

3.0 Effective Business Intelligence Approaches for Today's Business World

Since 1999, enterprises worldwide have purchased more than \$47 billion worth of enterprise resource planning (ERP), customer relationship management and supply chain management software. Although these applications can improve the efficiency and effectiveness of enterprises, they also have created a tidal wave of data. This mass of information crashes down on business users, who must get the data, reports and analysis they need for their jobs from multiple sources and in multiple forms.

At the same time, external business conditions force these same business users to make new and more-demanding strategic and operational decisions. Regulations change rapidly, requiring higher degrees of data integrity and confidence in the information.

This combination of information overload and the demand for better and more-accurate decisions means that enterprises can no longer take a business-as-usual approach to business intelligence (BI). Fragmented or tactical BI simply won't do. The BI initiatives of most enterprises lack the maturity and breadth of deployment needed to meet business demands (see Figure 3-1).

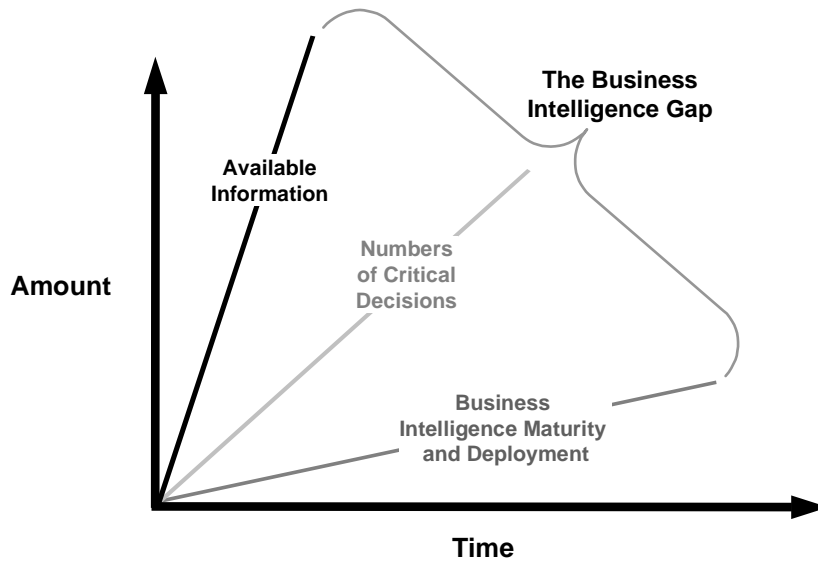
Managers and executives need BI solutions to better manage the business. Enterprises that fail to properly implement these solutions put themselves at a competitive disadvantage. To be successful in today's business environment, enterprises must:

- Assess their readiness for meeting the challenges posed by these new business realities
- Take a holistic approach to BI functionality
- Leverage best practices and anticipate hidden costs

The following Key Issues frame the analysis in this chapter:

- How can enterprises maximize their BI investments?
- What BI functionality do enterprises need, and what are they using today?
- What are some of the hidden costs associated with BI initiatives?

Figure 3-1: Most Enterprises Need to Close the “BI Gap”



Source: Gartner

3.1 Getting the Best Return From BI Investments

3.1.1 The Importance of a BI Framework

Key Issue: How can enterprises maximize their BI investments?

Tactical Guideline: The success of a BI initiative and the value it delivers depend on effective alignment and integration. Enterprises should use a BI framework to align their BI initiatives and create solid business cases.

