

Ohio Uses BI to Improve Data Analysis and Performance Reporting

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Business intelligence applications improve management and the quality of customer service delivery by enabling access to integrated, timely client and program data. Ohio's Department of Job and Family Services BI initiative shows how a disciplined implementation can achieve operational improvements.

WHAT YOU NEED TO KNOW

Business intelligence (BI) implementations continue to show strong growth in the public sector as governments must meet greater accountability, transparency and service delivery performance demands. Ohio's Department of Jobs and Family Services (ODJFS) is following an industry standards approach and embracing Gartner's cornerstone practices in implementing an enterprisewide BI strategy. While perhaps lengthening deployment, ODJFS's carefully executed BI approach — despite an extended period of deployment — has produced significant, measurable returns in terms of cost savings and better customer-centric service. As this case illustrates, government CIOs need strong working partnerships with program owners and executives to deliver tangible BI business-based benefits for agencies and their client bases.

CASE STUDY

Introduction

ODJFS develops and oversees programs and services designed to help Ohioans become independent through education, employment, job skills and training. Other ODJFS programs help to ensure a safe and healthy environment for individuals and families that need help caring for their basic needs. With a fiscal year 2006 budget of more than \$17.1 billion, ODJFS has the largest budget of any Ohio state agency. About 62 percent of the budget comes from the federal government. More than \$11.1 billion of the annual department budget supports the Medicaid program and provides healthcare to children, pregnant women, families, the elderly and state residents with disabilities who have limited incomes. About \$1.42 billion in state and federal welfare funds provide families with cash assistance, child care programs, work support and emergency services. Approximately \$1.36 billion in federal funding passes through ODJFS to other state agencies, including the departments of Mental Retardation and Developmental Disabilities, Mental Health, and Aging. In addition, ODJFS processes \$2 billion per year in child support payments, pays more than \$1.3 billion per year in unemployment compensation benefits and issues nearly \$1 billion annually in food stamps.

The Challenge

ODJFS suffered from siloed information stored in systems that required special reports to report to external entities and analyze program performance. Static reports were barriers to real-time analysis and program management and service delivery problem solving. Program staff did not have query capabilities directly on their desktop PCs. Rather, information access was based on the intervention of IT staff and did not meet the time requirements of end users. The CIO spearheaded a BI strategy designed to make the BI data the standard way of viewing the operational aspects of the department (see "BI Software Becoming a Top Priority for CIOs"). The goal of this ongoing effort, which began in 2000, was to achieve direct, Web-based user access to critical business information at the desktop, a "single version of the truth" that emphasized consistent application of data and business rules across the department, and a comprehensive view of single customers across multiple human services programs (such as Medicaid, Child Support, Temporary Assistance to Needy Families [TANF], Adoption and Foster Care) administered or funded by ODJFS. A key to success was the analytical capability to develop performance metrics that would demonstrate both compliance and successful program performance to state and federal funding agencies. Better compliance reporting and hitting defined targets would also translate into less difficult justifications and more opportunities to acquire additional resources for expanding services.

Approach

Industry-accepted standards associated with successful BI implementations (see "The Cornerstones of Business Intelligence Excellence" and "Avoid the 'Fatal Flaws' of Business Intelligence and Corporate Performance Management") were identified upfront and adhered to during a multiyear design and implementation period:

- An industry-standard *architected data warehouse/BI environment* was emphasized over simply using a database and set of tools (see Note 1).
- A *defined governance approach* emphasized participation from agency program managers, as well as executive-level sponsorship. (Business-side sponsorship, engagement and education were lacking early in the process; the data warehouse was being viewed as a fancier tool with better data access.)
- An *executive-level sponsorship group* was paramount to success. Three key senior managers who knew program/agency operations inside and out helped to define extraction, transformation and loading (ETL) requirements and also met with county workers (often frontline customer interface agents) to address and resolve concerns and problems.
- A *BI competency center (BICC)* was created to ensure that BI development efforts followed best practices and improved information delivery across the affected program areas (see "BICCs Drive Business Intelligence Platform Standardization"). The BICC, which is overseen by a steering committee and uses internal staffing, is responsible for configuration, administration, security, platform and tool operations, organization support, methods, standards, project development, quality control, and training.
- *Commercial off-the-shelf (COTS) adoption* was chosen for the Medicaid decision support system (DSS), which had wide use and adoption in the marketplace (Thomson Medstat). A Cognos BI tool suite that was used for the other major ODJFS program areas was augmented by customized reporting programs.
- BI platform decisions used a vendor-neutral and multiple *best-of-breed tool selection approach* (see "Deliver Process-Driven Business Intelligence With a Balanced BI Platform"). ODJFS selected independent tools that best met its data modeling, ETL, address standardization, geospatial coding and business intelligence needs (see Note 2).
- *Training programs* for BI application/tool use were all done in-house, using program staff who knew the information needs of managers and staff. An internal user group was also established that could articulate tool use advantages in clear business terms and champion the BI process as a way to improve program analytical needs.

