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THE OHIO AGENCY DASHBOARD
TEAM OHMI

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Executive Summary

Team OhMi explored the potential for a finance-based state-wide business intelligence dashboard fueled by a consolidated business intelligence database in the State. The team found that in instituting the finance dashboard, an organization could ensure that the agency's mission is being accomplished in a transformational, cost effective manner. While recommending a more modest, initial investment into a private, desktop executive dashboard as a first step, the group was cognizant that border states such as Indiana and Michigan have already made full investments into holistic dashboards available to the public. In this respect, the question of "is it possible?" is already settled.

The group researched the fiscal implications of a dashboard (ie. "Is it worth it?"). The group found that exact cost saving and revenue benefits were nebulous, as development of key performance indicators (KPIs) and establishing a Single Version of the Truth (SVOT) have become inseparable from good public finance practice itself. Though there is no exact cost savings number available, the Information Technology and Innovation Foundation (ITIF) included dashboarding and creation of agency KPIs into its figure of $281 million in potential total State of Ohio savings over five years through IT innovation. Additionally, the team was able to point to definitive profit increases for certain revenue-generating public agencies in other states.

The team explored the cost of the software and found that emerging resources soon available to the State would amply deliver business intelligence value to agencies, minimizing increased operational cost. Throughout the paper, Team OhMi stressed the importance of linking KPIs, business intelligence, and the executive dashboard into a single, unified executive philosophy. Team OhMi's final recommendation is that finance professionals in the State adopt the dashboard concept and fully integrate themselves in the State's ongoing business transformation process.

Introduction

Team OhMi explored the potential for a finance-based state-wide business intelligence dashboard fueled by a consolidated business intelligence database in the State. The team found that in instituting the finance dashboard, an organization could ensure that the agency's mission is being accomplished in a transformational, cost effective manner.

In publishing its findings, this paper will attempt to accomplish a number of interconnected tasks. First, Team OhMi will explore the history, applicability, and benefits of dashboarding, business intelligence, and implementation of key performance indicators (KPIs) to agency finance staff. Second, the team will bridge its gained knowledge to selected sample agencies in the State and Ohio as a whole. Third, the team will deliver an assessment of whether or not it is realistic to implement these measures either piecemeal to agencies or entirely throughout the State. Lastly, the team will summarize its discussions with key stakeholders and deliver its recommendation.

Background

What is a dashboard?

The birth of dashboarding as a management tool
A dashboard is a management tool used to track organizational health (sometimes called "financial sustainability"[1]). The dashboard concept originated in the late 1990s, as the proliferation of software programs made business management more difficult for the average executive. In response, industries began exploring consolidated data analysis options. At the *KMWorld '99* convention, a Microsoft vice president laid out a vision for a "digital dashboard" in his keynote address. Charles Stevens, Vice President of the company's Business Solutions Group described this dashboard as a linking of several products into one portal interface, creating a single report screen where an executive could delve into all reports as needed[2].

Benefits and weaknesses of dashboards
Dashboards provide an agency a number of benefits, such as allowing a brand new executive to immediately determine an agency's financial health and weaknesses[3]. Dashboards additionally deliver very timely and relevant summary information and allow for more immediate decision making, in addition to virtually eliminating regular support staff data-collection redundancies.
An additional benefit of an agency-wide dashboard managed by a finance department is that it can further the concept of "Single Version of the Truth" (SVOT). The implementation of a single system with a single set of numbers gives agency data the impression of integrity. In defining

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[1] http://www.rootcause.org/docs/Resources/Books/Building-a-Performance-Measurement-System/Building-a-Performance-Measurement-System.pdf
[2] http://www.kmworld.com/Articles/News/News/Microsoft-refines-Digital-Dashboard-concept-12189.aspx
[3] http://www.financialscoreboards.com/dashboard.html

performance indicators and preferred sources for data, finance staff has already developed the SVOT. The dashboard is the delivery mechanism for that truth. As Jeanne Ross, the director of MIT Sloan School's Center for Information Systems Research advised for creating an SVOT, "just declare it. Pick the source, and declare that this is now the one version executives and employees will use to make decisions.[4]" The CFO dashboard serves as the declaration to its agency shareholders.

Negative aspects of dashboards include potential high implementation costs, though newer acquisitions by the State (such as Office 365) can mitigate these expenses. Additional disadvantages include the difficulty of quantifying "time saved," as decision making is normally a holistic process, and is often unquantifiable. Data may also be less secure, as actionable information is more readily available to staff.