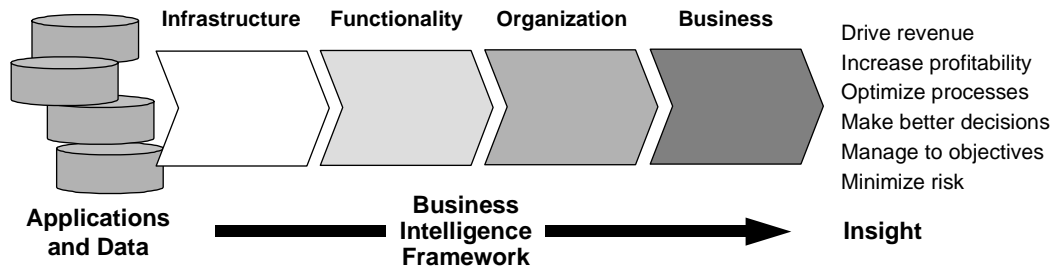
Many enterprises treat BI and data warehousing as after-the-fact, technical exercises for their IS organizations. This mindset leads to implementations that lack significant business value and force IS organizations to react constantly as they chase ever-changing business needs. In contrast, enterprises that view BI as a strategic initiative — making it a catalyst for business change and building it into plans for all key business initiatives — will gain substantial benefits from greater insight into the business.

Reaching the point where BI is positioned appropriately and executed in a sustained, strategic way requires understanding the business requirements, careful planning and proper organizational alignment. Gartner’s BI framework provides a model to align and integrate BI, and achieve optimal results (see Figure 3-2).

Strategic and operational business objectives are defined at the business level, where the success or failure of a BI initiative is ultimately measured. At the organizational level, enterprises need to consider:

- Available skills
- Business needs
- “BI activism” — that is, the level of enthusiasm with which business users and the IS organization embrace BI concepts
- Organizational culture
- Sharing and reuse of methods, concepts, data and insights

Figure 3-2: Alignment and Integration in the BI Framework Help Close the BI Gap



Business value in the real world can only be achieved when information is accurate, timely, consistent and, most of all, relevant.

Source: Gartner

The functionality level is where enterprises choose the appropriate BI applications, tools, platforms and technologies to meet business and organizational needs. The functionality level builds on the infrastructure, which consists of the choices for:

- The data warehouse
- The operational data store
- Extraction, transformation and loading
- Data integration tools and technology

For a detailed examination of Gartner's BI framework and its four key levels — infrastructure, functionality, organization and business — see Section 2.2.

Action Item: Use a BI framework to align BI initiatives with business objectives and make strategic choices.

3.1.2 A BI Initiative Needs Strategic Objectives

Tactical Guideline: Business objectives must drive BI initiatives and investments.

The success of a BI initiative should be measured by how it affects strategic and operational business objectives — not how many rows of information can be loaded into

the data warehouse in six hours or the complexity of a data model developed. However, the lack of defined business objectives makes assessing the success or impact of a BI initiative difficult.

Conducting a business assessment prior to investing in a BI initiative provides a quick and low-cost validation of a BI project's proposed direction and deliverables. This assessment also brings focus and attention to a BI initiative within the IS organization and the business users.

The assessment starts a dialogue between the constituent groups (the IS organization and business users) that should:

- Identify business objectives
- Show how BI can contribute to the success of those objectives
- Set the scope and size of the project
- Determine investment levels

Even if a BI initiative is already under way, it may make sense to take a step back, assess the initiative and potentially discover areas of additional leverage. Questions to ask at this time can include:

- Should other business opportunities and objectives be incrementally addressed and funded within the BI initiative?

- Are business objectives well-articulated?
- Are key performance indicators defined?
- How well and often are key performance indicators measured and analyzed?
- Do the appropriate users have access to relevant data and analysis?
- What would be the impact of increased or improved data, access or analysis?
- What would be the impact of more real-time data and analysis?
- Is executive sponsorship and funding available?

Action Item: Analyze the strategic and tactical business objectives that will drive the BI initiative and its funding. These objectives ultimately define its success.

3.1.2.1 Case Study: Clear Objectives Drive BI Initiative's Success

New mandates from the U.S. Securities and Exchange Commission (SEC) and Congress have made most financial-reporting systems and processes obsolete. The risks have never been bigger: The public and government draw no distinction between financial reporting errors and actual fraud. CEO and CFO liability are criminal.

