WHITE PAPER

Partnering for Successful Business Analytics Projects: Tata Consultancy Services

Sponsored by: Tata Consultancy Services

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IDC OPINION

Organizations operating in today's global economy are faced with unprecedented competitive and regulatory pressures and a heightened level of uncertainty. In this market environment, there is a trend toward continuously shrinking decision cycles where improved — faster, more accurate, insightful, and flexible — decision making commands a premium and serves as a basis for competitive advantage.

Software for analyzing financial, operational, customer, and supply chain data is being rapidly adopted to speed and improve decision-making processes. Running in different environments, a variety of tools and technologies are available from a plethora of vendors with unique integration requirements and interfaces. The task of selecting the right technology can be daunting enough, but implementing a solution that delivers relevant, reliable, and actionable information compounds the challenge of enhancing decision-making processes. Companies can benefit from the experience, resources, and established solution frameworks and methodologies of consulting firms that understand not only how to implement business analytics software but how to apply these technologies to solve real-world business problems.

Tata Consultancy Services (TCS) is a leading global consulting firm with established success in improving decision-making processes at companies worldwide. The firm's internal practices ensure that it has dedicated, experienced, and knowledgeable resources; meaningful technology partnerships; and reusable know-how that combine to deliver relevant, reliable, and actionable business analytics solutions to its clients. IDC believes that TCS is well positioned in the business analytics services market for several reasons:

☑ TCS has a robust solution implementation methodology with supportive internal business processes.

☑ TCS develops customizable templates and other reusable assets to replicate client success stories based on industry and technology expertise.

☑ Dedicated technology centers of excellence ensure that TCS has employees with the proper technical skills, meaningful technology partnerships, and best practices and know-how that are being captured for reuse.

Offshore development is integrated into the TCS implementation methodology to lower development costs and speed time to delivery.

> The task of selecting the right technology can be daunting enough, but implementing a solution that delivers relevant, reliable, and actionable information compounds the challenge of enhancing decision-making processes.

IN THIS WHITE PAPER

This IDC white paper examines the value proposition of business analytics solutions. After presenting the definition of business analytics, the paper looks at typical challenges faced by organizations, the technologies that are being implemented, and the role consulting services can play in leading to successful development, implementation, deployment, and support services for business analytics initiatives. The paper further examines Tata Consultancy Services' role in the business analytics market.

SITUATION OVERVIEW

In supporting diverse decision-making processes, such as manufacturing quality analysis, financial planning, marketing campaign or supplier relationship management, one-size-fits-all solutions rarely work. Organizations must deploy appropriate solutions to support the needs of end users at all levels. Solutions to real business problems require much more than just the right software tools; they require technical expertise and business process knowledge to ensure that tools are implemented and applied to benefit all stakeholders.

Business Analytics Defined

IDC defines business analytics as software tools and applications for tracking, analyzing, modeling, and delivering data in support of decision-making and reporting processes. The worldwide business analytics software market reached $16.5 billion in 2005 and is forecast to increase at a CAGR of 10% through 2010. Data points offered throughout the document are based on previous IDC supply-side and demand-side survey work spanning several years.

Revenue figures include only software license and maintenance revenue, which is supplemented by services for implementing, deploying, and supporting the appropriate software. IDC estimates that the services multiple for business analytics ranges from two to five times that of the software market. Within the specific segments of the market, data integration has a higher services multiple than data warehousing or business intelligence (BI).

Today, business analytics is reaching more organizations and extends to a wider range of users, from executives and line-of-business managers to analysts and other knowledge workers. In addition, over 40% of organizations indicated that they are providing business analytics functionality to external stakeholders, including suppliers, customers, partners, and government agencies. Each of these user groups has unique analytic and reporting requirements.

The growth in the number of users is accompanied by the growth of data generated by operational applications as well as an increasing array of other data sources. As a result, a scalable supporting architecture is needed to address data growth and data integration. For example, 64% of large organizations have enterprise data warehouses of at least 1TB, 23% of all organizations expect their data warehouses to at least double in size over the next three years, 40% of these data warehouses are updated daily, and 12% have continuous, intraday feeds.

Evolution and growth in the BA market over the past 15 years have been characterized by a shift from executive information systems and standalone legacy reporting tools to operational BI and organizationwide business performance management. Already, 43% of large organizations indicated that their business analytics systems can't be down (unavailable) for more than a few hours without having significant impact on ongoing operations. This is one of the indicators that the value proposition of business analytics has shifted from a decision support function for only top-level executives to a broad operational requirement for all internal and, increasingly, certain external stakeholders.

Value Proposition of Business Analytics

The motivation for investment in business analytics is varied. Some companies are looking to consolidate and gain global visibility across organizational data; others are looking to streamline operations or production processes. Still others seek a wholesale reinvention of their approach to their suppliers or customers. Figure 1 shows the results from a fall 2005 IDC survey in which respondents identified the business objectives that their organizations target with their BI systems. At the highest level, these motivating factors can be segmented into two broad categories: competitiveness and compliance.

Competitiveness

Business analytics software helps organizations answer questions such as:

☑ Who are our best suppliers or most profitable customers?

☑ Which customers are likely to become profitable, when, and to what extent?

☑ What are the causes of quality issues, and how can we minimize them cost-effectively?

☑ What combinations of factors are directly impacting marketing campaigns?

These questions require analysis of data from internal transactional as well as external sources. By implementing business analytics software, organizations are able to leverage their existing investments in transactional applications while avoiding costly mistakes due to "gut-feel" decisions made without solid information.

IDC's study *The Financial Impact of Business Analytics*, published in 2002, examined organizations of various sizes and industries in North America and Western Europe and showed that the median ROI of business analytics projects was 112%. Organizations of all sizes experienced measurable benefits related to increased productivity and efficiency, business process improvement, and technology-based cost savings.

The median ROI of business analytics projects was 112%, according to IDC research.