Finally, due to the size differential between agencies, not all agencies will be able to take advantage of the economies of scale necessary to make the most of dashboards. An agency with a single analyst may perform *more* or duplicative work.

What are key performance indicators?

KPI's explained

Key performance indicators (henceforth known throughout this paper as "KPIs"), are a type of performance measurement. A good KPI can serve as a convenient thermometer for an agency and should measure continuing progress against an element of an organization's strategy. For instance, a constituent-based agency may identify KPIs which target issue resolution by average-time from beginning to end. An agency which administers grants may identify KPIs that track operational expense of administering activities in certain categories. All agencies in the State of Ohio should track their travel and other immediately controllable expenses that directly affect their budget.

Limitations of KPI dashboarding

Negative aspects of KPIs include the amount of time required to collect and compare information, and the concern that too many KPIs are burdensome to review. PricewaterhouseCooper's (PWC) KPI study recommends four to ten measures as the optimal range for most business units[5]. PWC's study further recommends continually re-evaluating KPIs for relevance which, as with development of agency projections, requires significant time dedicated to forecasting on the part of finance staff.

As an example of a traditional KPI independent of a dashboard interface, The Ohio State University Board of Trustees has a scorecard system with specific metrics and goals. Though the scorecard is currently published through PDF files, the format could be quickly integrated into dashboard software[6]. The trustee system is direct evidence that KPIs can and do exist without dashboards, but we will indicate later that dashboards are largely useless without key indicators

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[4] http://www.informationweek.com/it-leadership/how-to-get-one-version-of-the-truth/d/d-id/1101181?
[5] https://www.pwc.com/gx/en/audit-services/corporate-reporting/assets/pdfs/uk_KPI_guide.pdf
[6] https://oaa.osu.edu/board-of-trustees-scorecard.html

of agency health. KPIs, when promulgated throughout an agency through a single resource (such as a dashboard), represent an agency's single-version-of-the-truth. Though, as Efficiency Exchange recorded in an interview with the Finance Director of the UK's Nottingham Trent University, "We [need] analysts not data crunchers[7]." A finance professional could have a dashboard interface loaded with KPIs, but the project is meaningless without intelligence that's actionable. This necessity forms the third item in our triumvirate: business intelligence.

History of business intelligence

Business intelligence defined

Business intelligence is defined as the transformation of raw data into actionable intelligence for business analysis purposes. The term "business intelligence" (BI) originated with H.P. Luhn in an IBM research journal, titled "A Business Intelligence System," published in 1958. Luhn's conception of BI, "the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal," tracks with the contemporary definition of the term. Aided by progressive advances in computer technology, by the 1970s, the BI concept evolved into Decision Support Systems (DSS) and Executive Information Systems (EIS)

The transformation of the business intelligence concept

Also known as an Executive Support System, EIS was soon developed to transform organizational data into executive-level reports to enhance senior-level decision making. EIS used key performance indicators (discussed below) to distinguish between vital and nonvital data, which served to give better snapshots of an organization's vitals. The business need to tame Big Data fueled increased efforts to crunch information into actionable intelligence. Concurrently with EIS, and in response to "Y2K bug" concerns, firms began converting to Enterprise Resource Planning (ERP) systems, which is, like EIS and the "digital dashboard," a suite of integrated programs, to manage and interpret data collected from a myriad of sources. Financial analysts were quick to embrace the software, as it aided in financial performance accountability and more granular expense tracking. Though the terms (DSS, EIS, ERP) have changed from decade to decade, the ultimate mission of business intelligence (using data to make better decisions) has remained largely unchanged.

In delivering advanced analytics to the stakeholder in a user-friendly format, business intelligence is intrinsically tied to KPIs and dashboarding. In looking at KPIs, business intelligence, and dashboarding together, we combine 1) performance measures tied to an agency's mission, 2) a methodology to track only those KPIs which are actionable and applicable, and 3) a convenient, simple interface for viewing these items, respectively.