These mandates drove one firm to implement a new financial performance management system — once capable of meeting its new requirements to:

- Perform flawless analysis and compilation of thousands of transactions and journal entries
- Balance more access to data with the need to control access to sensitive insider information
- Deliver reports to the SEC in less time

The company deployed a BI infrastructure and applications that met these challenges, thanks in large part to the clear objectives that drove and guided the deployment. Within the overarching goal of achieving financial-reporting compliance, these objectives included:

- Get “more eyes on the data” and key performance indicators, and build in strict security controls.
- Provide live reports that allow people to drill down to the lowest level of transaction detail.
- Put a spotlight on the accounting treatment of material components.
- Proactively scour the financial databases for anomalies using variance triggers.
- Gather all financial data into a cohesive database.

An implementation tightly linked to these objectives provided the company with a financial performance management system that enables analysis to complement accounting and budgeting applications for:

- Flexible reporting
- Free-form investigation
- Automated data analysis

The BI infrastructure and applications allow users to drill down from summary reports to the lowest level of transaction or journal entry. It supports large numbers and types of users with high levels of security, and uses automatic data mining for anomaly detection. It can proactively alert specific individuals whenever an anomaly is detected.

3.1.3 A BI Initiative First Requires a Readiness Test

Tactical Guideline: *An assessment of IS organization and business user skills, levels of BI activism and culture will help the enterprise determine the probability of a BI initiative's success — before making any significant investments.*

Before embarking on a data warehousing and BI initiative, enterprises should complete a self-assessment to determine their readiness. They must honestly evaluate their available skills, levels of BI activism and culture so that, before spending considerable sums of money, they understand the challenges ahead and have a way to determine the likelihood of success.

To assess their potential for BI success, enterprises should rate the level of BI activism exhibited by both the IS organization and the business user community.

First, they should rate the degree to which the following statements apply to the *IS organization*:

- IS understands the need for, and potential of, BI.
- It has the required skills and resources.
- It is taking responsibility for setting up a data warehouse infrastructure.
- It acts as a catalyst for process improvement in the enterprise.
- It is respected within the enterprise and has a history of success.

Next, they should rate the degree to which the following statements apply to the *business user community*:

- Business users understand the need for, and potential of, BI.
- They have a history of funding and championing IT initiatives.

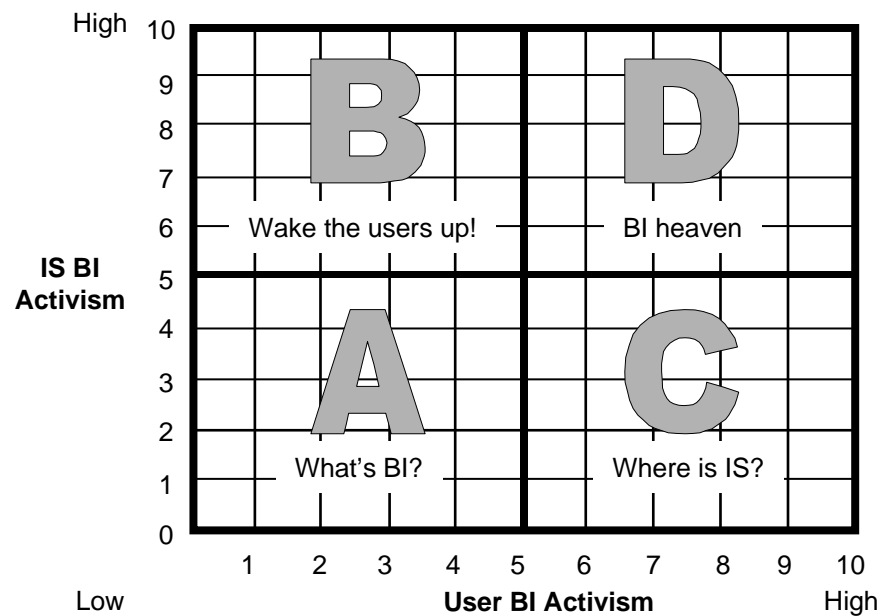
- They drive IS to deploy new technology.
- They seek an active partnership from IS organization.
- The business user community is willing to participate in the technology selection and deployment process.

