehouse extracts data from multiple transaction or operational systems and integrates and stores the data in a dedicated database. For example, a data warehouse might match and merge customer records from five operational systems (e.g. orders, service, sales, shipments, and loyalty programs) into a single file. This extraction and integration process turns data into a new product—**information**.

From Information to Knowledge. Then, users equipped with analytical tools (e.g. query, reporting, OLAP, and data mining tools) access and analyze the information in the data warehouse. Their analysis identifies trends, patterns, and exceptions. Analytical tools enable users to turn information into knowledge.



Illustration 1. A BI environment can be thought of as a "data refinery."

From Knowledge to Rules. Armed with these insights, users then create **rules** from the trends and patterns they've discovered. These rules can be simple (e.g., "Order 50 new units whenever inventory falls below 25 units.") Or, they can be forecasts or "what if" projections based on past trends and working assumptions. Or the rules can be highly complex, generated by statistical algorithms or models. For example, statistically-generated rules can dynamically configure prices in response to changing market conditions, optimize freight hauling schedules in a large carrier network, or determine the best cross-sell opportunities using customer response models.

From Rules to Plans and Action. Users then create plans that implement the rules. For example, marketers create campaigns that define what offers to make to which customers through various channels (e.g. direct mail or email) based on their analysis of customer segments, models that predict how customers will respond to specific offers, and the results of previous campaigns. The plans turn knowledge and rules into action.

Feedback Loop. Once the plan is executed, the cycle repeats itself. Operational systems capture customer responses to the offers or plan and subsequent transactions (e.g. sales.) This data is then extracted by the data warehouse, integrated with other pertinent data, and analyzed by users who evaluate the effectiveness of their plans and refine them accordingly. The cycle then repeats itself.

Learning Organizations

Five-Step Learning Cycle. This virtuous cycle—in essence, "capture," "analyze," "plan," "act," and "review"—creates a learning organization that can respond flexibly and nimbly to new events in the marketplace. (See illustration 2) When organizations repeat this learning cycle, they gain a strong empirical understanding of how their business operates and how its decisions and actions affect the marketplace and vice versa.



Illustration 2. BI uses the same five-step learning cycle that humans use in everyday life: capture, analyze, plan, act, review.

This learning cycle embodies the essence of business intelligence, which TDWI defines as: *The processes, tools, and technologies required to turn data into information and information into knowledge and plans that drive effective business activity.*

The best BI solutions provide robust support for each step in the learning cycle and enhance an organization's ability to accelerate the cycle to stay ahead of customers and changing market conditions. BI Systems Mimic Human Decision Making **Human Learning**. In many respects, the best BI solutions are designed to mimic the processes that humans use every day to learn and make judicious decisions. During our lifetime, we experience millions of events that we assimilate, analyze, and turn into rules, consciously or not. Each time we apply a "rule," we get feedback on its validity, which enables us to refine the rules and adapt to changes in our environment. Our "gut instincts" are no more than the unconscious application of rules refined from millions and millions of life experiences.

Business Intelligence Framework

Now that we understand the conceptual basis of business intelligence, let's explore the components that comprise a BI environment.

Data Warehousing Environment. The diagram below depicts a basic BI environment as two intersecting ovals. (See illustration 3) TDWI calls the left-hand oval the "data warehousing environment." This is where the technical team spends 60 to 80 percent of its time. Its job is to *extract, clean, model, transform, transfer, and load* transaction data from one or more operational systems into the data warehouse.



BI Professionals Are Data Archaeologists

Most Business Users Consume Interactive Reports Illustration 3. At its most basic, a BI environment consists of a data warehousing environment and an analytical environment.

These data warehousing tasks are not easy because operational data is rarely clean, consistent, or easy to integrate. Like archaeologists, the technical team needs to decipher the meaning and validity of thousands of data elements and values in multiple operational systems. They then need to glue everything back together again into a single coherent "model" of the business, much like a paleontologist might reconstruct a life size model of a dinosaur from its bones.

Needless to say, these tasks take a tremendous amount of time and effort and require that technical teams have a deep understanding of business. In fact, no matter how much business savvy the technical team possesses, it still can't perform this work without step-by-step guidance from key business experts who can interpret the data and define the rules for gluing it back together.

Once data archaeology and analysis is complete, the technical team loads the integrated data into a data warehouse, which is typically a relational database optimized for query processing and report generation. Often, the technical team creates a customized subset of the data warehouse, called a data mart for users in a single department. A data mart can be implemented using a relational database or a specialized multidimensional database that lets users "slice and dice" data by common business dimensions such as customer, geography, time, and revenues. **Analytical Environment.** The right-hand oval in the previous diagram refers to the analytical environment, which is the domain of business users, who use analytical tools to query, report, analyze, mine, visualize, and, most importantly, act on the data in the data warehouse. Since the majority of business users simply want to interact with standard reports, the technical team creates these in advance and puts them on the corporate intranet. Users can either view the report as a static document, filter the report by relevant criteria (e.g. geography, products), or navigate the report (i.e. search, drill down, drill across) to change the view or level of detail. In addition, many organizations are delivering exception-driven reports, such as dashboards or scorecards, which show how performance compares to plan.

For users who want to explore the data in the warehouse in a more ad hoc fashion, the technical team usually creates a catalog of data fields that users can select from to create a query or custom report. This catalog—or meta data layer—shields users from the complexity of the back-end systems and ensures that queries are formed correctly to avoid erroneous results.

BI versus OLTP Systems

One mistake made by business executives is failing to understand the difference between a BI system and a transaction system, which runs the business on a daily basis (e.g. order entry, inventory, shipping) Many companies have botched BI systems by designing them as if they were transaction processing systems.

Design Differences. The key difference is that BI systems adapt to the business whereas transaction systems impose structure on it. (See Table 1) Since BI solutions are learning systems, they need to adapt continually to the changing concerns of the business. The questions that business people ask today are different from the ones they will ask tomorrow, next week, or next year.

In contrast, transaction systems are designed to impose structure on a well-defined business process—such as taking orders—so that it is done the same way every time no matter who is taking the order. Once you design a transaction system, you usually don't change it unless business practices change.

The opposite is true with a BI system. The more you change it, the better it becomes. And if it doesn't change to address new questions, it's not meeting the needs of the business. From a technical perspective, the things that change in a BI system are the data (e.g. new sources and summaries), the data model, the meta data, reports, and applications. It's also imperative to

System Design: OLTP vs. BI Systems

Transaction systems	Business intelligence systems
Automate processes	Support decision making
Designed for efficiency	Designed for effectiveness
Structure the business	Adapt to the business
React to events	 Anticipate events
Optimized for transactions	Optimized for queries

Table 1. Basic design differences between transaction systems and BI systems.

BI Systems Must Continually Change

The More You Change a BI System, the Better it Becomes implement enabling technologies that make it easy to implement changes.

So, the real challenge with a BI solution is how to design and manage a system that always changes. In other words, how do you create an adaptive system? This is certainly not easy, which is why many experts say building a BI system (or data warehouse) is a journey, not a destination.

Types of Data. The dichotomy between transaction systems and BI systems is also evident in the type of data that each manages. (See Table 2) OLTP systems track current transactions (debits, credits, and current account balance) and keep little history around (i.e. usually only 60 to 90 days of transactions).

In contrast, a BI system maintains *years* of detailed transactions from multiple OLTP systems. That's why many veteran BI systems now hold upwards of 50 terabytes. For comparison, one terabyte is roughly equivalent to the text contained in about 1 million books. Moreover, a BI system summarizes this data and applies calculations to create metrics that the business wants to track. To provide fast responses to queries against such large volumes of data requires a different architecture from OTLP systems—one that is optimized for queries rather than transactions.

ypes of Data: OLTP vs. BI			
Transaction data	Business intelligence data		
Current 🔫			
Continuously updated 🗸	→ Periodic snapshots		
Source-specific	Integrated		
Application-oriented	Subject-oriented		
Detailed only			

Table 2. Transaction and BI systems store very different types of data.