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[7]http://www.efficiencyexchange.ac.uk/3483/business-intelligence-at-nottingham-trent-university/

Why business intelligence? The case for knowledge

Understanding the tool and concept behind the data

A major challenge regarding business intelligence lies in limiting the scope of desires for implementation. In meeting with senior level staff, if the fiscal analyst has succeeded in capturing the imagination of agency stakeholders, the employee will end up with a laundry list of specific requests for the system. The analyst should remember that, in the world of business intelligence, less is more. Team OhMi itself struggled against shoehorning complex project management solutions into its State fiscal dashboard vision. When integrating KPIs into decision analysis, agencies should take into account best practices. US defense contractor Big Sky Associates notes that "KPIs should be only the highest priority indicators that provide more insight than any other measure or metric at your government agency[8]." As countless companies with their own business intelligence software have stated, "Dashboards need to be concise and show information points in a way that can be digested and acted upon immediately[9]." This demand virtually requires hands-on participation by the agency fiscal analyst, the staff member who is intrinsically able to parse meaningful, actionable data from clutter.

Due to the immense amount of data that the Ohio Lottery must navigate, the agency has been methodically entering into the world of business intelligence. In fiscal year 2015, the Lottery launched the MyLotto Rewards program, powered by a custom content management system. Similar customer reward systems have been used by Virginia Lottery, among others, to gain valuable consumer insights into buying patterns and player motivations. These consumer insights result in a plethora of benefits to the citizen (decreased operational costs through better player targeting), the player (in creating more appealing products), and the State itself (in the form of increased profits for k-12 public education).

Examples of business intelligence dashboarding in action

In addition to the Virginia Lottery, members of Team OhMi reached out to the California Lottery, which implemented Business Intelligence Business Analytics[10] (BIBA) and Predixion[11] analytics systems to deliver KPIs, ad-hoc reporting solutions and advanced analytics to key stakeholders. California Lottery succeeded in integrating a system into its business operations that enabled staff and decision makers to integrate performance metrics into its decision making process. Lottery business intelligence, when tied to a gaming loyalty system which conducts periodic user surveys, may perform market segmentation analysis[12] and determine consumer trends. This segmentation

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[8] http://www.bigskyassociates.com/blog/measure-what-really-matters-the-secret-to-effective-kpis

[9] http://www.logianalytics.com/resources/resources-library/dashboard-best-practices-part-4/

[10] http://stage.calottery.com/~/media/D89798BA8CBE45F39486B9E77C7B72D6.pdf

[11] http://www.calottery.com/about-us/lottery-commission/commission-schedule/~/media/122FF6369A4A469C9F06CF43786CDEF1.pdf

[12] http://www.flalottery.com/exptkt/FloridaSegmentationFinalReport_30April2012.pdf

and trend analysis directly leads to increased revenue for the state and its beneficiaries. Most lotteries are engaged in both market segmentation and researching trends, but the combination of both into a single real-time dashboard acts as a powerful decision-assistance tool for senior management. This is the key takeaway for an agency dashboard: in laboring to create this system, we are empowering senior management to make intelligent decisions powered by data on a daily basis. In cascading KPIs from the senior manager all the way to the customer-facing level, this system can serve to create challenges for employees, which create a self-motivated staff[13] and can drive incentivized and objective compensation systems (in the form of employee bonuses) in the State.

Research Strategies

Current state of sample agencies and the State of Ohio as a whole

Introductory interviews
In introductory interviews with state key stakeholders, our team explored the current business intelligence landscape. A member of DAS' Project Success Center noted that he has built over thirty dashboards for Ohio agencies. Though not available on the web for review (as they are custom designed and specifically for internal use), the DAS administrator stresses the importance of data security (ie: development of a policy to ensure that sensitive data is kept internal-only) and paying attention to the potentially enormous political aspect of a big picture multi-agency project management dashboard. To address these issues, the stakeholder suggests, rather than a multi-agency solution, an entity-level, roll-up dashboard for fiscal officers and business offices to monitor the health of programs.

Other stakeholder input
Another stakeholder, an OAKS administrator, uses a dashboard generated by OAKS-BI itself to ensure the day-to-day management of the system. He noted to the team that he has received feedback from multiple agencies who have expressed interest in building a project monitoring dashboard. In response, the OAKS team is beginning to develop individualized solutions to begin moving agencies into the fold, with an upcoming project with the Department of Transportation serving as a notable example. As with the first stakeholder, the OAKS admin strongly recommended, rather than an everything-for-everyone solution, agencies should target a "CFO Desktop Dashboard." In this respect, we recommend divorcing the idea of a traditional project management dashboard (ultimately beyond the scope of our recommendation) from a CFO dashboard (what we are recommending).