Each statement should be rated with a score of as 0 (does not at all describe), 1 (somewhat describes) or 2 (very much describes), and the scores should be totaled for each group. Based on these totals, the enterprise will fall into one of the four quadrants depicted in Figure 3-3. The characteristics of enterprises in each category — and suggested actions for them to take — can be summarized follows:

Category A — What's BI? The organization and end users have a low level of activism, and BI cannot succeed. Inertia prevents any significant new initiatives because users are uninterested in BI, and the business is run without the benefit of a complete perspective. If there is a BI tool in place, it will probably be the least-expensive tool available in the market. Actions to take include:

- Do not initiate significant investments in strategic BI.

Figure 3-3: BI Readiness Assessment Matrix



Source: Gartner

BI business intelligence
IS information systems

- Educate the IS organization and the business on the potential benefits and value of BI.
- If you are happy with the situation, concentrate on delivering simple and efficient management reporting on a case-by-case basis.

Category B — Wake the users up! The IS organization stands alone in trying to promote BI to an uninterested end-user organization. BI will fail because IT-induced solutions might not necessarily meet user requirements. Users fail to use IT-provided solutions, technology vendors prevail, and limited or no business benefits are realized. Actions to take include:

- Assess why this situation exists and why the IS organization “lost the users somewhere down the road.”
- Attempt to make the connection between BI and strategic business objectives.
- Execute small pilot projects to raise awareness among senior executives.
- Seek out a high-level sponsor who understands the value of BI.
- If no progress is made, dare to stop.

Section C — Where is IS? User ambition exists, but there is no active participation from the IS organization. Users will buy their own applications, which will eventually create problems of scalability as the business grows and as processes become more complex. Issues of coordination, cost and reuse will grow as the IS organization attempts to support multiple, disconnected solutions deployed by the user community. Actions to take include:

- Focus on BI infrastructure, not just applications, and tightly control tool selection to minimize redundancy.
- Use the influence of senior management to put BI on the CIO’s agenda.
- If the IS organization still will not participate, consider outsourcing BI.

Section D — BI heaven: Your organization has the most balanced situation for BI. IS and end users have an equal amount of ambition or activism, and work together to deliver valuable and sustainable BI solutions to the enterprise. Actions to take include:

- Spread the news of your success and share the credit between the business and IS.
- Start a BI competency center that blends IT and business skills.
- Seek ways to turn BI into a revenue stream— for example, by sharing information with customers and suppliers.
- Don’t be the victim of your own success — stick to a small portfolio of tools and control BI implementations to ensure consistency and leverage

3.1.4 The Role of the BI Competency Center

When an enterprise demonstrates it has the proper mix of skills, levels of BI activism and culture, it should define, sponsor and fund a BI competency center. The staff of the BI competency center — coming from the IS organization and business units, and working full- or part-time — understands BI and actively works to ensure the ongoing benefits of a BI initiative by:

- Showing executives how BI plays a critical role in better managing the business
- Communicating to the IS organization the important role of BI applications as part of a BI strategy
- Encouraging the IS organization to work more closely with business users
- Building communication across lines of business to ensure that new BI applications integrate and comply with the BI architecture
- Helping people understand that, for a BI initiative to be successful, it needs a robust BI architecture
- Getting the IS organization to realize that business users will need multiple BI technologies to meet their varied analytical needs
- Ensuring that these same users support the IS organization’s need to provide a platform that can support changing business requirements

The BI competency center also plays an important role in encouraging BI activism as business needs change and new technologies emerge. In addition, it can help gain the appropriate executive-level commitment to resolve

issues when the goals of different organizations are not aligned.

For details on building a successful BI competency center, see Section 4.2.

Action Item: Build a BI competency center to ensure alignment of executives, business users and the IS organization.

3.1.4.1 A BI Competency Center Case Study

Approaching BI as just another technology initiative is a formula for disaster. A BI competency center is required, as is the commitment of senior management to a BI vision and plan that articulates a business solution to a business challenge. Although the IS organization plays a key leadership role in the BI competency center, it cannot be the sole driving sponsor or source of funds for the BI initiative. Most importantly, a BI competency center needs the right level of executive sponsorship and direction to create an environment that ensures and reinforces collaboration and cooperation.