FIGURE 1

Business Objectives Targeted with Business Intelligence Systems

Q. What business objectives are you currently targeting with your business intelligence system? (Select all that apply.)
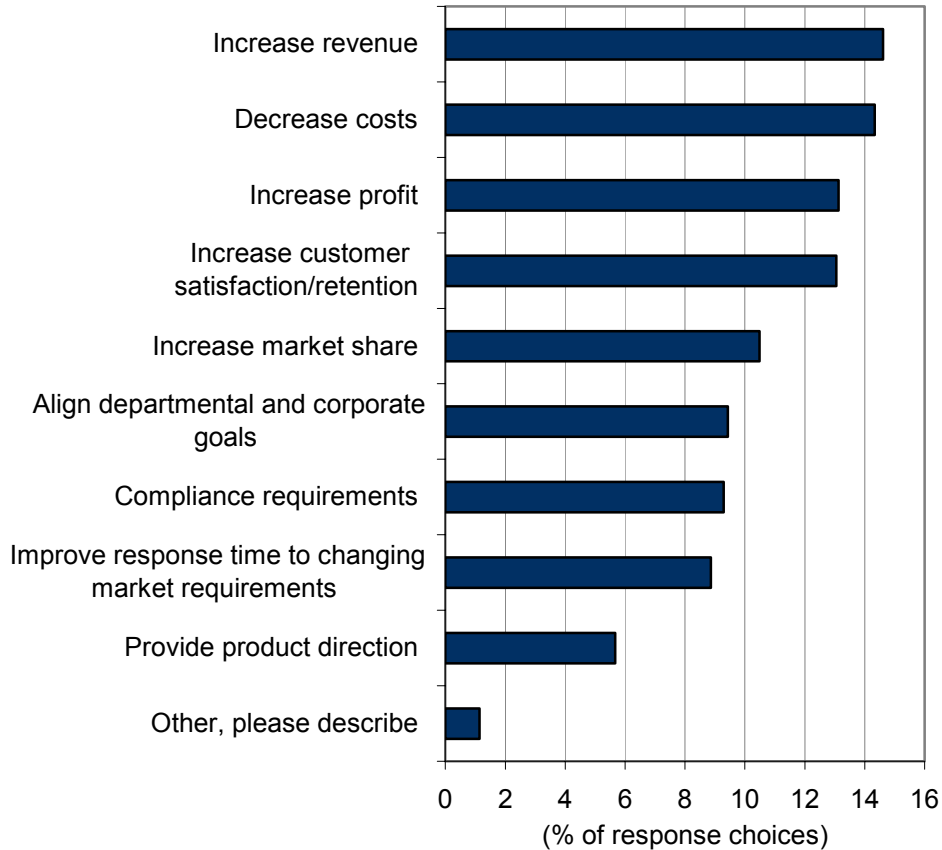
Source: IDC and DM Review, 2005

Compliance

Because many types of decisions are recurring or repeatable, decision-making processes exist that are amenable to automation. The resulting benefits enable greater consistency in the way decisions are made. This is important not only for competitive reasons but also, increasingly, for compliance reasons. Companies must demonstrate that decisions were not arbitrary but follow established procedures. Hence, they require an auditable record of decisions and a defined decision process. Companies with closed-loop processes can improve not only decision-making capabilities but also accountability throughout the organization.

However, developing and deploying business analytics solutions are not trivial tasks. Such projects require iterative plans that address a multitude of technical and business requirements.

Companies with closed-loop processes can improve not only decision-making capabilities but also accountability throughout the organization.

Technical and Business Requirements

Business analytics can be segmented into two areas. One area focuses on traditional information delivery–centric business intelligence. The other focuses on decision-centric BI supported by advanced analytics for scenario analysis, optimization, and "what-if" analysis processes.

Traditional Business Intelligence: Streamlining Information Access and Delivery

Traditional BI concentrates on information access by and delivery to individuals. The BI software supports activities for the following three steps:

☑ **Track.** Results from transactional systems are monitored to get a reading on the state of current operations. These results can be compared with established targets or goals.

☑ **Analyze.** Time-oriented data from multiple systems is integrated into a data warehouse or mart to support an analysis of key trends.

☑ **Deliver.** Reports (including dashboards) are published and delivered to business users based on the tracking and value-added analysis of the data.

The goals of traditional business intelligence are increased speed and higher accuracy in the delivery of information to ever-larger numbers of users.

Decision-Centric Business Intelligence: Addressing Collaborative Decision-Making Processes

Decision-centric business intelligence (DCBI) focuses on the decision-making steps in a business process. The goal of DCBI is to assess the relevance of information to a decision and to gain insight in seeking and evaluating possible decision alternatives. Here the business analytics software supports the following steps:

☑ **Hypothesize.** The problem is stated and alternative solutions are sought. For example, pricing analytics software can develop many more possible pricing rules than a human agent could handle.

☑ **Model.** Models are built to predict the likely result of candidate solutions to a problem. The effects of variable factors on business results are explored or simulated. This is the essence of what-if analysis.

☑ **Decide.** The results of the analysis and modeling work are considered along with business judgment and knowledge to decide on changes or adjustments to business policies or rules. Decision making is a process that involves a group of people. Therefore, support for team collaboration is vital.

☑ **Adjust/act.** Making the decision is only the beginning. Its results must be communicated to all people and applications that are responsible for execution. This process can involve the translation of the decision into the form that a particular application requires.

These steps, and the associated technologies required to support them, highlight both the technology and business process complexities involved in typical business analytics projects.

Technical Requirements

To support all their business analytics needs, organizations require distinct but related products and services, including data integration, data warehouse management, and business intelligence tools, as well as customer relationship, supply chain, workforce, and financial analytic applications. Key factors to consider include:

☑ Moving beyond information delivery to decision-centric BI

☑ Supporting decision workflow management, collaboration, decision capture, and predictive analytics

☑ Addressing the needs of multiple user constituents with respect to their data needs, user interfaces, and location (For example, 24% of organizations indicated that their users receive some alerts with mobile devices.)