In further discussions with administrators throughout the State, there were a number of consistent points and requests:

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[13] https://www.advisory.com/sitecore%20modules/web/research/medical-group-strategy-council/studies/2012/building-actionable-executive-dashboards/engaging-providers-in-dashboard-applications/lesson-6-cascade-dashboards-down-to-provider-level/cascading-dashboards-empower-executives-of-every-domain

1. The CFO dashboard concept should be at a summary level within an agency. It should be immediately accessible to a stakeholder with little "legacy" agency knowledge.
2. As mentioned earlier, a fiscal project dashboard across agencies, while worthy, would be challenging to implement and beyond the scope of a decision management dashboard.
3. As an additional point against tying a project management dashboard into a CFO decision management project, the State uses operational chart fields in OAKS, which do not have a consistent hierarchy. While some agencies use chart fields to budget, others budget via reporting fields. This would create an additional, unnecessary bottleneck in what should otherwise be a straightforward CFO dashboard implementation.
4. Should OAKS power the solution, the State would likely need to create two types of dashboards (chart fields and reporting fields) and allow the individual agencies to select one.

Can Ohio consolidate its knowledge?

Ohio's Master plan and other State's solutions

In order to determine how (and if) Ohio should consolidate its knowledge, the State should periodically revisit its master plan and make a determination between a couple key options. The State should also look at solutions engineered by other states. The State of Michigan, for example, launched a public dashboard under their Open Michigan initiative, where any citizen can view a number of KPIs based on enterprise-wide expenditures, cash balances, reserves, etc.[14]. Similarly, the Indiana Department of Education uses Compass to visualize data[15].

Ohio agencies must decide conclusively whether it will follow an "all-in" data modeling system that will omnivorously consume and report data from a myriad of sources (which reflects the promise of quantum computing[16], newer versions of SharePoint, Hadoop [which already interacts with BI Cognos via the Hive warehouse[17]]) or commit to capturing more agency-specific information in OAKS, which may involve creation and deployment of bridge software between third party solutions and Ohio's own OAKS system.

Though OAKS warehouses a large amount of data for the State, it is still a *single* source. Agencies currently use OAKS in conjunction with a number of other software solutions. An agency stakeholder commented that he finds some irony in the addition of *new* one-stop shops, which end up complementing, rather than supplanting, older systems.

The following section illustrates the complexity of data analysis among a sample of State agencies.

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[14] https://midashboard.michigan.gov/financial-health

[15] http://compass.doe.in.gov/dashboard/overview.aspx

[16] http://www.fiercebigdata.com/story/quantum-computing-tackle-big-data/2013-07-22

[17] https://www.progress.com/blogs/cognos-business-analytics-connectivity-to-hadoop-hive-just-got-bigger

Alternatives to primary contender

In analyzing a few key agencies within the State, the group found that organizations' decision models came from a myriad of different systems out of sheer necessity. The following area attempts to summarize the finance data atmosphere of three agencies: the Ohio Lottery Commission, the Department of Developmental Disabilities, and the Ohio Department of Transportation:

Ohio Lottery

Introduction
The Ohio Lottery uses a number of software solutions and reporting software to manage its data, to include the Ohio Administrative Knowledge System (OAKS), its primary vendor's Back Office System (BOS), the Integrated Agent Database (IAD), SharePoint, and a myriad of Excel and Access documents, not to mention the drawers upon drawers of historical paper records which have yet to be entered into document tables. Finance staff earnestly began research into business intelligence and enterprise resource planning software last year, tapping into its contacts at other state lottery agencies. After meetings with both Virginia and California Lotteries, senior management walked away with the distinct impression that BI was the future of the lottery industry. As Bud Borja, Senior IT manager of the Oregon Lottery, was quoted in a Microsoft Dynamics case study[18]:

> Reducing the number of manual processes and the number of places people have to look for information has had an immediate impact on operational efficiency.
>
> …
>
> We needed a single version of the truth, but we also needed a way to implement best practices across the organization, as a way to introduce operational efficiencies.

Roadmap
After meeting with key stakeholders in the agency, Lottery Finance staff have developed a roadmap to launch the process from the agency's finance department, followed by an enterprise-wide launch later in the fiscal year. In the sense that the Lottery must deal with both revenue and expense, the agency's operations are complex. However, the agency benefits from a single, unchanging mission (maximizing profits to education) and activities which are similar to that of private firms, which translate to simpler development of performance indicators.