One hospital discovered these insights were the prescription for turning its BI challenges into a business success. The IS organization could not do it alone. A significant cultural shift led by senior management was critical for creating the requirement for shared information and fact-based decisions and accountability.

Problem:

- The BI infrastructure was not well-designed for business users.
- Data was of poor quality — different organizations had different versions of the same information.
- There was no collaborative decision making and use of information.
- A poor relationship existed between the IS and finance organizations, which led to a battle over which organization owned the information.

Solution:

- The new CEO mandated fact-based decision making and accountability.

- A new BI project manager set out to fix the problem and meet business needs.
- The project manager recruited executive management sponsorship.
- The hospital formed a BI competency center — a new team made up of business users, data stewards and people from the IS organization.
- The team developed a five-year, business-centered vision and plan, and obtained the required funding.

Lessons Learned:

- The BI team had to show how it could meet the new managers' needs for a single version of analysis-derived information for their decisions.
- BI success required a shift in thinking from a solution based on research and development to a solution driven by business needs.
- To build the right level of data quality into the new BI infrastructure, the owners of the data that was housed in operational systems had to be substantially involved with the project.
- Creating a financial return-on-investment case for the impact of the BI initiative proved difficult; instead, it was easier to demonstrate how BI added business value (in this case, better fact-based decisions).

(For more details on this hospital's BI initiative, see Section A.4 in Appendix A, "Business Intelligence and Data Warehousing Case Studies.")

3.2 The BI Infrastructure

Key Issue: What BI functionality do enterprises need, and what are they using today?

The BI infrastructure:

- Is where data is collected, integrated, and made ready and accessible for BI applications
- Enables other applications
- Provides economies of scale for support costs and systems management

- Ensures better-quality operations
- Consists of:
 - BI applications
 - Enterprise BI suites (EBISs)
 - BI platforms
 - Inventorying data sources and means of access
 - Identifying data stewards
 - Profiling data quality “hot spots”
 - Identifying data quality solutions
 - Defining methods to extract and transform data

3.2.1 The Importance of a Technology Assessment

Because no single BI tool can economically support the broad spectrum of user requirements, a large enterprise needs a portfolio of BI applications. But before it can develop that portfolio, the enterprise must make a technology assessment to determine whether:

- Appropriate technical infrastructure and development methodologies are in place, including:
 - Choosing a hosting platform (for example, a data mart, data warehouse, operational data store or online analytical processing tool)
 - Establishing data models and business definitions
 - Creating rules for metadata use and integration
 - Supporting real-time use
 - Defining methodologies for development, deployment and change management
- Functionality is sufficient to ensure the BI initiative delivers optimal value; for example:
 - Defining user requirements
 - Establishing standards that match user types to appropriate tools
 - Deciding whether to build or buy analytic applications
 - Determining enterprise security and user access levels
 - Assessing scalability
- Data has sufficient quality to ensure the BI initiative delivers optimal value; for example:

Many new infrastructure and functionality requirements are identified approximately six months *after* a BI deployment. This makes an effective implementation methodology critical to ensure all the respective resources and skills are available throughout the project life cycle to address those new requirements.

A technology assessment can:

- Help validate technical and cost assumptions
- Identify whether any critical factors were overlooked
- Spot potential weaknesses in a plan
- Assist organizations with developing contingency plans

Action Item: Conduct a technology assessment to determine if the appropriate technical infrastructure and development methodologies are in place to deliver on a strategic BI initiative.

3.2.2 Selecting the Right BI Tools

Tactical Guideline: *Most enterprises will need more than one BI tool, and must select them as part of an integrated decision within the context of a BI framework.*

Many BI tools are available in several categories, including production reporting, EBIS, business activity monitoring, corporate performance management, data mining, and advanced analysis and forecasting (see Section 2.3.5). Considering the types of insight required and the interaction styles of users will help an enterprise determine what functionality it needs from the BI tools it chooses.