The Move to Real Time. Until recently, BI systems captured transactions by taking periodic "snapshots" of all the data in a transaction system at a certain time of day or week. But now, companies are trying to improve operational decisions (as opposed to strategic and tactical decisions, discussed further below) by analyzing integrated data in a more timely fashion. For example, store managers want to analyze store revenues from yesterday, not last month, and they want to compare their performance against the same day last year, as well as other stores in the chain.¹

To support this type of operational decision making, BI systems are beginning to adapt characteristics of transaction systems. BI teams are using "active data warehouses," "operational data stores," and middleware (including EAI and Web Services) to capture data in near real time and make it available to business users as soon as possible. Often, firms attach graphical "business dashboards" to near-real-time data feeds so business users can monitor the status of a process or event by watching changes in meters and gauges on a dashboard.

A BI System Maintains Historical Data

BI Systems Are

OTLP Systems

Becoming More like

¹ Since operational systems don't retain history or integrate data from other systems, this type of analysis is virtually impossible outside of the BI environment. However, many organizations—unbeknownst to the CEO—employ dozens of analysts whose full-time jobs more or less are to manually extract and transform disparate data into personal spreadsheets. The proliferation of these spreadsheets—which TDWI calls "spreadmarts"—is an insidious problem at many companies, and one that can only be addressed with a robust enterprise BI solution.

The Analytical Landscape

Does BI Stand for Analytics? Many people believe BI refers to the analytical environment only. Their perception is shaped by the fact that the only thing business users manipulate to access data and obtain answers to their questions is the analytical tool installed on their desktop or accessible from a Web browser. They don't necessarily see the data warehousing environment behind the analytical tool. However, as we have shown, BI is much bigger conceptually and architecturally than query-and-reporting and other analytical tools. Business intelligence systems create a learning environment that enables smart organizations to run their businesses more intelligently.

Evolution of Analytics. Nevertheless, there has been a sea change of activity in the analytical environment that is worth noting. Analytical vendors, many of whom have sponsored this report, have evolved considerably in the past decade. Many now offer suites of tools designed to serve every type of analytical need within an organization. Many also have embedded these tools within **packaged analytic applications**—prebuilt solutions geared to address the analytical requirements of a specific business area, such as procurement or supplier performance. Others have focused on delivering vertically integrated suites that combine data integration software with analytical tools and applications. Still others emphasize **analytic development platforms** for rapidly building custom analytic applications.²



Illustration 4. The majority of users (75 percent) use largely predefined reports to determine what happened (reporting or monitoring) in their domain of responsibility.

The illustration above shows the current analytical landscape, focusing primarily on tools, not analytic applications. (See illustration 4) It depicts four major categories of analytical tools represented by the intersecting circles. Most tools play in multiple categories, which is why the circles overlap.

Types of Analysis. The first three domains—report, analyze, and predict—are used to make strategic and tactical decisions. Strategic decisions involve analyzing data for long-term planning pur-

 2 For a complete overview of analytic applications, see the TDWI report titled *Analytic Applications: Build or Buy?* at www.dw-institute.com/aareport/.

BI Is More Than a Reporting Tool

BI Systems Support Strategic, Tactical, and Operational Analysis poses (i.e. next quarter or next year) or managing an organization's progress toward strategic goals and objectives. Balanced scorecards, planning, and budgeting all involve strategic analysis.

Tactical decisions, on the other hand, drive actions that need to take place in the near future (i.e. next week or month). Tactical decisions are more process-driven than strategic. For example, a retail buyer makes tactical decisions when he or she determines which merchandise to buy in what quantities for different stores.

As mentioned earlier, operational decisions need to be made immediately (i.e. today). Traditionally, users query a succession of OLTP systems and merge the results, if they bother at all. But the advent of active data warehousing and real-time analytical devices (e.g. dashboards, alerts, agents, and decision engines) makes it possible for business users to analyze near-real-time data within the context of historical, integrated data in the BI system. This gives users a much broader, more accurate frame of reference (e.g. year-over-year or seasonal comparisons) for making nitty-gritty operational decisions.

Reporting and Reacting. Not surprisingly, most users (75 percent) use tools in the reporting or monitoring domains. Here, users simply view "reports." These can be static (paper or online), parameterized (showing only selected variable), or interactive (search, drill down, or drill across within a predefined report view.) The reports can also be dynamic dashboards or scorecards that reflect the status of key performance indicators.

Analysis and Prediction. The analysis domain is the province of business analysts who spend a lot of time crunching data to create forecasts or explore the root cause of various problems or trends in the industry. The prediction domain is the province of statisticians or analysts trained in statistical methods. Companies use data mining tools to create predictive and other types of models that drive mission critical applications, such as identifying fraudulent credit card activity, forecasting when machine parts in an assembly line will fail, and anticipating which customers will respond to a given product offer.

Analytical Tools Must Provide Depth and Breadth	Analytical Depth. We know that organizations gain more value from their analytical environments as users move from reporting ("What happened?") to analysis ("Why did it happen?") to predictive analysis ("What will happen tomorrow?") to monitoring ("What just happened?")
	However, this doesn't mean that all users within an organization will follow this evolutionary path. It is important the organization as a whole evolve to greater levels of analytic sophistication in order to deliver the most value possible from BI investments.
	Analytical Breadth. To derive the full benefit of their analytical environment, companies must also deploy analytical tools broadly, to all knowledge workers in the organization as well as customers and suppliers. The benefits of BI accrue in proportion to the number of users using the system. The more broadly the BI system is used, the more benefits it will deliver.

Key: Fit the Tools to But it's important to deploy the right tools to the right types of user. Casual users who only want to view standard reports on a weekly basis will become befuddled if you give them a complicated OLAP or data mining tool. Historically, most analytical tools have been geared to power users, not casual users. This is why many organizations have experienced difficulty getting users to use the BI solution.

> Although many organizations would like to purchase a single analytical tool or suite, one size does not fit all-at least yet. Vendors of analytical tools have made great strides in recent years to broaden the audience for their products. In three years, it is likely that their analytical suites will offer best-of-breed functionality for each category depicted in the diagram on page 9.

the Users

The Value of Business Intelligence

At the beginning of this report, we cited six examples of organizations that are reaping significant value from BI investments. Despite these examples, many executives wonder whether BI is worth the money. Having been burned by sizable technology projects in the past, executives are understandably reluctant to sink hard-earned money into another IT venture.

Tale of Two Data Warehouses. Case in point: when two large telecommunication firms merged several years ago, the new combined company found itself with two largely redundant BI environments. But that's where the similarity ended. One BI environment was designed like an OLTP system, which made it difficult and expensive to implement changes. It cost \$20 million a year to maintain. The other environment had a much smaller BI budget, but a more flexible BI architecture, which was updated continuously, covered more subjects, and required a much smaller staff.

Not surprisingly, the organization decided to go with the smaller, more nimble data warehousing environment. But it also learned a stark lesson: large investments of money don't guarantee success with BI. "The [former] business got used to paying lots of money with few results," said a senior technology manager at the firm.

Justifying BI Solutions

Organizations that have deployed BI solutions cite many tangible and intangible benefits. Our survey shows that a majority of the benefits from BI solutions are intangible in nature. (See illustration 5)

Although it's difficult to associate a concrete ROI or dollar figure resulting from these benefits, most enlightened executives place huge value on having a "single version of the truth," better information for strategic and tactical decision making, and more efficient business processes. These executives know it's difficult to calculate—let alone foresee—all the benefits that accrue to an organization that has better access to information than it had in the past.