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[18] State Lottery Manages Over $1 Billion in Revenue with Microsoft ERP solution, Microsoft Dynamics

The Lottery's Finance and IT staff are testing and intend to launch Microsoft's Power BI program, in hopes that it can deliver KPI performance to senior staff on-the-go. Power BI is a Microsoft-based business intelligence package that combines on-premises and cloud information into a single, central location. A top enticing factor toward agency adoption is the software's capability of delivering the dashboard on a CFO's smartphone[19], promising real-time on-the-go data updates. With the installation of bridge software, finance analysts can set refresh schedules on local files to sync data changes with the cloud-based software. The Lottery demo currently holds visualized KPIs for lottery sales vs. prior year and forecast, minority business enterprise (MBE) year-to-date actuals vs. required, profit transfers vs. commitment, in addition to frequently referenced historical data. The immediate benefit of Power BI is that it interacts directly with the State's newly deployed Office 365 suite and OneDrive[20]. It is the Lottery's hope that future OAKS revisions include similar PC-to-mobile connectivity for budget and expense information.

Department of Developmental Disabilities

Introduction

The Department of Developmental Disabilities represents the average State agency in its data needs; the DODD relies on a number of difference business intelligence packages for the vast amount of data it uses on a continual basis. All of the financial information is captured using the OAKS systems and can be extracted using OAKS and BI. However, the information must be manipulated after it is pulled from these sources in order for the information to be relevant. Because DODD has a large number of funds and general revenue funds line items that must be tracked (35 separate lines), it is necessary to monitor spending trends on a daily basis. A report from BI is sent directly to the budget analysts on a daily basis and then this information is dumped into Excel to create a picture of how much has been expensed and encumbered year-to-date. While it may be advantageous to have a dashboard to monitor on a daily basis, it would not be something that the CFO would be interested in receiving, due to the large number of funds that are monitored. It comes down to the budget analyst continually monitoring the spending in each fund and then communicating to the relevant parties the severity of the situation.

A closer look at DODD

While a dashboard with 30 plus funds to be monitoring on a daily basis by the CFO would be extremely unwieldy, an agency with 2-3 sources of funding might find this to be more beneficial. A dashboard that would allow the CFO or dashboard manager to pick the funds to be included would be more beneficial. Surely all funds would need to be tracked but CFOs could monitor those funds that have more variable spending. This need ties into OhMi's recommendation for a practical limit to tracked KPIs and the ability to add and remove measurements as needed.

The DODD funds are split into three major categories, all with very different spending trends. The first is statewide operated developmental centers. These developmental centers must be fully staffed at all times, read 24 hours a day every day of the year. The largest variable costs would be payroll, with payroll increasing on holidays because of overtime compensation. The funds used

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[19] http://blogs.msdn.com/b/mvpawardprogram/archive/2014/08/04/primer-on-power-bi-business-intelligence.aspx
[20] https://support.powerbi.com/knowledgebase/articles/471009-refresh-excel-csv-and-power-bi-desktop-files-sto

for the developmental centers do not need to be monitored as closely as the other two categories because so much is devoted to payroll.

DODD fully or partially funds over 35,000 waivers for individuals who wish to reside in the community and require assistance to do so. The five or so funds used to pay for these services are not the same funds used for the developmental centers. The spending in these funds remains fairly steady over the course of each fiscal year and to provide daily updates on these funds would be unnecessary. However at least 60% of the DODD budget is spent on these services. So if only the largest funds were to be included on a CFO dashboard there would be a lot of information that would not actually be relevant. Again, OhMi insists that a CFO dashboard should follow BI best practices, which involves only the inclusion of the most relevant, actionable intelligence.

The Central Office portion of the budget is the smallest, but requires the most monitoring due to the restrictions placed on how each of the funds can be used. There are a variety of difference dashboards that are being created on a continual basis to monitor payroll spending by quarter, encumbrances and projected expenditures.

Because of the complexity of the DODD budget and the number of funds that must be monitored, the budget analysts are primarily responsible for monitoring revenue and spending trends with the understanding that a monthly memo is provided to the chief budget officer as well as the CFO. This allows the analysts to provide a high level snapshot view of all aspects of the agency and explain the trends with the summarized data. More specifically the GRF disbursement estimates provided to OBM at the beginning of the fiscal year are used to compare actual spending across all funds and groupings of funds. This allows the analysts to explain any variances and communicate to the CFO any concerns they may have about the current trends of the agency. For instance, with the unbudgeted payroll increases in FY16, 17 and 18, we can explain why spending on the Central Office and Developmental Centers have been higher than originally projected.