Results

The results to date highlight how a disciplined approach can produce tangible results that are both business-side and public-value-oriented (see "How to Measure the Public Value of IT"), such as:

- Timely access to up-to-date critical program data. ODJFS had a backlog of several hundred reporting requests, all of which were point solutions. With the implementation of the data warehouse, data marts and Medicaid DSS, the department has been able to answer complex questions rapidly — within hours, instead of days or weeks.

- More client-focused, proactive outreach capabilities resulting from the analysis of service delivery and benefit status data (for example, Health Chek, which monitors missed preventive health services and enables a quick follow-up with the client).
- Faster detection of event patterns requiring policy or process problem-solving, such as unusual decreased/increased claims activity among providers.
- Stronger overall program analysis focused on actual benefit realization data (such as financial targets achieved).
- Adoption of a standard data warehouse/BI architecture to facilitate the efficient use of common data and client-centric cross-program data sharing, improved compliance reporting, and the elimination of redundant IT investments.
- Use of industry standards and recognized best practices in BI implementation, including a repeatable methodology that would ensure that the BI applications and data warehouse would become the accepted, preferred way of viewing the operational and performance aspects of ODJFS.

BI tool use has enhanced the state's ability to secure more federal funding. In 2004, population and demographic analysis performed by the Office of Refugee Services with BI tools and reporting enabled program managers to identify previously unreported recipients. This ultimately led to a 100 percent increase in federal funding for the program, doubling the budget to \$2 million. In 2005, the Office of Family Stability, using newly implemented business intelligence reports, won a \$28 million federal high-performance bonus for improving the job entry and employment retention rates for recipients leaving the TANF cash assistance program.

As participants in the early rollouts, Medicaid and TANF programs have reaped the most-tangible benefits to date. BI tools enhanced timely access to critical program data and analyses that experienced program analysts and managers used to make more-informed decisions about program operations, such as:

- **Program cost savings:** BI tools were instrumental in identifying total cost savings of \$1.1 billion in FY06 and FY07 during the state budget formulation process. For example, better data analysis capabilities discovered hospital pricing, Medicare in-patient co-pay adjustments, changes in trade name drug use, and mental health drug rebates, which have resulted in millions of dollars in program savings. The analysis was used to identify how to change statutes and amend payment rules to achieve the savings.
- **Improved program management and client services:** Subsidies have been restored for adult dental and vision benefits, often at lower cost. The state has recouped disability assistance costs from the U.S. Department of Health and Human Services (HHS)/Centers for Medicare & Medicaid Services (CMS) because of better reporting and supportable analysis. With psychotropic drugs now accounting for 25 percent of pharmacy-related budgets, BI tools are providing better identification of potential patient overuse, underuse and misuse. Data analysis also showed that 35 percent of all admissions to nursing homes were preceded by a patient fall within 30 days of admission. A predictive model of the likelihood of a patient falling was developed with the intention of creating a registry of patients at risk for falls.
- **Ability to qualify for CMS funds due to better reporting and higher-quality program management controls:** With quicker and more-reliable access to claims data, encounter data for Medicaid HMOs and other state agencies (for example, Aging, Mental Health, and Alcohol and Drug Addiction Services), provider data, and month

eligibility data, ODJFS is able to perform trend analyses and monthly monitoring to quickly identify potential return-on-investment possibilities.

Critical Success Factors

The BI initiative required consistent and constant leadership from both the CIO/IT organization and senior program executives throughout ODJFS program areas. Several critical success factors are worth noting:

- The mission, governance structure, roles and specific responsibilities of the BICC were established with stakeholder involvement and documented in a BICC strategic plan. This helped to establish methods, processes and success measures (such as service, quality and responsiveness) among the stakeholders.
- Data quality issues were illustrated to business process owners, making the mission and operational impacts real; acceptance testing was done with the business side. As a result, data quality corrective steps were "baked into" the initiative strategy as part of the ETL process (see Note 3).
- A standard set of tools and methodology practices were adopted to ensure consistency and discipline.
- Business rules and common data structures were addressed to help give consistent results from BI tools.
- Executive-level sponsorship and engagement were critical to the Medstat/DSS governance and implementation, and to the ODJFS initiative as a whole.
- The development of an explicit BI strategy overcame a lack of understanding and awareness of what BI was intended to accomplish.
- A statewide Cognos users group (involving multiple agencies) was formed to review Cognos-related BI approaches, tools and benchmarking.
- The Medicaid DSS effort (using Thomson Medstat tools) involved cross-agency interactions that have led to ODJFS, state attorney general's office, state auditor's office, and Medicaid program surveillance all using a single platform and measures.