Illustration 5. A BI solution typically delivers more intangible benefits than tangible ones. Based on 510 respondents who rated the value of the benefits as "very high" or "bigh."

This is why so many executives do **not** insist on a rigorous cost-justification for BI projects. A 2001 TDWI conference survey showed that only 13 percent of all respondents had calculated the ROI of their BI projects, and only 37 percent were planning to do so.

BI Solutions Are Strategic for Many Executives

Money Doesn't Guarantee Success

BI Solutions Provide Intangible Benefits "Our CEO is the champion of our BI project because he wants to understand what each customer means to our firm in revenue and usage," says Ted Carlson, an energy information consultant at Wisconsin Public Service. "It was difficult to pinpoint the ROI for the project—we primarily justified it as a strategic asset. It has played a big role in attracting and retaining customers and keeping our stock price and credit rating at high levels compared to the rest of the industry."

Calculating ROI Is a Good Exercise However, most experts recommend that BI teams calculate the ROI for every BI project. "The exercise of calculating ROI ensures that you are aligning the project with business goals and gives you ammunition and documentation if your chief sponsor leaves and you have to justify the project all over again," says William McKnight, president of McKnight Associates, a BI consultancy in Plano, Texas. "Also, if you can't find enough tangible benefits to yield an acceptable ROI, you probably shouldn't undertake the project, even if it is strategic," he adds.

Creating BI Application Portfolios. Although ROI is a useful measure of value, many experts believe executives need to take a broader perspective of the value that BI can bring. Jill Dyché, a partner in Baseline Consulting Group in Sherman Oaks, California, says smart companies don't justify BI projects by assessing the payback on technology. Rather, they evaluate the degree to which applications in a BI portfolio further the company's top strategic goals and objectives.

Business Needs to"Too many organizations let technology drive requirements rather than business objectives," DychéDrive BIsays. "Creating a BI application portfolio prevents this and keeps the focus on the business."

To create a BI portfolio, the BI team first defines a set of "applications" that have relevance to the business, such as "faster monthly financial reporting," or "improved supplier performance," says Dyché. The BI team then maps all these applications against the firm's top business objectives. This creates a grid depicting the value of each BI application to the business and the likely order in which it should be deployed. (See table below.) The BI team then maps the BI applications to technical requirements, which forms the roadmap for the technical architecture and project plan.

BI Application	Business Objective			
	Decrease Costs	Increase Customer Value	Increase Customer Satisfaction	Increase Revenues per Transaction
Customer profitability modeling		X		X
Target marketing	Х	Х	Х	Х
Customer segmentation	Х		Х	
Fraud detection	Х			Х

Table 3. To create a BI portfolio, map BI applications to strategic business objectives. This ensures that business objectives, not technology, drive the order of BI projects and the technical architecture and project plan. (Courtesy, Baseline Consulting Group, 2003, www.baseline-consulting.com)

Managing Expectations

The portfolio strategy also helps manage the expectations of business executives, giving them a longer-term perspective of BI than many are inclined to adopt.

"Many executives don't see the value of a BI solution unless it fulfills their entire vision," says an executive director of BI at a major insurance company who wished to remain anonymous. "The key is to take their vision and break it into bite-sized chunks so they can see steady progress towards achieving their final vision. A portfolio strategy prevents executives from looking for that 'quick fix' to BI issues. Rather, it provides them with a series of incremental fixes to provide some relief along the way."

Working Incrementally. Many BI experts recommend that BI teams work in three to four month project increments with each increment demonstrating relevant value to the business. For example, a BI project for the vice president of sales might first deliver an executive desktop system that tracks revenues and commissions by salesperson and product. The next



Illustration 6. A BI architecture evolves gradually using an incremental and iterative development methodology, such that each new increment builds out more of the architecture.

phase might make this information available to field salespeople via a Web interface from the company's corporate intranet. A third phase might add pipeline and customer data.

This "go slow" incremental approach not only reassures executives that their vision will be fulfilled; it also enables developers to adjust and adapt the system to evolving user requirements without suffering expensive, time-consuming rewrites. Often, business users don't know what information they really want or how they want to analyze it until they actually see something and begin to use it. Also, giving users a "self-service" environment for accessing and analyzing data helps them discover the data and views they want more quickly than if they have to wait for the technical team to deliver reports.

"Incremental projects foster iterative development, both of which are key to BI success," says Dave Wells, director of education at TDWI and primary author of TDWI's Fundamentals of Data Warehousing class. This approach also means that technical developers don't need

Successful BI Projects Deliver New Value Every 3 to 4 Months

The Go-Slow Approach to specify the entire BI architecture up front. Rather, the architecture evolves with each iteration and increment. (See illustration 6 above.)

The Profile of Success

Creating the Profile

Let's assume you've established the value of a BI solution and you've made a commitment to fund it. Does your involvement stop there? Are you guaranteed success? What does a successful solution look like?

TDWI Success Metrics. To answer these questions, TDWI defines success using three attributes based on questions in our BI survey³. We believe these attributes reflect BI solutions that deliver strong business value and measurable ROI:

- 1. Does the BI solution support a critical process that runs the business on a daily basis?
- 2. Do users consider the BI solution **mission critical**? (For example, do they "scream" immediately if the system goes down?)
- 3. To what degree has your BI solution succeeded in meeting users' needs?

Profile of Success. Using these metrics, we created two profile groups from our survey respondents—those who responded positively to these questions and those who didn't. Respondents who replied positively comprise our "successful solution" profile group; those who responded lukewarm or negatively constitute the "struggling solution" profile group.⁴

We then examined how respondents in these two groups—"successful" and "struggling" answered the remaining survey questions about their organizations, BI environments, and use of technology. This method enables us to correlate success with numerous project attributes. The rest of this section describes these profiles so that you can benchmark your team's efforts (or potential efforts) against them.

Business Leadership

Business Sponsor. The importance of strong business leadership to the success of a BI project is almost an industry cliché. Every BI project needs a committed and involved business sponsor who can evangelize the solution, secure and sustain funding, navigate political issues, effect cultural change, and help prioritize projects. Our data verifies these claims, showing a strong correlation between the commitment of a business sponsor and the success rate of a BI solution. (See illustration 7)

Level of Commitment. In fact, what's most interesting is that successful projects are twice as likely to have "very committed" sponsors as "fairly committed" sponsors (67 percent versus 30 percent.) So, BI sponsors can't be half-hearted—or even three-quarters "hearted" about a BI solution—they must give it 100 percent if they want their projects to succeed. The more committed they are, the more successful their projects will be.

 3 To learn about the survey, turn to the "Research Methodology" section on page 2.

⁴ The "successful solution" group answered either "Definitely" or "Mostly" in response to the first two attribute questions and either "Very High" or "High" to the third question. The "struggling solution" group answered either "Somewhat" or "Not Really" in response to the first two questions and either "Average" or "Low" or "Very Low" to the third question. The two groups represent a subset of all qualified respondents, since some respondents may have selected a mix of positive and negative responses to these questions.

Successful BI Projects Have "Very Committed" Sponsors **Type of Sponsor.** The most effective sponsors are top business executives who are highly respected in their organizations and have a vision for how BI technology can drive corporate strategy or address a critical business problem or opportunity. These executives are either CXOs (CEO, CFO, COO) or business unit or functional leaders, according to our data (see illustration 8)



Illustration 7. Successful BI projects have a high proportion of "very committed" sponsors.



Illustration 8. CXOs and unit leaders most often sponsor BI projects. Percentages reflect "successful" projects.

IT Sponsors? Many BI experts and many of our survey respondents warn against letting the IT department sponsor and drive a BI project. We were therefore surprised to see that 21 percent of the sponsors in our "success" group are either IT executives, program managers, or project managers. This is due in part to semantics, not substance. We interviewed many "sponsors" for this report who came from the business side but were assigned to IT (or the BI team if outside of IT) to drive the BI project.