For a BI initiative to succeed, different types of users will need different BI tools (see Figure 3-4). Providing casual users with BI tools primarily intended for power users will overwhelm these people, who likely do not have the skills

or the time to learn about these advanced tools. Likewise, asking power users to use simple reporting tools for their analysis work would be akin to asking them to bore through solid rock using a spoon.

Aligning tools and user types will help enterprises when the time arrives to select vendors. Most BI vendors are beginning to deliver enhanced or next-generation EBIS products that merge EBIS and reporting functionality. As a result, a wider range of user types will have access to a broader range of functionality from a single BI tool.

Action Item: To properly select BI tools:

- Define the range of user types in the enterprise
- Quantify how many users fall into these categories
- Determine which user-type category has the most requirements (for example, power users or casual users)

3.2.2.1 Case Study: Extranet-Based Reporting Tools Improve Service and Reduce Costs

One insurance company's experience illustrates how shrewd selection and application of the right BI technology can bring major benefits. Insurance firms traditionally produce stacks of paper reports, delivered monthly, for their large corporate customers. Insurance administrators then wade through these bulky reports, extracting information about claims and hoping that the data will reveal critical information about their policies.

Large customers that have hundreds of claims a year need summaries of their claims. They value the ability to get any level of detail needed, or to analyze relationships and trends in their claims.

An insurance firm sought to better meet this need through the implementation of new BI applications, including extranet-based reporting tools. With these tools in place, customers of this company can now access claims

Figure 3-4: Match User Types and Functionality to Maximize Value

Types of Users

	IT	Power Users	Executives	Functional Manager	Occasional Information Consumers	Extranet: Partners, Customers
Number of Users	Few	Dozens	Dozens	Dozens to hundreds	Hundreds to thousands	Hundreds to thousands
BI Tools and Functions	Developer Admin. Metadata Security Data management	Ad hoc query OLAP Reports Data mining Advanced analysis	Dashboard Scorecard Reports CPM	Reports Spreadsheet OLAP view BAM CPM	Reports Spreadsheet	Reports
Strategic Value		High	High	Medium	Low	High

BAM business activity monitoring
BI business intelligence

CPM corporate performance management
OLAP online analytical processing

Source: Gartner

information, view custom reports and charts, and download data over the Internet.

Customers work with this insurance company to define the information they want and decide how to organize it. Information analysts then develop and deliver the report as requested. Within a few days of their requests, customers can click on their new report to get the latest view of their information.

With paper reports, it often took 30 days before customers could find a problem. Now, customers can group their claims by codes that indicate specific types of loss, and can spot trends or exceptions, or identify potential trouble spots, earlier than ever. Customers also can download data to analyze on their own.

This insurance company is not measuring the success of this project simply based on cost reduction in paper and production. It is realizing the benefits of enhanced customer relationships in its competitive market.

3.3 The Hidden Costs of BI

Key Issue: What are some of the hidden costs associated with BI initiatives?

3.3.1 The Cost of BI Tool Proliferation

Strategic Planning Assumption: *Through 2005, Global 2000 enterprises will adopt a staggering number of disparate and unrelated BI technologies, largely through applications, adding to BI fragmentation in enterprises (0.7 probability).*

Many enterprises have been thwarted in their ability to deploy BI solutions effectively because of the overabundance of unrelated end-user technologies from various vendors. End users and IS organizations have deployed various BI tools without much (if any) thought about integration, future needs or issues.

This random portfolio of tools typically contains products that are:

- Current and relevant
- Older, but still used

- Discontinued and unsupported
- Abused
- Fads

In other cases, BI technology slips in under the guise of ERP and other enterprise applications. For example, one Gartner client stated that it had 13 separate tools for accessing its data warehouse. It wanted to consolidate the tools and reduce that number to six or seven.

Enterprises need to find the right number and mix of tools. To do this, they must stop the proliferation of BI tools. This will ensure they can provide a consistent and manageable BI environment.

