CASE STUDY

The Path Toward Pervasive Business Intelligence at an Asian Telecommunication Services Provider

Sponsored by: Tata Consultancy Services

November 2008

SUMMARY

The trend toward evidence-based decision-making is taking root in commercial, non-profit and public sector organizations. Driven by increased competition due to changing business models, deregulation or, in some cases, increased regulation in the form of new compliance requirements, organizations in all industries and of all sizes are turning to business intelligence (BI) and data warehousing (DW) technologies and services to either automate or support decision-making processes.

An increasing number of organizations are making BI functionality more pervasively available to all decision makers, be they executives or customer-facing employees, line-of-business managers or suppliers. IDC defines pervasive BI as follows:

Pervasive BI results when organizational culture, business processes and technologies are designed and implemented with the goal of improving the strategic and operational decision-making capabilities of a wide range of internal and external stakeholders.

Despite the fact that the term Business Intelligence was first coined in 1958 and the first BI software tools emerged in the 1970’s, BI is not truly pervasive in any organization. As organizations identify more stakeholders who can benefit from improved decision-making capabilities, they are choosing to deploy BI and thus come increasingly closer to achieving pervasive BI. For organizations struggling with changing organizational structure and culture, business and IT processes and technologies, several lessons can be learned by examining the best practices organizations employ on their path toward achieving pervasive BI.

METHODOLOGY

In 2008 IDC launched a global market research project with the goal of uncovering best practices in expanding the use of BI and analytics processes and technologies. The research project was underwritten by eleven competing BI software, services and hardware providers. The project methodology, which was developed by IDC and contributors from Boston University School of Management Information Systems department included both a survey of over 1100 private and public sector organizations in 11 countries and in-depth interviews with 22 of these organizations resulting in a series of case studies on best practices in achieving pervasive BI. One of the organizations interviewed was a large Asian telecommunication services provider. Due to the company’s request to remain anonymous, IDC will refer to it throughout this case study as The Organization.
**ORGANIZATION**

The Organization IDC interviewed for this case study is a large telecommunication services provider. Details of the organization have been removed to maintain its request for anonymity.

**SITUATION OVERVIEW**

**Business Drivers**

Like all organizations that took part in IDC's research project, The Organization was influenced by both external and internal factors that triggered a need to re-evaluate its decision-making processes and the supporting BI and analytics technology architecture. In the case of The Organization, these business drivers were both strategic and operational.

*Strategic*

Over the past few years, economic growth, new services, and industry deregulation have helped The Organization increase its subscriber base from 4 million to over 25 million. Although the company has experienced rapid growth, it operates in a highly competitive environment, where customer retention is as important or even more important than new customer acquisition. Therefore, the company puts a premium on effective execution of customer-centric processes that help it maintain and enhance its positioning in the market. A key component of such effective process execution is The Organization's BI solution, which the company's management felt it needed to improve to enable optimization of marketing, sales, customer service, and service delivery processes.

*Operational*

Although BI technologies, such as a DW and various query, reporting, and analysis tools, were not new to The Organization, by 2005 the company found it needed to establish a strategy for enterprise-wide deployment of BI capabilities. In May 2005, the arrival of a new CIO with first-hand experience in implementing BI solutions at other telecommunication companies signaled the beginning of the establishment of a long-term BI strategy for the organization. The new CIO's goal was to consolidate numerous independent BI projects, expose the information in the DW to a broader set of user groups within The Organization using a range of end user BI functionality, and to establish data governance policies and a governance body to maintain and enforce these policies.

**SOLUTION**

**Towards Pervasive Business Intelligence**

To address its BI and analytics needs, The Organization embarked on a path towards pervasive BI that would require changes to the organization's culture, technologies, and business and IT processes.

**Organizational Culture**

As a data-rich telecommunications company, The Organization had always had a culture dependent on data to inform decisions, which meant that the organization's culture would be supportive of a strategy to deploy BI capabilities more broadly. The issue preventing broader BI use was never a lack of interest in information and fact-based decision-making. Rather, the sub-optimal BI processes that developed
over time prevented broader and deeper diffusion of BI throughout the organization. In response, The Organization launched a new, specialized BI group in 2005. Organizationally, the BI group is a part of the IT department and is led by a full time senior IT manager who is dedicated to managing the BI solution. The BI group started with four dedicated staffers who collaborate closely with a virtual team of information analysts from various business units. The result is a cross-functional team with both BI technology and business expertise.

The BI group's primary, initial task was to develop the roadmap for BI and demonstrate the benefits of the proposed BI solution to business users. To do so, The Organization turned for assistance to Tata Consultancy Services (TCS). TCS has provided various technology consulting services to The Organization since 1999, and in 2006 The Organization entered into a comprehensive technology outsourcing partnership with TCS. This deal allowed The Organization to strike a better balance between internal staff and consultants from TCS, based on its BI resource requirements.