In addition, once a project becomes enterprise in scope, it is logical to hand corporate IT responsibility for managing (but not sponsoring) the project. "It's hard for a single business unit to deliver an enterprise data warehouse so the IT department is often the best group to handle this," says William McKnight. The IT group ensures compliance with enterprise infrastructure standards, but the business still needs to drive the final solution.

Business Drivers Spearhead the Project on Behalf of the Sponsor **Business Driver.** In most successful BI solutions, the business sponsor hands over the reigns of the project to a *business driver*. (See illustration 9) A driver is a business manager (or business-oriented IT manager) who spearheads the project on behalf of the sponsor. A business driver is very familiar with the business and has a solid understanding of information technology, or a willingness to learn.

Often, the business driver is the person who initiates the idea for the BI project and sells it to the sponsor, whose influence and credibility are vital to ensure the success of the project. Most successful business drivers dedicate at least half their time to nurturing the BI solution to inception. Once the project is implemented, the driver evangelizes the system's merits to increase usage and solicit feedback for improvement.



Illustration 9. Successful BI projects are more likely than struggling projects to have a business driver who spearheads the project on behalf of the sponsor.



Illustration 10. Successful BI solutions are led by business teams that perform better at the "soft" skills than unsuccessful solutions.

Business Capabilities. It goes without saying that the business side of the BI team needs to be good at what it does. For the most part, this means the business sponsor and driver must allocate enough time and attention to nurture the project through its entire lifecycle. They also must stick around for the duration of the project or garner sufficient consensus and momentum for the project to continue without them.

Not surprisingly, survey respondents rated business teams running successful BI solutions better at the "soft" issues involved in managing a BI project than teams that are struggling. These soft issues include communicating business requirements; selling, justifying, funding, growing, and prioritizing projects; specifying success metrics; managing risk; and assuming responsibility for the project's outcome. (See illustration 9)

Selling Projects and Securing Money. Interestingly, successful business teams score highest on "selling and justifying" the project but least well on specifying metrics for success. This reinforces the notion that many sponsors justify projects based on their strategic value, not measurable outcomes.

Time to Obtain A	oproval and Funding
Succeeding	7.28 months
Struggling	10.5 months

Illustration 11. Successful BI projects obtain funding in just over seven months, more than three months faster than struggling projects.

On average, it takes sponsors of successful projects 7.28 months to obtain approval and funding for a project. This seems like a long time, but it is significantly shorter than the 10.5 months it takes struggling projects to obtain approval and funding. (See illustration 11)

LESSONS LEARNED ABOUT SPONSORSHIP:

- Business sponsors should be top business executives who have considerable influence in the organization and possess a vision for how BI technology can be used to achieve key business strategies.
- Business sponsors must be very committed to the BI project, or the project's chances of success drop precipitously.
- Business sponsors should appoint business drivers to spearhead the project on their behalf.
- Business drivers should dedicate at least half their time to the BI project.
- *The IT department should never sponsor a BI project unless its leader was appointed from the business side to drive the project.*

Alignment

Degree of Alignment. Another key factor in successful BI solutions is alignment between the business sponsors and developers of the BI solution. As in business sponsorship, the degree of alignment makes a huge difference! Successful teams are almost five times as likely to be

"Highly Aligned" Teams Are 5 Times As Likely to Succeed



Illustration 12. Teams in which business and the BI project team are "very aligned" are likely to be successful.

"very aligned" as teams that struggle with BI. (See illustration 12) The key to ensuring success in BI is to achieve total alignment between the business and technical sides of your team.

Team Approach. So what does a "very aligned" team look like? First of all, it has an actively involved business sponsor or driver. Second, it's a team—not two or more disparate groups with different leaders, objectives, and cultures. "We sit side by side with business people and report into the same leadership," says Wes Flores, senior technology manger who helps run the BI team at the telecommunications firm Verizon. "The only difference is that we specialize in the data and they specialize in the business processes."

For this reason, experts caution against outsourcing BI development to a distant IT department or a third party with little knowledge or experience with the business. "The best companies integrate technology experts within the business at all levels," says Dr. Barbara Wixom, assistant professor at the University of Virginia's McIntire School of Commerce in Charlottesville. "It's not that you don't have an IT group, it's just that you don't have IT projects."

Ongoing Project Governance. Once a BI solution is deployed, alignment becomes even more critical. Smart organizations establish permanent governance structures to ensure that BI solutions adapt and respond quickly and flexibly to changing business requirements.

Our data shows that both successful and struggling BI solutions employ a wide variety of governance strategies, but successful solutions are more likely to employ BI steering committees. (See illustration 13) These committees are comprised of representatives from business units and functional areas who meet monthly or quarterly to guide the direction of the BI solution, set goals, establish priorities, and allocate funds.

Successful projects also employ BI working committees to guide the project on an operational level. These committees are comprised of BI developers and power users who meet weekly or monthly to address technical problems, discuss enhancements, and recommend action to the executive steering committee.

For example, Burlington Northern Santa Fe Railway (BNSF), a TDWI Best Practices winner, has a BI advisory board that meets quarterly to prioritize new projects, make adjustments to existing ones, and allocate funding. The board, which consists of directors and assistant vice presidents in various business units, uses ROI and other metrics to determine which projects

Business and Technical Personnel Work Closely Together

BI Steering Committees Are Critical



Illustration 13. Executive-level BI steering committees are key indicators of successful BI projects.

or enhancements to move ahead with. "Board members work together to determine which proposals are best for BNSF as a whole," says Phil Gollhoffer, director of data warehousing at BNSF.

Bill Schmarzo, a vice president at DecisionWorks Consulting in Portland, Oregon, adds that BI steering committees should reevaluate and reprioritize BI projects every six months. This keeps the BI solution focused sharply on addressing the most critical business problems, he says.

Alignment Strategies. Not all alignment strategies work. A business sponsor at a large insurance company said his firm hired specialists to "bridge the chasm" between the worlds of business and IT. These specialists gathered and translated business requirements into technical specifications. "The results have been poor," he said. The company also tried to embed IT within business units and departments. "That method worked OK when we were constructing technology 'silos' that weren't integrated, but now integration is our chairman's top priority."

Ultimately, there is no right or wrong way for organizations to align business and BI teams. Each organization needs to devise methods that match both its organizational and cultural environment and strategic objectives.

LESSONS LEARNED ABOUT ALIGNMENT:

- Organizations need to ensure that the BI project team and business representatives are working as a single team.
- *BI teams should form an executive-level steering committee to guide, fund, and prioritize BI projects.*
- Steering committees should reprioritize BI projects every six months.
- BI teams should form a working committee to guide the BI project from an operational level.
- Organizations need to devise alignment strategies that best fit their organizational culture and strategic objectives.

The Value of a BI Solution Increases with Scope

Enterprise View

The Value of an Enterprise View. Ultimately, most successful BI projects grow into enterprise resources. That's because the value of the BI resource grows exponentially with the number of subject areas it addresses and departments it serves. (See illustration 14) Each new subject area (e.g. finance or human resources) adds a new set of users who can benefit from the system, but more importantly, it lets existing users ask questions and integrate data across subject areas, which often yields extraordinary insight.



Illustration 14. The value of a BI solution grows exponentially with the number of subject areas it supports.

For example, a manufacturing firm that integrates data from the marketing, service, engineering, logistics, and sales departments can give users a more complete and accurate picture of a product's lifecycle than when analyzed from a single perspective.

Older, Wiser, and Richer. It's not surprising that successful BI solutions support more distinct groups of users and have been around longer than ones that are struggling. (See illustration 15) Healthy BI projects add two or three new subject areas each year. The older a successful BI project gets, the more value it provides.