Lessons Learned

- The importance of business-side-led training cannot be overemphasized. Training on the BI tools was done in-house using mission/program owners with domain knowledge. External contractors were not used for training.
- An integrated, *single* view of the customer across multiple ODJFS programs has not been achieved and remains a long-term goal. The improvements to date have been better data access and analytics within specific program offices.
- ODJFS did not rely on a single vendor to help establish its BICC except for an initial attempt that tried to use an existing data model from another state. However, this did not work well, primarily because of the lack of knowledge or training of business-side people for developing BI solutions. Instead, the BICC was staffed by a handpicked team using internal and external resources.

- Metadata standards are critical, but difficult to enforce: Metadata management has proven problematic — particularly adherence to standards by the operating program units — and requires diligent attention.
- Build rather than buy has clear advantages (speed, uniformity, interoperability, and simpler maintenance and support) but also some implications; namely, with a more COTS-based approach comes the realization that ODJFS components have less control over how the vendor defines data and data structures. ODJFS chose a COTS solution for Medicaid because of the complexity of developing medical claim and provider analytics, and the availability several good, cost-effective solutions (BI products are also beginning to address issues such as food stamps, cash assistance and work participation). Ohio has found that available data models really aren't mature enough to cover all the various ways that states may administer Medicaid programs and related data (see Note 4).
- Funding such multiyear initiatives is not easy; the data warehouse, ETL and BI tools were funded largely by pooling the resources of the various state programs that were involved and used state general reserve funds and federal funds/assistance. The Medicaid DSS data mart solution used state general reserve funds and federal assistance.

RECOMMENDED READING

"Activity Cycle Overview: Business Intelligence and Information Management"

"Deliver Process-Driven Business Intelligence With a Balanced BI Platform"

"BICCs Drive Business Intelligence Platform Standardization"

"Avoid the 'Fatal Flaws' of Business Intelligence and Corporate Performance Management"

"The Cornerstones of Business Intelligence Excellence"

"BI Software Becoming a Top Priority for CIOs"

"How to Measure the Public Value of IT"

Note 1

ODJFS BI Approach

The architected data warehouse/BI environment utilized defined subject areas (such as eligibility, service receipt and individual demographics within specific program areas), ETL processes (such as data quality issues identified, business rules established for processing data, defined processes for pulling data from systems, and applied standards for data representation prior to creation of the new data warehouse layer), metadata management (such as the defined availability, content and context of the BI information — what it is, where it came from, and how it was transformed), and data access (such as a Cognos OLAP toolset combined with security management, emphasizing HIPAA compliance and defined summary, detail and user controls).

Note 2.

BI-Related Tools Used by ODJFS

- *Data modeling*: CA's AllFusion
- *ETL*: Informatica's PowerCenter

- *BI*: Cognos Series 8 PowerPlay, Impromptu and Transformer; Report Net, Report Studio and Query Studio; and Metrics Manager, planned for use in 2006 (balanced scorecards)
- *DSS*: Thomson Medstat (AdvantageSuite, DataProbe, NetEffect)
- *Special analytical needs*: SAS and SPSS
- *Address standardization*: Pitney Bowes Finalist
- *Geospatial coding*: Sagent's AddressBroker

Note 3.
Medicaid DSS Improvement

During the initial release of the Medicaid DSS, ODJFS discovered that Medicaid claims had been submitted and paid to recipients that could not be matched with data from the Medicaid eligibility system. In some situations, eligibility could be updated in the claims payment system, but the updates were not reflected in the eligibility system. Through the ETL process, the data warehouse team was able to integrate eligibility records from both systems and provide customers with a complete, integrated view of the Medicaid-eligible population in the Medicaid DSS.

Note 4.
Customized COTS Software

For ODJFS to add denied claims, immunization and similar data required the vendor to change its data model and ETL processes. In short, despite good market solutions, none are complete, and technology providers are still customizing the data warehouse or data mart designs based on how the current legacy systems are operating.

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