☑ Addressing the constant, iterative needs and requirements of end users through self-service query and reporting solutions, online training, and external consulting and systems integration services and/or offshoring for incremental application development

Business Requirements

From a business perspective, there is a need for:

☑ Process changes that embrace flexibility, insight, accuracy, and relevance in decision making

☑ Developing a culture of fact-based decision making (67% of organizations indicate that executive focus around managing by fact and building a performance management culture is the most significant factor in promoting wider adoption of BA solutions.)

☑ Compliance with regulations that require documented decision processes and accountability for decision making

Business analytics has moved beyond the traditional business intelligence that concerns itself primarily with productivity gains by improving data capture and information delivery. Today's analytic applications support business process improvements through the introduction of new products, pricing changes, renegotiation of sourcing contracts, product or service quality management, workforce and inventory optimization, and so on.

Although the value proposition and specific benefits of business analytics projects are clear and have been documented through thousands of case studies and many empirical research projects, several challenges and shortcomings persist.

Business Analytics Market Challenges

Recent IDC market research shows that challenges faced by organizations in implementing and deploying business analytics solutions are varied. Table 1 depicts the most frequently mentioned challenges by survey respondents who were asked to select the top 3 challenges specific to their organizations.

TABLE 1

Top Business Analytics Challenges Faced by Organizations

Q. What are the top 3 challenges faced by your organization?

Challenge	% of responses
Budget constraints	17.7
Data integration	10.8
Data quality	9.7
Culture change	8.8
Time required to implement project	7.0
ROI justification	5.9
Lack of qualified personnel	5.8
Number of responses	920

Note: Multiple responses per survey participant were required.

Source: IDC and DM Review, 2005

☐ Not surprisingly, the perennial top challenge is budget constraints. The issue of budgets underlies all other challenges, whether they pertain to software and hardware costs or internal staffing requirements, including the lack of qualified personnel. Supplementing internal staff with consulting firms that combine onsite and offshore resources has become an accepted method for alleviating some budget constraints and mitigating risk.

☐ The number 2 and 3 challenges are data integration and the closely related issue of data quality. Data integration takes on different forms, but the most common remains development of extraction, transformation, and loading (ETL) routines by IT staff. Given that most large organizations have heterogeneous operational data sources, data integration plays a key foundational role in successful business analytics deployments. ETL development is often a labor-intensive project step. However, it is also a task well suited for offshore resources who can rely on their knowledge of source and target systems as well as commercial ETL software.

☑ Cultural change is perhaps the most difficult and time-consuming challenge to overcome. It requires strong executive commitment to managing by fact. It will likely require reengineering of business processes and may necessitate reallocation of staff. External consulting firms that combine both technical and business consulting services can be leveraged to guide organizations through the period of such change. This aspect of business analytics projects cannot be underestimated. For example, a survey conducted by IDC in 2005 showed that the number 1 factor (25% of respondents) leading to wider adoption of business analytics is executive focus around managing by fact and building a performance management culture.

☑ Time required to implement the project is another challenge that can benefit from tried-and-true methodology and project management. Rapid deployment of technology using business process, technology and industry-specific frameworks, templates, and data models can lead to cost savings. The ability of organizations to expand or contract their staffs as the requirements of specific project steps dictate is another factor for improving the time efficiency of development, implementation, and deployment of business analytics projects.

☑ The one top challenge not mentioned yet is ROI justification. Here again organizations have the option to rely on the selected consulting firm for references and case studies in their industry. The value proposition of business analytics discussed earlier is a starting point for making a strong ROI case. However, more in-depth results from ongoing projects in which the consulting firm is involved can serve as a template for ROI justification and budget requests.

☑ Finally, an issue that is not listed in Table 1 but has surfaced in several other IDC market research studies is the overall confidence level of decision makers in information being delivered to them. Only 14% of managers reported feeling very confident with the statement that the reports developed in their organizations deliver relevant information to the right people at the right time. If this basic requirement of traditional BI is not fulfilled adequately, organizations will find end users resistant to adopting the latest business analytics solutions.

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The business analytics consulting and implementation service provider often can impart its experience and best practices on the client organization to overcome these shortcomings. While the above-mentioned challenges are very real in today's market, with the assistance of experienced partners such as TCS, companies stand a better chance of overcoming these roadblocks to successful business analytics implementations.

The Tata Group and Tata Consultancy Services

The Tata Group, founded in 1868 in India, is one of the largest diversified corporations in Asia. It has 93 operating companies with revenues over $17.8 billion and over 215,000 employees.

Tata Consultancy Services is part of the Tata Group and has over 160 offices in 47 countries and 59,000 professionals. The company has been providing technology consulting and related services since 1968 with revenue over $2.24 billion for the year ending March 31, 2005.

TCS provides a wide range of cross-industry IT services, including strategy and IT consulting (e.g., business process reengineering, enterprise architecture definition, systems integration, software evaluation and implementation, application development), business process management (e.g., front- and back-office operations, process optimization) and infrastructure management (e.g., datacenter operations, security management). One of the key practices within the company is TCS Business Intelligence Services, which addresses challenges faced by organizations engaged in business analytics projects.

Tata Consultancy Services in the Business Analytics Market

TCS Business Intelligence Services

The TCS Business Intelligence Services practice has a base of 3,200 consultants worldwide and focuses on consulting and implementation of data warehouse and business intelligence solutions for customers globally.

As shown in Figure 2, TCS' go-to-market strategy is predicated on eight key variables — offerings, methodology, alliances, people, process, assets, training, and infrastructure — that interact as a network of interdependent variables. For the purposes of this paper, we focus on the differentiating factors of only the first three variables.

TCS BI Offerings

TCS BI offerings are classified into two broad categories — service offerings and solution frameworks — as depicted in the bottom half of Figure 2.

Service offerings are strategic, tactical, and operational services that range from BI strategy formulation and change management to software selection, development, testing, and training services on BI applications. Keeping the best interests of customers in mind, TCS gets involved in projects that span all three levels or in any one or two levels.