This is not to say that given time all BI solutions will eventually succeed. Often, struggling solutions never generate enough initial value to gain traction or funding to continue growing. The old adage, "the rich get richer, and the poor get poorer" applies to business intelligence. "You need to give sponsors and end users some quick wins so they can see that you are spending their dollars wisely," says Rick Stotler, a senior manager at Vanderbilt University Medical Center in Nashville, Tennessee. Once you prove initial value, funding and support become easier to obtain.

Drivers Rotate in Larger Projects Success Breeds Sponsors. Interestingly, the turnover rate among sponsors for successful BI solutions is higher than for struggling ones. This is partly because successful BI solutions are older and outlive the tenure of their initial sponsors. But it's mostly because sponsorship evolves as a project expands. "It's quite natural for sponsors to change over time as the BI solution tackles new subject areas," says William McKnight.



Illustration 15. Successful BI solutions are older, support more groups (and subject areas), and have had more sponsors.

In the best cases, sponsors and drivers don't leave the project; they simply fade into the background as new sponsors and drivers are added to the executive steering committee. (The best steering committees are established at the outset of the initial project, not later.) The new sponsors play a vigorous role, adding their subject areas to the BI solution while the "old" sponsors serve more in an advisory capacity.



Illustration 16. Successful BI projects have leaders who are willing to fund the BI infrastructure.

Funding Infrastructure. Another sign of successful projects is the willingness of sponsors to fund the BI infrastructure on an ongoing basis, even in uncertain or difficult economic times. (See illustration 16) Infrastructure consists of the data warehousing environment (data warehouses, data marts, analytical tools and applications), the technical platform on which it runs (servers, storage, networks), and the people to feed and maintain the environment. A robust infrastructure ture is needed to support an enterprise BI solution that supports a multiplicity of applications.

A common problem in some projects is that sponsors are only interested in funding subject areas that interest them. Once they get the information they desire, they turn off the funding spigot. A cross-departmental BI advisory board can counteract this tendency.

LESSONS LEARNED ABOUT ENTERPRISE PROJECTS:

- *The value of a BI solution grows exponentially with the number of subject areas it supports.*
- Successful BI solutions have a succession of business sponsors as new subject areas are added to the solution.
- *The business must be willing to fund BI infrastructure to ensure that the BI solution can grow into a valuable enterprise resource.*

Budgets

Illustration 17. The size of a BI budget doesn't correlate with success. Annual budget includes hardware, software, services, and labor.

BI Budgets. Surprisingly, our data shows that companies are succeeding or failing in almost equal proportion regardless of the size of their BI budgets. (See illustration 17) More money doesn't necessarily guarantee success! However, a healthy budget is critical for the ongoing sustenance and health of a project.

Many successful BI teams start with a shoestring budget and prove the value of the BI service in an incremental fashion. As executives and users gain confidence in the team's ability to deliver value, they allocate more funds and resources with each new increment. Conversely, BI teams that receive sizable budgets up front often struggle to deliver real value. With a big budget, these teams often feel compelled to increase the scope of their project beyond a manageable level.

However, limited funding is the kiss of death for many projects. Once off the ground, a BI project needs a steady infusion of cash and resources to grow into an enterprise resource that provides significant value and ROI. Many survey respondents complained that a lack of funding is crippling their projects.

Lack of Resources Can Choke Growth and Benefits One survey respondent sums it up well: "We have a very small BI team, in an organization that is just starting to realize the benefits. Our ability to adapt and respond to changing business priorities is often limited by the small bandwidth of the team." Without more resources, this type of team won't be able to respond to business needs in a timely manner. Executives will begin questioning their value and worthiness to receive additional funds.

LESSONS LEARNED ABOUT BI BUDGETS:

- *New BI projects that prove their value incrementally are more likely to succeed than those given a big budget to start.*
- BI projects need a steady infusion of cash and resources to grow and adapt to the business.

Culture

An organization's culture, especially as it pertains to the use of information and technology, is another leading indicator of whether a BI project will succeed or stagnate.

Technology Adoption. Organizations that characterize themselves as "early adopters" of information technology are three times as likely to deploy a successful BI solution (32 versus 10 percent), while "late adopters" are almost twice as likely to struggle (32 versus 17 percent.) (See illustration 18)

Illustration 18. Early adopters of information technology tend to deliver successful BI solutions while late adopters tend to struggle.

Intuition versus Data Analysis. In addition, organizations whose users are accustomed to making decisions by analyzing data, rather than consulting their intuition, are more like to succeed with a BI initiative. (See illustration 19)

"Our company was used to making decisions on gut feel," says Deb Masdea, director of business information and analysis at the Scotts Company, a maker of lawn care products. "But now our executives believe strongly that fact-based decision making gives us a competitive advantage. Executives now ask, 'Where's the data to back up this decision?' and they expect sales people to use information to close deals, not just rely on the strength of their client relationships. And it's working!"

Sharing Information. Another indicator of success is how freely employees share information with each other. Organizations whose employees share information "very openly" are five times more likely to succeed with BI than those whose employees do not (17 percent to 3 percent), while those whose employees don't share information very openly are five times more likely to struggle with BI (23 percent to 4 percent.) (See illustration 20)

Illustration 19. Organizations that make decisions using data rather than intuition have higher success rates.

Illustration 20. The way organizations share information internally is an indicator of success with BI.

Middle managers often feel threatened by BI solutions because they are accustomed to preparing their own numbers to present to upper management. A BI solution gives upper management vital performance data before mid- and low-level managers get a chance to "spin" the numbers. "We had a lot of resistance from middle management when we first deployed the BI solution," says Scotts' Masdea.

Data as a Corporate Asset. Finally, organizations whose executives "definitely" view data as a corporate asset are six times as likely to be successful than those whose executives do not (31 percent versus 5 percent.) In contrast, firms where data is not really viewed as an asset are between two and three times as likely to struggle with BI projects. (See illustration 21)

Not surprisingly, the implementation of a BI system can often effect cultural and organizational change in the organization. Since organizational culture is notoriously difficult to change, this only happens when the change is instigated at the top. For example, a CEO who is using the BI system and expecting his or her subordinates to do likewise can start a chain reaction where individuals up and down the organization begin to make fact-based decisions and share information more openly and proactively.

Illustration 21. Successful companies are more likely to perceive data as a corporate asset.

LESSONS LEARNED ABOUT THE IMPACT OF CULTURE:

- Organizations that aggressively apply information technology and believe that information can provide a competitive advantage have a better chance of succeeding with BI.
- Organizations whose employees use data to make decisions (as opposed to intuition) and freely share information are more likely to succeed with BI.

Analytics

Analytical tools are the window to the BI solution for business users. How users react to these tools and the data they deliver often determines whether the overall BI solution is a success.

Driving Usage. Thus, it should be no surprise that 63 percent of the potential users of successful BI solutions use the system at least once a week. This is more than twice the percentage of potential users who use a struggling BI solution.

Successful BI teams develop strategies to encourage business users to use new analytical tools to assist in making informed decisions. David Norton, senior vice president of marketing at Harrah's Entertainment, Inc., which operates 26 casinos in 13 states, says his firm uses both a top-down and bottom-up strategy to encourage users to use the firm's BI solution.

"We develop our reports centrally and educate our casino property managers and teams how to use them. But we don't stop there," Norton says. "Our COO and I use the reports when we visit each property to review their performance and help them devise new marketing tactics against underperforming segments. The properties are now eager to obtain as much information as possible."

Interacting with Data. Another key factor in successful BI solutions is the degree to which the solution lets users interact with the data. Business users in successful BI projects are less likely to be viewing paper reports, and more likely to be viewing static online reports or navigating interactive online reports than business users in stagnating solutions. (See illustration 22)

Types of Analysis. Interestingly, successful solutions also have a higher percentage of users who view static online reports than struggling solutions do. This is no surprise to David Norton at Harrah's. The corporate team has developed roughly 100 static online marketing reports that are generated and viewed—and often printed—by corporate and field marketing managers and analysts at the casino.