To stop proliferation, enterprises must enforce some standardization around BI tools. This can be difficult because end users can:

- Become partial to certain tools
- Strongly resist changing the BI tools they use

Action Item: Develop standards for tools prior to deployment, instead of trying to consolidate BI tools after the fact.

3.3.1.1 Case Study: The Hidden Costs of Tactical BI

A retail office-supply company had experienced rapid growth, expanding to 1,000 stores and \$5 billion in revenue in 10 years. Several transactional and reporting systems had evolved over the years to address tactical business needs. However, this approach had several consequences:

- Each system required expensive — and often redundant — software and hardware.
- These multiple systems were costly to maintain and manage.
- The biggest challenge was getting to the right data in the right form to deliver consistent, timely and accurate information to managers.

This company had too many reporting systems, custom interfaces and reporting tools, and too much complexity.

The IS organization, working with management, developed a strategic proposal to redesign the BI infrastructure and functionality to address the company's challenges. Cost was justified based on the total cost of ownership (TCO) of the current, fragmented system.

The new architecture moved from the fragmented transactional and reporting systems to a single, primary transactional system based on SAP R/3, and a single reporting platform based on SAP Business Information Warehouse. Each functional area (for example, marketing, sales and inventory) defined a precise set of business goals and questions that the company wanted to meet and answer with the new system. The project plan called for an aggressive eight-month transition, which included:

- Training
- Design
- Loading (from legacy systems)
- Report creation
- Portal integration
- User training
- Parallel testing and balancing

The result was a single infrastructure and functionality for reporting. It serves executives, power users and management, delivering reports on the performance of more than 1,000 stores. Although the overall number of systems has been reduced, the complexity of implementing and maintaining the new technology is still quite high. One project manager noted: "What you think should be easy just isn't some days."

The cost of migration was significant. The company said that although the system has shortcomings, it was worth the investment because the new reporting infrastructure:

- Reduced TCO
- Increased business value through improved consistency and timeliness
- Extended reach (to field sales and stores)

3.3.2 The Cost of Cross-Functional Politics

Many BI initiatives span multiple business and functional groups in an enterprise. The politics associated with getting participation, data and resources from these disparate groups can introduce unanticipated challenges and delays to a BI initiative. Several project managers indicate that dealing with politics consumes as much as 40 percent to 50 percent of their overall project management effort.

Political and organizational challenges are unlike typical project tasks. More resources cannot be added to the project to deal with such delays.

The politics of who has control — related to factors such as visibility, information, resources, funding and technology choices — often leads to challenges in cross-organizational BI initiatives. A cross-functional BI initiative will fail quickly if it does not have a credible team and leadership that anticipates and addresses these challenges. Such advance planning will minimize the impact of cross-organization politics on a BI initiative.

Action Item: Factor into the enterprise's BI initiatives any cross-organizational challenges that might consume unexpected amounts of time and resources.

3.4 An Enterprise's Level of BI Maturity

Tactical Guidelines:

- *Enterprises should think of BI as an evolution of delivering key decision-making information throughout the enterprise, rather than as a single initiative.*
- *The BI maturity of an enterprise determines how it can leverage BI and close the BI gap.*

Those that try to define and implement a complete enterprise BI solution in one step will end up taking far too long to finish building it. Most likely, the BI solution delivered will not meet needs because requirements nearly

always change after a project is initiated. Enterprises need to assess the overall maturity of their BI initiative and aim to add value incrementally, rather than use an all-at-once approach (which often leads to spectacular failures).

Results and challenges differ, depending on the level of BI maturity (see Figure 3-5).

At the *opportunistic* level:

- Results are usually measured in terms of more-effective use of IT investments and improved operational efficiency.
- Challenges primarily occur with infrastructure and functionality.

At the *tactical* level:

- Results are usually associated with having one version of analysis-derived information, which improves the management of multiple departments.