Solution frameworks are specific project components that map to the technology required to support both traditional and decision-centric BI needs. These frameworks range from data integration and cleansing to data warehouse development and end-user reports and dashboard management. Solution frameworks include processes, methodology, standards, solution assets, guidelines, and templates. In addition, when addressing specific customer projects, TCS combines these offerings with its industry-specific domain assets.

TCS BI Methodology

TCS has worked on developing and refining its methodologies for delivering successful business analytics projects. Its internal business processes support these methodologies with a focus on knowledge transfer, continual education, and close partnerships with leading technology providers. Its means of project execution is based on its primary methodology, the Business Intelligence for Decision Support (BIDS™) framework.

TCS' BIDS™ framework provides documented best practices for several solutions categorized as strategic, tactical, or operational. The BIDS™ framework encompasses a modular approach to building platform-independent solutions by leveraging offshore development where appropriate.

However, many clients have their own methodologies. For example, IDC has found that only 22% of organizations adopt an industry-standard methodology, while the vast majority have their own methodologies. In these cases, the first step for TCS in a business analytics project is to bring best practices from BIDS™ into a client's own BI program to improve predictability and quality of delivery.

BIDS™ ultimately provides for a modular approach to development with defined guidelines and standards that include:

- ☒ **Solution processes and tools.** TCS has documented procedures for implementing business analytics software across the project life cycle, from planning and design to implementation and post-deployment support.

- ☒ **Domain assets.** TCS develops and maintains industry-specific logical data models, analytic templates, high-end analytics, key metrics, and report templates. This reusable knowledge, based on the experience of implementing solutions for leading organizations across verticals, speeds project delivery while providing refined best practices to a client engagement. At the same time, the solutions are always customizable and extensible to accurately match clients' needs. Such domain assets help TCS create industry-specific extensions of its BIDS™ framework.

  For example, there are frameworks such as bBIDS for banking and iBIDS for insurance within financial services. Other verticalized solutions include tBIDS for telecommunications, mBIDS for discrete manufacturing (based on SCOR guidelines), and rBIDS for retail. It is important to note that although some metrics and analytics within these frameworks overlap, the majority are industry specific.

> TCS' BIDS™ framework encompasses a modular approach to building platform-independent solutions by leveraging offshore development where appropriate.

Several key internal business practices support this methodology:

☐ **5i KM3.** TCS' Knowledge Management Maturity Model (5i KM3) uses detailed methods for capturing know-how and transferring it into reusable best practices. The 5 i's (initial stage, initiation, initiatives, intelligence, innovation) refer to levels of maturity that an organization reaches as it strengthens its knowledge management capabilities across three categories of assets that encompass people and culture, processes, and technologies.

☐ **Offshore development support.** TCS has an offshore delivery model with consulting staff in India who can aid in the development of solutions at a lower cost than onsite development teams. Offshore development capabilities are incorporated into TCS' BIDS™ framework. Furthermore, TCS can manage and support custom solutions from its offshore facilities, providing clients with high-availability solutions and support personnel for problem resolution. For example, with a "factory approach" to data integration services, TCS can compress the time to deliver solutions and reduce overall project costs for its clients. In addition, TCS has also successfully extended the delivery of BI programs to a networking model, where the development and support are carried through multiple solution centers across the globe.

> With a "factory approach" to data integration services, TCS can compress the time to deliver solutions and reduce overall project costs for its clients.

☐ **Centers of excellence.** TCS has created technology-focused centers of excellence to ensure its employees have the skills required to implement leading business analytics software packages. Centers of excellence provide training on the latest technologies, develop reusable assets, provide presales and delivery support, and also provide support for go-to-market solutions with partners.

☐ **eSTREAM (Evaluation of Software Technology Rating through Excellence and Assessment Model).** TCS has a robust methodology and metrics for evaluating the level of services it can provide for specific solutions. Individual groups within the company are responsible for a specific number of centers of excellence. Each center of excellence is evaluated on a scale that ranges from emerging, to defined, to established excellence and leadership. The variables being evaluated include those listed in the center of Figure 2, ranging from people to infrastructure.

TCS BI Alliances

The bottom center box in Figure 2 shows a representative sample of the business analytics software partners with which TCS has joint solutions and joint go-to-market relationships. Those vendors represent all segments of the business analytics market, from data integration to end-user reporting and analysis. TCS' current target is to achieve at least 15–20% of revenue through partner influence. However, these are two-way relationships, and often clients request that TCS participate in software vendor evaluations and recommendations.