A Strategy to Encourage Usage Is Critical

Illustration 22. Successful BI implementations tend to offer users more interaction with data.

Illustration 23. Building or buying a BI solution doesn't correlate with success.

"Our reports present a lot of information in a user-friendly way so marketers don't have to spend time running queries—it's all right there." However, Norton adds that Harrah's also offers OLAP-based reports for users who want or need to explore or "slice and dice" the data in an interactive fashion.

Build versus Buy. Finally, successful teams build and buy their BI solutions in equal percentages to struggling teams. However, the majority of both groups are still primarily building custom solutions. In many cases, they purchase a tool and customize it before delivering it to users.

LESSONS LEARNED ABOUT ANALYTICS:

- Successful organizations analyze the types of users they have and provide tools or applications that best fit their analytical needs.
- Successful BI teams develop strategies to encourage the use of a BI solution once deployed.
- Successful BI solutions offer users more interaction with the data and more types of analysis that can be performed.
- There is no correlation between building or buying a BI solution and a successful outcome.

Project Team Competencies

Many experts claim that assembling the technology is the easiest part of delivering a BI solution. The BI team must exhibit strong technical and project management skills to succeed.

Illustration 24. Successful BI solutions are deployed and upgraded more quickly than struggling BI solutions.

Illustration 25a. Successful BI teams score above average on many technical and project management criteria.

Illustration 25b. Successful BI teams deliver robust technical solutions.

Our data shows that successful BI teams work faster and deliver results sooner than their struggling counterparts. On average, successful BI teams deliver BI solutions one month faster than struggling teams (8.6 months versus 9.6 months). Also, successful BI teams upgrade the solution approximately one month sooner than their struggling counterparts (3 months versus 4 months), according to our data. (See illustration 24)

Successful BI teams also scored higher on a range of technical and project management capabilities compared to struggling teams. Successful teams scored especially well on their ability to communicate technical issues clearly, respond to business requirements, and develop desired functionality. (See illustration 25a).

Successful teams also deliver BI solutions with better overall effectiveness and better scalability, reliability, usability, response time, and data quality, according to our data. (See illustration 25b)

As we'll see below, the key to delivering a robust technical solution and successfully managing BI projects is to create a team of experienced, talented individuals who work closely with the business.

LESSONS LEARNED ABOUT PROJECT TEAMS:

• Successful BI teams hire top-notch technical developers and project managers.

Partnerships

A majority of both successful and struggling BI project teams use the services of both consultants and vendors to assist with the project. (Roughly one-quarter of both groups don't use consultants at all, according to the survey.)

The majority of both types of firms are "very reliant" or "fairly reliant" on consultants. (See illustration 26a) The use of consultants doesn't seem to make a difference in whether a com-

pany succeeds with BI. However, firms successful with BI tend to use consultants for application development and integration, and project management. (See Illustration 26b)

Vendor Partners. On the vendor side, more than 80 percent of both successful and struggling firms have at least one vendor serving as a strategic partner. In fact, both groups average 1.6 strategic vendor partners. (See illustration 27a.) Both groups also use vendors to provide a variety of services, notably information on BI methodologies and best practices, and product consulting. Successful firms mostly take advantage of vendors to assess and benchmark product usage and obtain a methodology and best practices for implementing BI. (See illustration 27b.)

Illustration 26a. Most BI projects are at least fairly reliant on consultants.

Illustration 26b. Firms with successful BI solutions use consultants for application development and application integration more than firms struggling with BI.

Illustration 27a. Firms average roughly 1.6 strategic vendor partners.

Illustration 27b. Successful BI teams leverage vendor methodologies, best practices, and product knowledge and assistance.

However, a strategic vendor partnership doesn't necessarily translate into over-reliance on vendors. Only a minority of both groups are "very reliant" on vendors. (See illustration 28) "The day you start to rely heavily on one or more vendors and become dependent upon them is the day that your checkbook breaks," says Verizon's Wes Flores.

However, others are less timid when it comes to partnering with vendors. "When I get a vendor relationship that works, I stick with the vendor," says Scotts' Masdea, who likes vendors who are responsive to her needs and incorporate her suggestions into the next round of product enhancements.

Illustration 28. Successful BI firms are more reliant on vendors than less successful ones.

LESSONS LEARNED ABOUT PARTNERSHIPS:

• Successful BI teams leverage the assistance of consultants and vendors but don't become too reliant on them.

Summary—Characteristics of Success

Active Sponsors and Drivers. In summary, successful BI teams exhibit specific characteristics. They have committed sponsors who have a vision for how BI can further an organization's strategic objectives. Sponsors appoint drivers to spearhead projects on their behalf, and drivers spend at least 50 percent of their time dedicated to the BI project.

Strong Alignment between Business and IT. Successful BI projects also exhibit a high degree of alignment between business and IT. In fact, the two groups function as a single team with minimal organizational delineation between them. Successful BI projects are guided by an executive steering committee that funds and prioritizes BI projects and a working committee that guides BI projects on an operational level.

Incremental Growth and Enterprise Scope. Successful BI projects start small but add value exponentially by adding new subject areas and users in increments of three to four months. As the project gains the confidence of executives and users, it picks up momentum and funding for infrastructure expansion. It eventually turns into a mature enterprise resource that serves many departments and provides unique cross-functional views of the data.

Superior Talent. Organizations that succeed with BI also hire and retain talented developers and project managers and leverage the expertise and resources of vendors and consultants without becoming too reliant on them. This balance enables the BI team, which works closely with business drivers, to deliver BI solutions that are fast, scalable, reliable, and highly available.

Receptive Culture. Organizational culture also dictates success. Organizations where BI flourishes typically sincerely believe in the value of information and invest in it. These organizations also encourage employees to use data rather than just intuition to make decisions, and they encourage users to share information for the betterment of the company.

Guidelines for Success

It's one thing to understand the key indicators of a successful BI solution, but it's another to roll up your sleeves and make the solution work. Below is a synthesis of the critical success factors for delivering successful BI solutions that we culled from our interviews with BI professionals and experts.

1. Establish a Vision

This point is so obvious it's often overlooked! One or more top executives must have a vision for how BI can advance the key strategies and objectives of the business. "You need a sponsor who has a vision for how to apply information technology and also really understands the business," says Randi Klarin, a technical manager at EDS in Rockville, Maryland.

It doesn't matter if every knowledge worker and manager in the company wants and needs the BI solution. The project simply won't succeed if the top executives aren't committed to it. "If your sponsor is not 100 percent behind the project, then look for another job," says Doug Hackney, president of Enterprise Group Ltd., a San Diego-based consultancy. "It's better to resign than work on a project that is doomed to fail."

If a potential BI project doesn't have an enthusiastic, committed sponsor, there are ways to cultivate one. Those with the vision need to communicate it to potential sponsors so they adopt it as their own. "The golden rule of BI is to make your sponsor a hero," Hackney says.

To make the case for the BI solution, it's helpful to use examples of direct competitors who are leveraging BI for competitive advantage. It also helps to bring in an outside consultant to validate concepts and educate sponsors about BI's potential at your firm. But don't sidestep potential pitfalls; be compelling, yet realistic. Also, make sure the sponsor assumes responsibility for the outcome of the project.

2. Evangelize the Vision

Since BI acts as a change agent within an organization, the sponsor (or a publicly appointed driver) must actively evangelize the importance of the project at all levels of the company. "I am the nexus of change management for our CRM/BI project," says a vice president and BI driver at a large insurance agency. "Our chairman evangelizes the project from the top and I cheerlead from the bottom among people in the field who interact with customers. When you work the top and the bottom, the middle comes along."