Thus, the biggest organizational change for The Organization was the clear delineation and acceptance of responsibilities among the BI group, business end users, and consultants from TCS.

**Technology**

Once an appropriate team was established, a new DW was developed as the first phase of the BI-improvement initiative. A new logical data model, provided by TCS, served as the basis for the deployment of the DW and The Organization soon began to reap some initial benefits from the information accessed from the DW. The Organization and TCS's collaboration was guided by the latter's Telecommunications Business Intelligence Domain Solution (tBIDS) Technology Framework – a proprietary methodology based on TCS's "think big, build step-by-step" philosophy. BIDS Framework is based on TCS's experience with implementing solutions for leading organizations across industries and is comprised of logical data models, analytical templates and data mining problem definition templates. tBIDS, which includes a logical data model with 300 entities and 3000 data elements, was instrumental in establishing a BI solution roadmap for The Organization.

The jump-start provided by the tBIDS framework and the resulting DW gave the BI team the opportunity to demonstrate the initial results of its technology development efforts to business end users and to begin collecting feedback about the new BI functionality. This requirements-gathering process resulted in a wide range of BI functional requirements, including those for static and parameterized reporting, ad-hoc query and analysis, dashboards and scorecards.

The BI team then developed new, and redeployed existing, query, reporting, and analysis end user interfaces utilizing Cognos BI software. In addition, certain Oracle analytic applications for scorecarding and financial performance management were deployed and technology from TIBCO was used as part of the application integration technology layer. The Organization relied on the extensive BI experience of TCS consultants for all of these BI solution development, deployment and maintenance tasks. By mid 2008, the size of the Oracle database-based DW reached 12 terabytes and the various BI tools and analytic applications reached hundreds of business end users across different departments.

As for the future, the organization's intention to launch new products and services based on 3G and GSM technologies is expected to have a significant impact on the BI solution as the format of the data coming off of operational systems will change and new types of data analysis will be introduced. Therefore, the BI team expects iterative development and enhancement of the BI solution to continue. This will include not only investments in ensuring that the BI solution scalability can keep pace with new data volumes, but will also include new analytic techniques, new reports and other end user BI tools, and the introduction of new key performance indicators (KPIs).
**Business and IT Processes**

The identification of KPIs was, in fact, one of the biggest BI project challenges facing The Organization. One of the shortcomings that the BI team had to overcome was the historical lack of a robust data governance process that would ensure consistency of KPI definitions across the organization. The lack of a common "BI language" across the company caused unnecessary inefficiencies due to time spent integrating, reconciling and arguing about information shown in disparately produced reports.

One of the examples was the difficulty in calculating the number of active subscribers, because different departments would have slightly different definitions for what constituted an active subscriber. In addition, business users didn't always believe results produced by the BI solution. To resolve these challenges, the BI team held frequent meetings with business users to clarify and reconcile data definitions and establish the most actionable KPIs. Early on during the BI project, The Organization identified 100’s of KPIs that led to the need to evaluate which KPIs were really "key". While some metrics were retired, the approved KPIs were integrated into the new BI solution over a 4 – 6 month period. Today, definitions of KPIs are documented and reviewed on a periodic basis. The BI team, which has grown over the last 2 to 3 years to 50 people (including 5 from The Organization and 45 from TCS) continues to receive ongoing requests for new KPIs and other BI solution enhancements, which are vetted through the BI team's data governance process.

The BI project also included the introduction of completely new KPIs based on TCS's industry expertise. The new BI solution improved decision-making capabilities across four major business end user constituencies. These include:

- Employees who monitor and manage performance of business processes within individual departments, including sales, marketing and customer service. These users manage processes such as revenue assurance, churn prevention, and customer interactions through the call center.
- Employees who monitor and manage the performance of the organization, such as the overall performance of departments, performance against competition, and monitoring of the four highest-level KPIs (profit, revenue, EBITA, and cost).
- Financial analysts who review the performance of business units against plan and monitor the financial performance of individual products and services. These users report their findings back to business units and executives.
- Business analysts who perform ad-hoc query and analysis on data pertaining to specific projects such as performance of a new promotional campaign. These analysts are also users of the new churn management application, whose output is used within campaign management systems to prevent customer churn.

**BENEFITS**

As the breadth of the BI solution's reach indicates, The Organization has been able to achieve a number of benefits that improve decision-making capabilities of various end user groups across multiple levels of the company. The success of the BI solution is largely attributed to the close collaboration between IT and business users under the TCS tBIDS methodology. "Engaging with the business is one of the most difficult aspects of any BI projects, but unless you do it, you will develop something that won't be used," said The Organization's CIO. "Today, BI leaders from individual business groups come together to meet every 2 weeks. This practice plays a key part in broadening the adoption of the BI solution throughout the company." In other words, The Organization has been able to make substantial progress toward providing the right information to the right people at the right time using the right tools.
**The Right Information**

- The right information can have many characteristics, including being accurate and complete. By deploying its BI solution, including the DW, The Organization was able to reconcile and document previously disparate information that existed in several BI systems. Now each business end user group is able to receive or access more trusted and actionable information that is personalized for each group with cross references to data used by other groups available on an as-needed basis.