TCS Business Intelligence Services
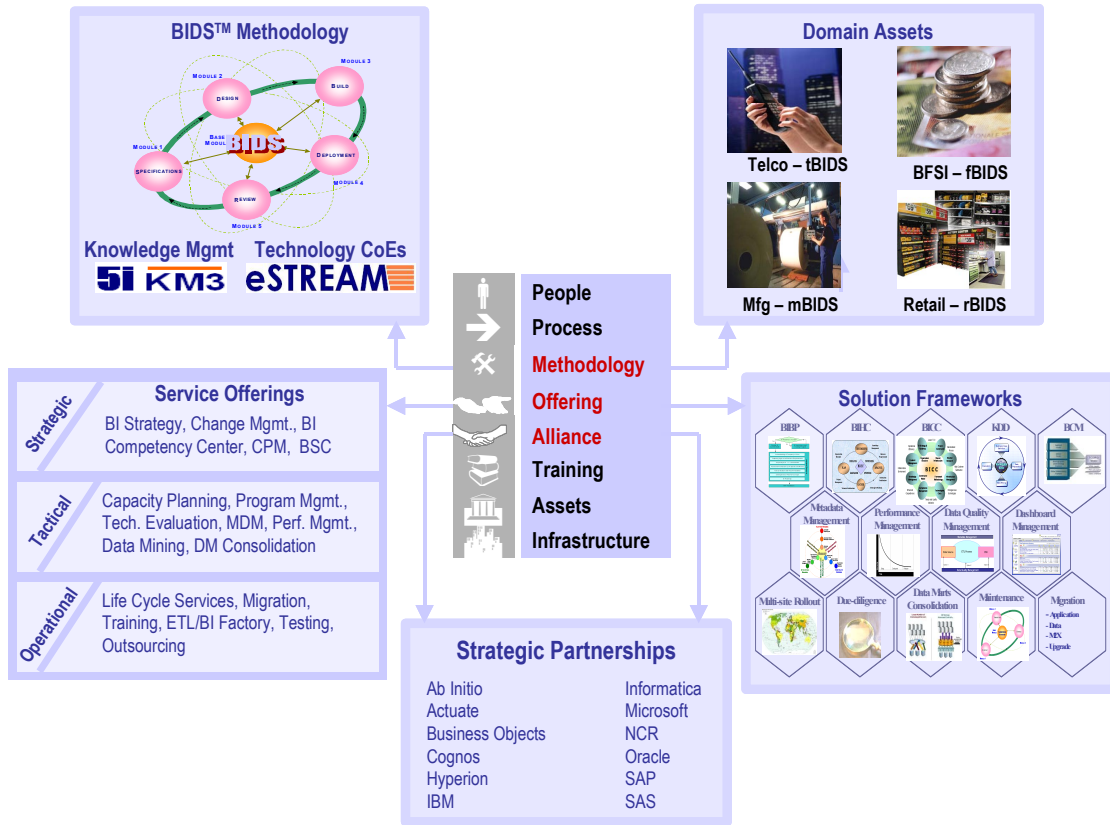
Source: TCS, 2006

CHALLENGES AND OPPORTUNITIES

The continued growth of the business analytics market is a natural magnet for competition. Thus, TCS will continue to face competition from a wide range of consulting and solution integration services companies.

Challenges

The resulting challenges for TCS will include the following:

◻ TCS has been partnering closely with its key customers to define their BI blueprints and to help them attain business value through their BI initiatives by bringing to the table domain solution offerings for their industries. While TCS' current customers recognize the value that TCS brings through its BIDS™ framework, the company faces a challenge in creating broader market awareness.

⊠ TCS has been successfully managing global data warehouse implementation that span multiple countries. TCS' implementation experience in this area has been furthered by the multiple mergers and acquisitions (across geographies) in which it has been involved to date. Having set high expectations, the company is now a business analytics services player on the worldwide scale and faces the challenge of taking its business analytics solution offerings to the broader market through continuous innovation.

⊠ Many of TCS' key BI customers are also customers with which TCS has longstanding partnerships. TCS BI alliance partners recognize these relationships, and as TCS, along with its partners, forays into newer markets with joint solutions, they face the challenge of continuing to manage mutually beneficial partnerships in a competitive environment. This may require establishing new or enhancing existing partnerships as the company's presence in different market segments expands.

Opportunities

The business analytics market is expected to continue to grow as companies seek to improve decision-making processes and manage ongoing compliance requirements. TCS is well positioned to participate in this growth as it continues to invest in its people, processes, and partnerships. Specifically:

⊠ TCS invests 4% of its annual revenue in training. Over 50% of its consulting staff members have master's or PhD degrees and are graduates of top universities. TCS is also a classic matrix organization with consulting skills in both IT and business (i.e., industry- and business process–specific) disciplines.

⊠ TCS has flexible engagement relationship options to suit the needs of its various clients. These options range from fixed price and time and materials to long-term annuity relationships. Long-term annuity relationships are driven by expectation predictability and cost advantage.

⊠ As discussed in the Business Analytics Market Challenges section, organizations implementing new solutions or upgrading their existing solutions will face both IT and business hurdles. Specifically:

❑ The primary hurdle cited was finding the budget to undertake new projects. TCS' methods for offshore development, networked delivery model and support, as well as available fixed-cost project pricing can help clients get a clear picture of the costs associated with a project.

❑ Many other challenges and issues faced by customers can be addressed by TCS with its experience and methodologies that strive to reduce customers' friction points and therefore increase return on investment.

TCS' methods for offshore development, networked delivery model and support, as well as available fixed-cost project pricing can help clients get a clear picture of the costs associated with a project.

CONCLUSION

Organizations seeking ways to make smarter, more efficient decisions will increasingly turn to business analytics software to help achieve this goal. Implementing this software in a way that supports specific business processes in a flexible manner, regardless of underlying platforms, will enable end users to execute corporate goals rather than be hindered by irrelevant, unreliable, or inaccessible business data.

Availability is a key theme that resonates with adopters of business analytics software. These buyers want to decrease the times between data collection and analysis with analytic capabilities available at all times. TCS has shown it can manage custom solutions that access data in near real time for clients. Organizations without a solid software architecture for operational BI lack the ability to make information-based decisions that incorporate historical trends, monitor current transactions, and evaluate future scenarios using predictive analytics.

Companies must anticipate that business analytics needs will change, so flexibility must be built into the solution. TCS' methodology for constructing scalable solutions on leading technologies with an understanding of key trends in the business analytics software market delivers relevant results that can adapt to changing requirements.

Furthermore, the company transfers knowledge gained from prior experiences to ensure the right metrics are tracked and the interface supports the user's way of doing work. Further, as upgrades to underlying technologies are required, TCS will have employees with the skills to manage a move to newer versions of underlying packaged software programs.

Corporations will invariably find themselves faced with some type of business analytics project as part of doing business. TCS can provide supporting services to firms with business analytics issues, whether the need is to implement an entirely new business analytics solution, address architectural complexity within an existing business analytics solution, deliver scalable and flexible decision support solutions to end users, conduct upgrades to the business analytics technology stack, or more.

The next section of this document presents case studies of four TCS clients: British Telecom Plc., Cummins Inc., a leading data and information services provider, and the United States Department of Defense.

Organizations without a solid software architecture for operational BI lack the ability to make information-based decisions that incorporate historical trends, monitor current transactions, and evaluate future scenarios using predictive analytics.