Sponsors and drivers should use all available communications channels to evangelize the project. First, they should map out the key players in the organization with influence and the ability to kill the project either actively or passively, and explain how the project will benefit them or their groups and what they need to do. Then, the sponsor/driver should develop a marketing plan that uses the corporate intranet, newsletters, annual reports, quotes in the general media, and company meetings and outings to build enthusiasm and commitment to the project.

But the sponsor/driver should be careful not to raise expectations too high, too soon, because this can be a recipe for disaster later on. The need to manage expectations goes hand in hand with the desire to evangelize the project.

Business Savvy and Technical Acumen Required

3. Prioritize the Portfolio

Companies should tackle BI projects that are strategically significant to the company or business unit but not so mammoth in scope that they are impossible to deliver. The key here is to establish a portfolio of BI applications that fulfills the sponsor's vision. Then prioritize the applications by their strategic value and deliver them incrementally over a reasonable period of time.

With a BI portfolio in hand, the BI team can create appropriate project plans and program offices to coordinate the development of technical resources required to deliver each application in the portfolio.

Ideally, the vision for the BI solution should emanate from the top of the organization, rather than individual departments. Department-driven initiatives often create redundant and costly analytic silos that perpetuate incompatible views of the business, says Margy Ross, president of the Ralph Kimball Group. "You need to strike a balance between local needs and the broader enterprise vision," she says.

4. Allocate Sufficient Resources

Business sponsors need to secure initial funding to launch the project. More important, they need to sustain funding over the life of the BI portfolio and allocate funds to build and maintain an enterprise BI infrastructure. Many survey respondents bemoan the lack of ongoing support from top management. "Our biggest challenge is maintaining investment levels and senior management support in a mature environment, including 'technology refreshes," wrote one respondent.

Money is not the only critical resource that sponsors must free up. "Business users say they want to be involved but they really don't understand how much of their time the BI project will consume," says EDS' Klarin. "They don't understand the minutiae of decisions about the data that have to be made. This is not a part-time job for the business."

Finally, sponsors need to hire and retain highly experienced and skilled BI professionals who can work full-time on the project. Continental Airlines, a 2003 TDWI Best Practices winner, has 16 full-time staff members who all are qualified database administrators and have an average of 10 years of experience in the airline industry. A majority also have a master's degree. The airline attributes the technical and interpersonal skills of its BI development staff as a critical reason for its success.

5. Align Business and IT for the Long Haul

Extraordinarily successful BI projects all have an enterprise scope that took years to implement. They've integrated data from dozens of systems across geographic, organizational, and political boundaries. They've created a single version of the truth from a Babel of incompatible systems and business processes. As a result, they now save millions of dollars in costs and millions of hours in lost time.

But the journey to this nirvana does not happen overnight. It begins with a small project of strategic significance, backed by an influential sponsor and driver and implemented by a close-knit team of developers and business people who work hand in hand to deliver actionable information to the users who need it.

"Make sure you are planning for the enterprise and not the project," says Charla Moore, data warehousing manager at BNSF. "When you first start out, you have to be creative to get funding and support. But after several wins, it is not hard to sell an enterprise program and infrastructure." Develop a BI Marketing Plan

Don't Underestimate the Time Commitment Involved BNSF's BI advisory board (mentioned above) and various BI working committees ensure alignment between the business and technical development teams. But BNSF cements alignment by ensuring that its technical developers understand the business and spend lots of time with business users. "It's an absolute requirement that developers have business knowledge. We use joint application development sessions to bring the two groups together to gain a common understanding. Some sessions last months."

6. Build Trust in the System

Start Small, Grow Big

The most elegantly designed BI solution provides little business value if no one uses it. A key responsibility of the business sponsor is to function as a change agent that gets users to shift from old to new ways of making decisions and analyzing information. "Change always takes time because users are not going to give up their old ways of doing things," says one survey respondent.

Besides evangelizing the new system, sponsors need to ensure the technical team does everything possible to avoid giving users any excuse not to trust the new system. There are very few ways to directly increase the credibility of a system, but hundreds of ways to undermine it. Here are a few.

Ways to Undermine the Credibility of a BI Solution:

- The data is inaccurate; it doesn't reconcile with operational data.
- The data looks different even though it's accurate.
- There is no way to discover the origins of metrics or data in the solution.
- The user interface is confusing and the analytical tool is hard to use.
- Users find it difficult to locate the reports they want.
- Users can't access the data or reports from the corporate intranet.
- It's difficult for users to create custom views of data.
- Users aren't shown how to use analytical tools in context of their own data.
- Users can't leverage the BI data in other applications they use.
- There is no easy way to get assistance when using the BI solution.
- User feedback to enhance the BI solution doesn't get implemented.
- The BI solution doesn't fit with the organization's existing infrastructure.
- The BI solution is time consuming to maintain and difficult to administer.
- The BI system is slow, unreliable, and unavailable at night or on weekends.
- The BI solution offers little added value compared to other BI resources.

The only way to build trust in a new BI solution is to have the business team own the solution and make all the decisions within predefined technical boundaries. This means users must be involved in the system's design, data sourcing and validation, and selection and prototyping of tools and applications.

Also, business sponsors need to make sure that, in their eagerness to build the BI solution, they don't set arbitrary deadlines that force project managers to cut corners. Business sponsors need to ensure that the technical team has sufficient time and expertise to carry out the business's wishes. The sponsor needs to review the technical team's work on a regular basis. You should ensure that the technical team does the following:

The Technical BI Team Must:

- Implement a rigorous plan to ensure adequate data quality.
- Create a dictionary of data elements and metrics for business users.

There are 100 Ways to Undermine a New BI Solution

Conclusion

- Iteratively prototype the user interface and incorporate feedback.
- Make the BI solution or relevant reports available via the company's intranet.
- Tune the performance of the BI solution to meet response time requirements.
- Architect the system to scale seamlessly and inexpensively as usage grows.
- Develop a training program that provides customizable instruction via multiple modes using real-life business scenarios and data.
- Train and support power users in every department to create custom reports for their colleagues and answer questions about the data.
- Establish a help desk to answer technical questions.
- Architect the BI solution so it can be easily updated and changed in response to user requests.
- Implement backup procedures and disaster recovery plans to maintain availability.
- Provide a scalable, reliable, and high performance solution.

The technical team needs to provide a bullet-proof technical environment that adapts rapidly to changes in business requirements. This is easier said than done. It requires a Herculean effort, but it is the only way to engender trust and usage in the system.

Conclusion

Business executives need to focus on these six success factors to minimize project risks and increase the likelihood of success.

- 1. Establish a vision.
- 2. Evangelize the vision.
- 3. Prioritize the portfolio.
- 4. Allocate sufficient resources.
- 5. Align business and IT for the long haul.
- 6. Build trust in the system.

These are the "bread and butter" issues in BI. Interestingly, the keys to success are not technical in nature. Projects don't succeed because they use an innovative design or radical new technology. They succeed because of the "soft" stuff—leadership, communication, planning, and interpersonal relationships. Organizations must master these as much as the technical designs and tools required to deploy BI solutions.

It's interesting that almost all of our key indicators of success are non-technical in nature. All technical issues, including infrastructure and analytical tools, require business oversight and guidance to be implemented correctly.

Business intelligence can provide significant value to your organization. It can provide high ROI and be a critical enabler of key business strategies and tactics for competing in an increasingly tough marketplace. By benchmarking your organization against our key success indicators and following our six critical success factors, your organization will be better able to extract value from BI.