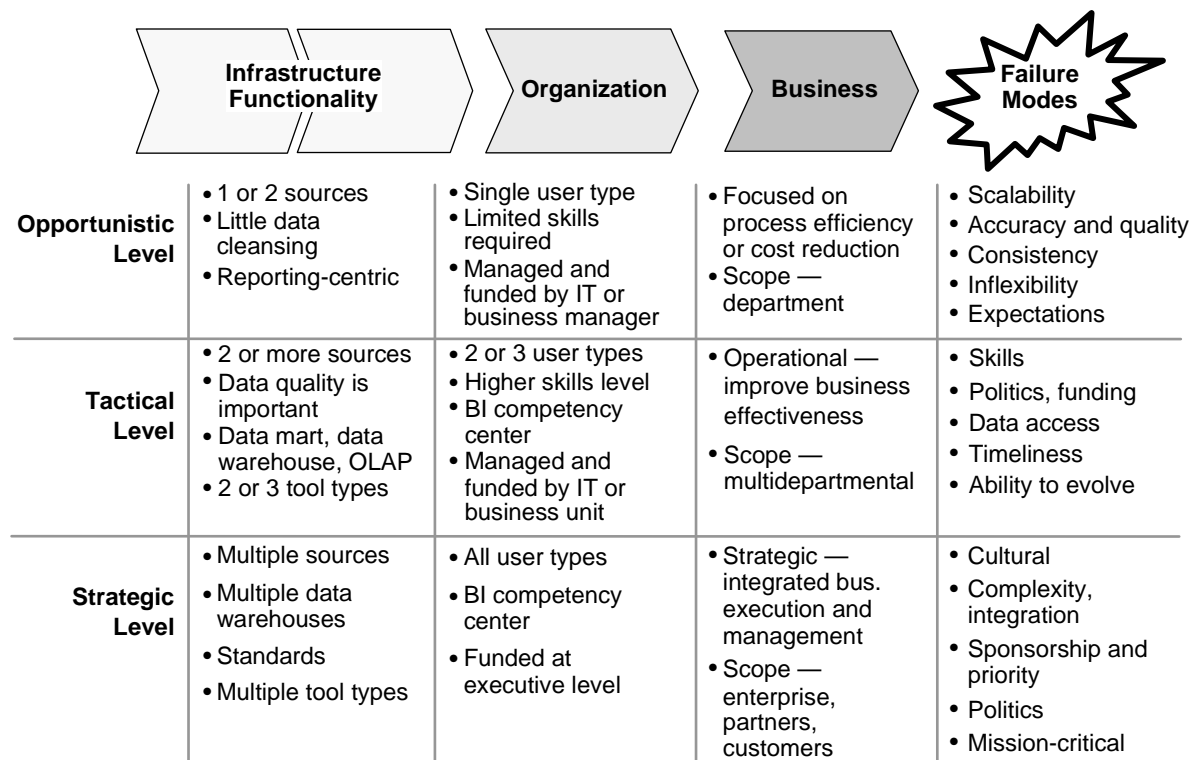
- Organizational challenges begin to take more focus and skills from the project team.

At the *strategic* level:

- Results are associated with improved and faster decision-making processes.
- Challenges occur at the business level, such as:
 - Shifting business processes and methodologies to leverage new BI capabilities, such as corporate performance management.
 - Changing business goals or objectives, based on insight gained.

Action Item: Plan for future directions in BI by building on the infrastructure, applications and maturity, while developing a comprehensive BI road map using the BI framework.

Figure 3-5: The BI Strategic Maturity Spectrum



Source: Gartner

BI business intelligence
OLAP online analytical processing

3.5 Recommendations

- Assess the requirements and readiness of all links in the BI value chain — not just the technology.
- Align user types with the right set of tools to maximize return on investment.
- Base BI tool requirements on a census of different types of users.
- Account for hidden costs — which can be significant — when building plans and budgets for BI initiatives.
- Establish a BI competency center to enable the enterprise's level of BI maturity to rise.
- Anticipate the types of failure that commonly occur as an enterprise moves through each level of the BI maturity spectrum.