#200682

CASE STUDIES

British Telecom Plc.

Customer

British Telecom Plc. is the largest provider of telecommunication services to the U.K. market. It comprises several operating groups, including BT Wholesale (BTW), which provides network services and solutions to over 500 telco clients, ranging from BT Retail to WorldCom and Vodafone. The broadband service is further delivered to over 6 million homes and offices.

Business and Technology Issues

The Service Assurance unit within BTW is tasked with ensuring the highest level of broadband service quality provided to BT customers. To be successful in its mandate, the Service Assurance unit required access to timely and consolidated data from legacy operational systems to enable analysts to examine trends and adjust processes to improve service delivery. BT had two critical business issues:

☑ Broadband inventory data was in disparate systems and difficult to consolidate and access.

☑ Historical data about network outages, network tests, and other service records needed to support process and service improvement decisions was unavailable.

Working with TCS to Address the Business and Technology Needs

To address these issues, BT launched, in early 2004, a program to establish a new business analytics platform called Business Information Platform (BIP) for the Services Assurance unit. This project had strong management support because it was part of a broader 21st Century Network initiative at BT. Although BT's Service Assurance unit had 55 IT people, it was evident from the start that internal IT capacity was limited and needed to be supplemented by external consulting resources.

BT went through a formal service provider evaluation process, paying special attention to technology skills. Once the decision was made to engage with TCS, John Mumford, unit manager for Assurance Business Information, said, "After the vendor evaluation process, we had a very high confidence level in TCS' technical abilities."

Striving for Data Accessibility and Reliability by Deploying Decision-Centric BI Solutions

The first project for the joint BT and TCS team was to improve accessibility to information regarding the equipment inventory used in the broadband network. The goal of the project, dubbed Unified Inventory Interface (UII), was to deliver near-real-time access to network inventory information from several disparate operational systems. TCS used the Network Management subject area of tBIDS solutions to guide the project in meeting BTW's requirements.

UII functions as an integrated information hub and makes the data accessible through a variety of downstream, end user–facing applications commonly used by BT's business analysts to get information on demand. For example, UII helps to identify systemwide effects of network incidents and helps to prioritize what steps to take to fix them.

As the system went live, customer support teams were able to access cross-network domain information about different broadband equipment inventories in near real time. Performance of less than 100 milliseconds was achieved for an average size information delivery. The system's latency of 6–10 minutes between an operational system generating data to the time it could be accessed by an employee was far superior to the primarily manual extraction and consolidation of information that took place prior to the UII rollout. Following the successful UII deployment, BT plans further integration with its CRM system, which will allow customer service staff to address client inquiries in real time.

In parallel with the UII project, BT also engaged TCS for a data warehousing initiative. This project, called Service Assurance MIS, was designed for analyzing performance of broadband repair services. BT and TCS relied on Oracle and Business Objects to provide the database and BI tools. Although BT had previous experience with Oracle databases, this BI software was new to BT. It therefore initially relied on TCS for its expertise in developing reports. Today, BT's end users are able to develop reports as well as use the software to run ad hoc queries to generate information that will support process improvements and increase system reliability and service levels. The next stage of the project is to have query and reporting access to historical service results, which will supplement the currently available data on the repair process itself.

Following production deployment, BT has retained TCS to provide ongoing (24 x 7) support for both systems with offshore services. This arrangement provides the necessary resources to ensure system availability and reduce the impact on BT's internal IT staff. TCS will manage the two systems and continue to develop new functionality in support of BT's changing service assurance BI needs.

There has been positive reaction from BT employees who now have access to the new business analytics solution. For IT, UII is a key foundational project that will allow BT to jump-start several new projects through 2006. For business users, the new solution provides access to more comprehensive and timely data. For analysts responsible for ad hoc analysis, the new solution has exceeded expectations because it provides previously nonexistent functionality that enables them to have greater visibility into the process of network repairs.

Given the importance of these service assurance projects in the context of the 21st Century Network initiative, both solutions have strategic importance. BT had confidence that TCS had the right technical experience to succeed in both projects. Throughout the project, TCS relied heavily on its offshore development capability to support the 10 resources onsite at BT and was thus able to the complete the project on time. TCS' ability to scale the project team was every important. In fact, at one point, TCS used as many as 70 offshore developers to work on the complex integration requirements along with the challenges in interfaces with the source systems such as changing structures and data quality management.

During this project, TCS was involved in all aspects of technical design, development, and testing. BT's Mumford, who acted as the primary project manager, mentioned the close collaboration between him, other BT business lines and IT staff, another independent consultant, and the TCS team, which was led by its own project manager.

The fact that BT did not experience any unexpected issues in working with TCS is a testament to TCS' ability to deliver and support critical operational business analytics solutions. As a result, BT reported a very high satisfaction level with TCS.

Cummins Inc.

Customer

Cummins designs, manufactures, services, and distributes engines, power-generation equipment, and related components. The company generated $9.9 billion in revenue in 2005. It comprises four business segments, three of which focus on primary product types including engines, parts, and power-generation equipment. The fourth unit manages international distribution for Cummins' products. Each of these four segments has its own IT department, each operating independently with guidance and further support provided by a corporate IT department.

Business and Technology Issues

In 2000, Cummins moved to improve its business analytics capabilities across a variety of business segments and processes. It was saddled with disparate mainframe-based systems that required extensive manual rework to generated relevant reports to support the decision-making processes of business managers. Internal IT resources with the knowledge to support these legacy systems were becoming scarce, and resources with knowledge on how to implement newer technologies were in short supply. Cummins had begun work on implementing data warehouses on Oracle databases using a variety of ETL tools and reporting tools. In that process, the company looked to TCS for support with several business analytics projects:

☑ **Marketing.** The marketing employees at Cummins needed improved insight into pricing and sales information to better manage accounts, product pricing, and revenue generation.

☑ **Supply chain planning.** The manufacturing plants needed better analytic capabilities to help their employees manage the supply chain. Inventory and distribution information needed to be analyzed to identify bottlenecks in processes and improve delivery times of the plants.