The Only Way to Build Trust Is to Have the Business Own the Solution Actuate Corporation 701 Gateway Blvd. South San Francisco, CA 94080 650.837.2000 Fax: 650. 827.1560 Email: info@actuate.com Web: www.actuate.com

Actuate Corporation is the world leader in scalable business intelligence applications. Actuate's Information Application Platform is the foundation on which Global 9000 organizations and packaged application software vendors create reporting and analytics applications that scale to empower 100 percent of their user community inside and outside the firewall. Information applications built with Actuate enable companies to increase their business agility, improve customer and partner relationships, adhere to corporate governance policies, and increase revenues while leveraging existing technology assets. When tested against other business intelligence products, Actuate's Information Application Platform has been proven to offer industry-leading scalability, the best performance, and lowest total cost of ownership.

arcplan

arcplan, Inc.

West Valley Business Center

900 West Valley Road, Suite 204

Wayne, PA 19087

877.2.arcplan

Fax: 610.902.0689

Email: salesUS@arcplan.com; prUS@arcplan.com

Web: www.arcplan.com

arcplan is a globally successful software developer whose solutions enable companies to bridge business initiatives and IT resources for maximum productivity and competitive advantage. With arcplan's business intelligence and product configuration platforms, IT and business professionals can create custom Web-based applications without the cost and complexity of traditional solutions. arcplan has more than 1,500 customers and 200,000 users worldwide. Headquartered in Düsseldorf, Germany, and Philadelphia, PA, arcplan delivers its solutions through a global direct sales force and a network of more than 135 service and implementation partners in 30 countries. For more information, visit www.arcplan.com. Business Objects 3030 Orchard Parkway San Jose, CA 95134 408.953.6000

Web: www.businessobjects.com

Business Objects is the world's leading provider of enterprise business intelligence (BI) solutions. Business Objects enables organizations to track, understand, and manage enterprise performance. The company's solutions leverage the information that is stored in an array of corporate databases including ERP, CRM, and legacy systems. Popular uses of BI include management dashboards and scorecards, enterprise performance management applications, customer intelligence applications, enterprise reporting, financial reporting, and both customer and partner extranets. Business Objects provides the industry's most integrated business intelligence suite, called BusinessObjects Enterprise 6. This suite includes the industry's best Web query, reporting, and analysis; the most advanced and complete suite of analytic applications; and the best connectivity to packaged applications. Business Objects has more than 17,500 customers in over 80 countries.

Cognos Inc. 3755 Riverside Drive Ottawa, ON K1G 4K9, Canada Fax: 613.738.0002 Email: sales@cognos.com Web: www.cognos.com

Cognos is the world leader in business intelligence (BI) and performance planning software for the enterprise. Our solutions let companies improve and direct corporate performance by enabling all of the key steps in the management cycle—from planning and budgeting, to measuring and monitoring performance, to reporting and analysis. Cognos is the only company to support all of these key management activities with a complete solution that spans all of the essential components of CPM—enterprise performance planning, scorecarding, and business intelligence.

Founded in 1969, Cognos employs more than 2,900 people and serves more than 22,000 customers in over 135 countries.

SPONSORS

Crystal Decisions, Inc. 895 Emerson Street Palo Alto, CA 94301-2413 800.877.2340 or 604.681.3435 Fax: 604.681.2934

Web: www.crystaldecisions.com/contact/

Crystal Decisions is a leading global provider of business intelligence software and services that enable the effective use and management of information within and among organizations. As of March 28, 2003, we have delivered more than 14 million licenses and had registered users in more than 170 countries. Crystal Decisions is headquartered in Palo Alto, Calif., and has more than 25 offices worldwide. Crystal Decisions can be found on the Internet at www.crystaldecisions.com.

Informatica Corporation 2100 Seaport Boulevard Redwood City, CA 94063 650.385.5000

Icrostrate

Fax: 650.385.5500

Web: www.informatica.com

Informatica Corporation is the leading provider of business analytics software that helps Global 2000 organizations monitor, manage, and optimize the performance of key business operations across the enterprise. Today, more than 1,600 companies worldwide have chosen Informatica to power their analytic solutions—resulting in millions of dollars in cost savings and productivity gains. For more information, call 650.385.5000 (800.970.1179 in the U.S.), or visit the Informatica Web site at www.informatica.com.

MicroStrategy, Inc. 1861 International Drive McLean, VA 22102 703.848.8600 Fax: 703.848.8610 Email: info@microstrategy.com

For 11 years, MicroStrategy has helped corporations transform their operational data into actionable information. Our industrial-strength business intelligence platform, MicroStrategy 7i, is the culmination of a legacy of technical innovations. It was specifically designed for fast and simple initial implementation and to grow seamlessly to support enterprise-class requirements.

We have over 2,000 satisfied customers, including Bank of Montreal, Best Buy, and AT&T, and over 300 technology and integration partners, including IBM, PeopleSoft, and JD Edwards.As they can attest, MicroStrategy 7i is the best, most complete solution for any business intelligence need.

Oracle Corporation 500 Oracle Parkway Redwood Shores, CA 94065 800.0RACLE.1 Fax: 650.506.7200 Web: www.oracle.com

Oracle provides all the infrastructure, tools, and applications a company needs to support better business decisions, from the call center to the CEO's office, from the traveling sales representative to the CFO. Oracle9i database provides a single, integrated business intelligence engine for scalable data warehousing; OLAP; data mining; and extraction, transformation, and loading (ETL). In addition, Oracle9i Application Server provides built-in personalization, ad hoc query, enterprise reporting, and clickstream intelligence functionalities. Oracle9i Developer Suite includes BI beans, specially built to tap into Oracle9i OLAP to develop or customize business intelligence applications. Finally, Oracle's E-Business suite offers pre-built analytical applications in its CRM and ERP modules.

For more information on Oracle's data warehousing and business intelligence products, visit www.oracle.com.

About the TDWI Report Series

The TDWI Report Series is designed to educate technical and business professionals about critical issues in BI. TDWI's in-depth reports offer objective, vendor-neutral research consisting of interviews with industry experts and a survey of BI professionals worldwide. TDWI's in-depth reports are sponsored by vendors who collectively wish to evangelize a BI discipline or emerging technology.

Acknowledgements

TDWI would like to thank many people who contributed to this report. First, we appreciate the many users who responded to our survey, as well as those who responded to our requests for phone interviews. Second, we'd like to thank Dave Wells who reviewed the draft manuscript, as well as our report sponsors who reviewed outlines, survey questions, and report drafts. TDWI's production team includes Dale Chinn, Denelle Hanlon, Marie McFarland, and Donna Padian.

About TDWI

The Data Warehousing Institute (TDWI), a division of 101communications LLC, is the premier provider of in-depth, high-quality education and training in the business intelligence and data warehousing industry. TDWI offers quarterly educational conferences, regional seminars, onsite training, professional membership, leadership awards, print and online publications, and a public and private (Members-only) Web site.

This special report is the property of The Data Warehousing Institute (TDWI) and is made available to a restricted number of clients only upon these terms and conditions. TDWI reserves all rights herein. Reproduction or disclosure in whole or in part to parties other than the TDWI client, who is the original subscriber to this report, is permitted only with the written permission and express consent of TDWI. This report shall be treated at all times as a confidential and proprietary document for internal use only. The information contained in the report is believed to be reliable but cannot be guaranteed to be correct or complete.

For more information about this report or its sponsors, and to view the archived report Webinar, please visit www.dw-institute.com/bireport/.

©2003 by 101communications LLC. All rights reserved. Printed in the United States. The Data Warehousing Institute is a trademark of 101communications LLC. Other product and company names mentioned herein may be trademarks and/or registered trademarks of their respective companies. The Data Warehousing Institute is a division of 101communications LLC based in Chatsworth, CA.

The Data Warehousing Institute 5200 Southcenter Blvd., Suite 250 Seattle, WA 98188 Local: 206.246.5059 Fax: 206.246.5952 Email: info@dw-institute.com Web: www.dw-institute.com