- The collaboration between IT, business users and TCS, with its BI and telecommunications expertise, also led to the creation of new KPIs that enabled business users to analyze data in new ways and thus influence corporate performance.

**The Right People**

- By mid 2008, The Organization's BI solution reached about 500 active users (up from about half that number in 2007) as well as many others who benefit from the BI content indirectly or without direct access to the BI software. 50 of the 500 active users are considered power users, 75% of which are located in the company's branch offices – a testament to the broad deployment of the BI solution.

- As already indicated, these users are spread across various business departments. The BI team continuously monitors the BI technology to evaluate the information use patterns by department. The results show that the business users who are the most active users of the BI solution also have the most requests for new information. The organization feels this is a positive indicator that the BI team also tries to diplomatically promote among users less engaged with the BI solution.

**The Right Time**

- Providing information at the right time refers both to the timing of information delivery and the ability of end users to access their BI tools whenever the need arises. Ultimately data must be captured and then made available to decision makers at intervals that match the specific business process requirements for such information. The Organization's BI solution supports many business processes that range from real-time interaction with customers through the call center to the development and testing of advanced models that incorporate historical data to help prevent customer churn.

- An example of a process that lies between the real-time information access and historical data analysis examples just mentioned, is the analysis of subscriber quality, which is performed daily based on capture and loading of data into the DW. The information from this BI process is delivered daily to business managers so they can correct the course of their customer acquisition efforts as needed.

**The Right Tool**

- A BI solution must be able to address not only the needs of various end user groups but also those of the IT group, in its effort to support ongoing BI needs of end users. The BI team, consisting of members from both The Organization and TCS, has at its disposal a portfolio of products for data and application integration, data warehousing, and query, analysis and reporting. TCS expertise with the various tools was especially valued during the initial data integration and data quality tasks.

- For some users the BI solution provides functionality for pre-built reports and dashboards, for others it provides functionality for ad-hoc query and analysis, yet other groups are exposed to BI content through their operational applications.
LESSONS LEARNED

IDC’s goal in interviewing The Organization was to identify best practices that other organizations can apply in their efforts to make the use of BI and analytics processes and tools more pervasive. Neither The Organization nor IDC would claim that The Organization has fully achieved the goal of having pervasive BI. Nevertheless, there are several important lessons that the case highlights:

☑️ It is easy to underestimate the time and resources needed to gather initial business end users requirements. When the BI team first got actively involved with business users, its members were not adequately prepared for pent up demand for the BI solution. All requirements had to be clearly understood to enable their prioritization. This process involved several meetings between the BI team and the lead people assigned to the BI project from each department. The business analysts on the BI team then processed high-level business requirements into detailed technical requirements. Today, the newly established data governance process, including the definition and documentation of KPIs, enables the BI team to respond much faster to new BI requests than was previously possible.

☑️ The IT group also changed how it promoted BI capabilities to business departments. In the past, the IT group had not been in the habit of “selling” BI capabilities to business users. Today, the BI team continues with programs such as the BI road show. As a consequence of these active outreach efforts, word-of-mouth marketing, and the benefits derived from the BI solution, the challenge is to decide which new users should be given access to the BI solution since demand currently outstrips the supply of available BI software licenses. The Organization is now evaluating the possibility of either entering into an enterprise-wide licensing deal with its current software providers or evaluating other software tools.

☑️ Creation of a shared services group, such as the BI group at The Organization, does not have to involve a large investment in resources if care is taken to identify appropriate centralized resources and balance them with related decentralized resources. The Organization’s BI team began with a core team of only 4 people and expanded it over time through external resources from TCS and the creation of a network of contributors consisting of business analysts from various departments.

☑️ All BI initiatives are iterative with one project leading to the other. This means that care must be taken to identify the scope of initial projects before the BI technology is spread through the organization. Throughout its ongoing BI project, The Organization has quarterly management review meetings, which sometimes result in project course-correction as business user needs evolve.

☑️ Any new BI initiative that is designed to overcome existing shortcomings should not be viewed only as a technology replacement or enhancement project. Given management support, organizations should take the opportunity to re-evaluate decision processes and performance metrics. With the help of TCS, The Organization was able to gain valuable experience about best practices from TCS’s experience with multiple BI projects in the telecommunications industry.

Copyright Notice

External Publication of IDC Information and Data — Any IDC information that is to be used in advertising, press releases, or promotional materials requires prior written approval from the appropriate IDC Vice President or Country Manager. A draft of the proposed document should accompany any such request. IDC reserves the right to deny approval of external usage for any reason.

Copyright 2008 IDC. Reproduction without written permission is completely forbidden.