☑ **Service.** Analysis of warranty service and support information would help determine where process improvements could be made in service delivery and manufacturing quality.

Cummins used a variety of tools and technologies to implement these projects:

☑ **Database and data marts.** Multiple Oracle versions (including 8i, 9i, and soon, 10g) as well as data marts based on Hyperion Essbase

⊠ **ETL.** In-house-developed code, Informatica, and Oracle Warehouse Builder

⊠ **Reporting.** Crystal Enterprise, Hyperion Essbase Excel Add-in, and Oracle Discoverer

Working with TCS to Address the Business and Technology Needs

Cummins had previous experience working with TCS in other technology domains. It had recently given TCS status as a preferred supplier when it began evaluating service providers that could execute the business analytics projects. TCS proved to have application development methodologies that were similar to those of Cummins' internal IT departments as well as knowledge of the variety of business intelligence technologies already in use at Cummins.

TCS was able to provide technical expertise suited to any of the technologies Cummins worked with in an onsite and offshore development scenario. TCS further provided project management expertise and manufacturing domain experts who worked closely with Cummins to evaluate supply chain practices, make process improvement suggestions, and establish performance metrics. This collaboration among Cummins, TCS IT, and functional consultants proved to be a key success factor for several subsequent business analytics projects. In fact, as Cummins continues with the iterative approach to rolling out new and enhancing existing business analytics solutions, it continues to rely on TCS for support.

As Cummins continues with the iterative approach to rolling out new and enhancing existing business analytics solutions, it continues to rely on TCS for support.

After several successful deployments, it has become clear that the robust methodology and IT expertise of TCS have created a foundational architecture that enables Cummins to extend and scale its business analytics solutions over time as necessary. The lessons learned from currently deployed business analytics projects have led Cummins to begin to establish consistent companywide standards and best practices for business analytics. In this endeavor, Cummins is also looking for support from TCS, given its experience with establishing centers of excellence both internally and at client sites.

Improving Support Services, Marketing, and Supply Chain Processes with Business Analytics Solutions

Cummins' business analytics initiative was an extensive undertaking that spanned multiple divisions, geographic regions, technologies, and business processes in support of several employee roles. The relationship with TCS proved successful project after project.

The initial project launched to tackle marketing issues related to account and price management. It included sophisticated modeling and analysis capabilities with additional reports served to the general employee base. The project consolidated information from many sources, including international sources and external data providers. With improved decision support in the marketing department, Cummins sought to provide similar results to supply chain planning processes.

Again, TCS worked with Cummins to understand the problems faced by supply chain managers. The analytics solution would need to access inventory and manufacturing information as well as integrate customer data and warranty service information.

Cummins was able to provide its supply chain managers greater insight into its operations and improve manufacturing delivery times, consolidate and score suppliers, and enhance warranty service.

TCS worked to expand several of the capabilities of the systems even as it worked to implement other business analytics capabilities to support international distributors. These efforts continue as Cummins seeks to add new metrics, dashboard capabilities, and improved data integration and quality. TCS will continue to provide resources and expertise to aid Cummins in logistics, finance, warehouse management, and plant delivery analytics initiatives.

Perhaps the strongest endorsement for the new business analytics capabilities deployed by TCS came from Barry Kastner, head of Cummins' business intelligence initiatives. As he pointed out, "The reporting and analysis applications have become part of the daily operations for our decision makers. They turn them on almost as soon as they turn on their email."

A Leading Data and Information Services Provider

Customer

The Company is a leading provider of data and information services to the banking and financial services industry. It serves hundreds of financial services companies that buy custom sets of data based on predefined metrics requiring significant batch processing prior to consumption. The Company's Application Solutions group within the IT department is tasked with maintaining computing resources required to deliver the Company's information services.

Business and Technology Issues

The Company sought to improve its time to deliver data to its customers. Its current system, developed over 35 years ago, runs on a mainframe and batch processes massive amounts of data to provide clients with custom data views. The system needed to be upgraded to reduce the time it took to process the volumes of data, reduce maintenance costs, and eventually allow customers the ability to directly access segments of the data to conduct their own analysis. The Company turned to Tata Consultancy Services for its technical expertise with extraction, transformation, and loading (ETL) tools and for other technical and project management expertise. The Company needed to address two critical business issues:

☑ Deliver information to its clients in a more timely manner

☑ Reduce the cost of delivering its services

The Company faced several technical hurdles:

☑ Lack of resources experienced with ETL tools

☑ Technical resource requirements that would vary greatly over the duration of the project

Working with TCS to Address the Business and Technology Needs

The Company had some prior experience in working with TCS, primarily in its U.K. branch. After further evaluation, the Company agreed that TCS would have the right mix of technical and project management skills.

The Company established that the first priority would be to have a skilled project manager onsite. It interviewed candidates carefully and contracted with TCS for this manager to oversee the project team, which would be a mix of the Company's internal IT staff as well as onsite and offshore personnel from TCS. The Company soon found the TCS project manager to be extremely valuable to the success of the project. The project manager's efforts to learn the Company's business, manage offshore and onsite resources, effectively communicate project status, and anticipate and address resource needs provided significant value to the project and to the Company.

Improving the Efficiency of a Mission-Critical BI Platform While Reducing Its Support Costs

The Company launched its key initiative to increase the efficiency of its operational data processing system in July 2003, and the system went live in July 2005. The new data warehouse was built on IBM's DB2 database and uses reporting tools from Business Objects. TCS provided key expertise to handle the extraction, transformation, and loading of the data from the old system into the new system. However, the Company feels that TCS' greatest contribution was in the form of project management.

When the Company interviewed potential project managers, it was looking for someone who had experience working on large projects, could communicate well, and would take charge of the project to reduce the impact on the IT manager's resources. The Company felt the TCS project manager performed above expectations. Over the course of the project, offshore development occurred seemingly behind the scenes and worked flawlessly with the software development methodology the Company had implemented for this project with TCS' input and advice.

As the new data warehouse rolled out, TCS conducted extensive tests to ensure, with 100% reliability, that the data was accurate. It further worked to develop a new Web-based interface that provided analysts with the ability to conduct dynamic queries against the data warehouse. The system not only improved access to the data but also increased processing efficiencies by 100%. The Company reported that its users were extremely satisfied with the system after training took place.

The Company worked with TCS to train key business users who would in turn train other business users on the system. Having moved from a mainframe-based system, the Company found the learning curve to be steep but well worth the results.

The Company currently maintains the system in-house but may contract with TCS in the future for additional support. It also plans to contract with TCS to further develop the system's ability to be accessed by external parties. The Company feels it will significantly differentiate itself within the market by placing more control over queries into the hands of its customers. New products and services could emerge as a result of the work it plans to do with TCS. The Company's success in working with TCS on an extremely important project of critical strategic value resulted in a favorable opinion of TCS; therefore, the Company expects the partnership to continue as future needs warrant.

The TCS project manager's efforts to learn the Company's business, manage offshore and onsite resources, effectively communicate project status, and anticipate and address resource needs provided significant value to the project and to the Company.

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United States Department of Defense

Customer

The United States Department of Defense (DoD) comprises the military branches of the U.S. government. The more than 2 million people employed in full- or part-time roles are operating within an annual budget that exceeds $370 billion. These employees, as well as their dependents, are entitled to healthcare benefits, which are administered using internal personnel and external service providers. The healthcare benefits department, through an incumbent service provider, ABSI, contracted with TCS in 2001 to help improve its services through the use of more appropriate technologies.

Business and Technology Issues

In 2001, the National Defense Authorization Act changed the format of healthcare claim forms and expanded coverage of benefits to reserve and guardsmen, effectively tripling — to 100 million — the number of healthcare claims processed annually by the DoD. The IBM S390 mainframe-based system would no longer be suited to processing healthcare claims, and the existing report systems used to support benefits-related decisions would need to be updated with modified reporting capabilities, including a data warehouse:

☒ Tricare Encounter Data (TED) constitutes the new data format collected by newly mandated forms as a result of the 2001 act. These forms are expected to further change over the years, requiring flexibility in the system that processes them as well as the data warehouse that serves reporting needs.

☒ Approximately 50 types of reports needed to be migrated and supported by a new data warehouse.

☒ Several other report data marts would need to be updated for additional analysis specifically related to identifying resource shortages within DoD healthcare facilities based on the types of claims sought by beneficiaries and the ability of these facilities to handle the treatments rather than outsource them to private facilities.

Working with TCS to Address the Business and Technology Needs

To address these issues, the DoD turned to ABSI, its incumbent systems management service provider. ABSI subsequently turned to TCS for help in migrating an S390 system based in Pennsylvania to an IBM DB2 UDB deployment running on an RS6000-based system to be managed out of Colorado. TCS conducted a capacity study in 2001 and worked with the incumbent mainframe managers to scope the project. They determined that an existing DoD enterprise license for Business Objects should be used to deploy the new analytics and reporting capabilities. The DoD found that TCS' technical experience and BIDS™ framework was well suited to the project. The BIDS™ framework matched very closely with the types of documentation and processes required to comply with DoD technology procurement requirements.

Achieving Compliance and Improved Decision Support Through Flexible Solutions

The DoD sought a solution to comply with the new government regulations that would also provide decision-making capabilities related to healthcare claims processing. TCS developed an ETL solution using Informatica and also worked within Business Objects to create reports from the new RS6000/DB2 system that were previously generated by the mainframe. Three TCS resources worked onsite in Virginia for the initial project phases and expanded to 15 while using offshore resources to perform quality assurance and testing using mocked-up data. Through testing and later in deployment, the DoD found that the new system handled the increased processing load of over 100 million claims in the same amount of time it took the mainframe to process an average 30 million daily claims prior to enactment of the new regulations. Additionally, reports and queries could now be handled through a Web browser–based interface. Continuity was maintained even as the government changed claims forms requirements. The project kicked off in 2001, and the solution was deployed in 2003 with more analytic capabilities added in 2004.

TCS was enlisted to help with migrating three other analytic solutions off the mainframe. They were based on data marts that fed service record data, claim request data, and claim fulfillment data into reports used by analysts and healthcare facilities for a variety of operational decisions. These reports were much more complex than those used by the claims processing team.

The primary goal of this function was to enable healthcare facilities to make appropriate personnel decisions. The U.S. government had allowed military facilities to refer patients to private facilities when they lacked the capabilities to provide appropriate care. The military facilities would now face budgetary penalties each time they allowed a patient to go outside the healthcare network.

The military healthcare facilities needed access to information that would support workforce management decisions because they were now held accountable for referring patients outside the network. Their analysis would include examining the medical cases of patients sent to private care facilities and searching for available personnel in other medical facilities who could be reassigned or to take other measures in an attempt to reduce the amount of patients turned away because of the lack of appropriate skill sets among professionals on staff. In fulfilling these needs, TCS selected Cognos to generate appropriate reports. The data would be loaded into three data marts in preparation for end-user access, but there was another step to take before deployment.

The DoD worked with TCS to create onsite training materials and lectures as well as online training services. Surveys of end users determined the success of the training and usefulness of the analytic capabilities. The DoD determined the project a success as it moved the systems into maintenance mode. Moving forward, the DoD plans to retain access to TCS expertise in support of the system.

In its efforts to migrate to the new system, TCS relied heavily on its BIDS™ framework, technical expertise, and project management experience to work toward the goals established by the DoD. It worked closely with an external service provider as well as internal DoD personnel to analyze the scope of the project, determine appropriate technologies, develop suitable applications and data warehouse architecture, and test the processing and reporting capabilities. The DoD was able to meet its goals for complying with the new regulations while establishing analytic capabilities that served internal claims processing departments and workforce analysts stationed in external medical care facilities around the world.

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