DODD also gathers a lot of data on the type of individuals being served including demographic information and health need information. One of the biggest drawbacks is not being able to marry our financial data with individual data. So it becomes very difficult to gauge the costs of adding an additional child to a waiver because without extensive manipulation the cost of the individual disaggregated cannot be determined. If the internal data gathering system could be tied to OAKS BI then the DODD leadership might be able to target which portion of the population could be served based on funding available. It would be more useful to know the cost of adding a child with specific needs if you could determine the cost of similar cases.

Ohio Department of Transportation

Introduction

The Ohio Department of Transportation is even more complex; ODOT uses a multitude of databases and reporting software in the management of its funding. The agency's main accounting database is driven by an exclusive, internal accounting system, Appropriation Accounting (AA).

A closer look at ODOT

This system feeds a database and a data warehousing model that staff can query against using Hummingbird BI Query software to retrieve financial information. The data that is housed in ODOT's AA system is stored and tracked at a very detailed level and incorporates data that comes from other databases outside the world of finance. Due to the complexity of ODOT's funding, as well as the need to track all aspects of the capital program and its numerous construction projects, ODOT must incorporate data that is independent of the accounting transactions created from its business process. For example, "Federally eligible" costs are billed to the Feds on a reimbursement basis. ODOT must track accounting data on a very detailed level by project, and eligible costs on a case by case basis. If a project has costs that are Federally eligible and ineligible, ODOT tracks the split of funding by the funding source Federal, (eligible and ineligible), State, Bond and Other. ODOT employs multiple databases and data warehousing models to track project planning, project management and project accounting data. The ELLIS program management model is a tool used to plan construction projects that have a variety of funding needs. Finally, ODOT uses Microsoft Excel and Access to assist in the preparation and tracking of both accounting and non-accounting transactions and data that are involved in the operation of the Department.

ODOT utilizes a dashboard, or a set of KPIs, at the agency that is referred to as "Critical Success Factors" (CSFs). These CSF's are measured quarterly, and are a good demonstration on how the various areas of the Department care about measuring its success in all aspects of its core mission. The agency has approximately 20 different CSF's under the broad categories of People, System Conditions, Safety and Capital Programs. A brief example from each category includes:

- Direct Labor Ratio – billable labor hours divided by the number of total labor hours in ODOT's core business functions
- Maintenance Conditions Ratings – the actual number of deficiencies from a sampling of the state highway network
- Total Crashes – number of motor vehicle incidents that occurred on the ODOT system
- Contract Program – total construction and maintenance contracts awarded for the fiscal year on ODOT and local agency projects

The Financial Management team at ODOT uses a variety of daily and monthly reports to monitor the financial health of the agency. Data is gathered using the agency's in-house data warehousing model. For example, the cash balance report is prepared weekly and compares the cash balance of its largest fund (the highway operating fund 7002) to the OAKS system. Once any timing differences area accounted for, any remaining discrepancies are resolved. The cash position report, completed monthly, compares the amount of appropriations and revenue by fiscal year compared to the amount of encumbrances and disbursements that have occurred by fiscal year. These revenues, encumbrances and expenditures are broken down into detailed program areas in the highway operating fund. Since ODOT operates across multiple fiscal years, due mostly to capital construction projects, ODOT uses this information to monitor the cash balances by fiscal year to determine if a transfer of cash is needed between fiscal years. ODOT is a data driven agency. The majority of its various systems act as silos of information that are not integrated. Therefore, ODOT has experts in each data model but, in order to provide any meaningful data,

the agency has to compile several different sets of data together to get a full picture of the agency. For Example:

- The finance department has a couple designated employees who are experts in creating queries in the accounting GQL data model
- The planning area has experts in the agency's ELLIS planning tool as well as ELLISGQL data model.
- The cost accounting area has experts in EIMS and EIMS GQL

This potentially creates a time lag in the timing of the data and the ability to quickly make decisions.

ODOT currently uses OAKS in a limited manner. The agency's HR department and a few isolated users in the Finance area currently utilize Cognos BI reporting, and do so in a very limited capacity. ODOT would like to be able to get everything into OAKS in the near future, but it will be a costly and cumbersome process. Instead, in discussions with the BI Cognos liaison, and the members of our OHMI team, we feel that it would be beneficial for not only ODOT's needs, but the state of Ohio as a whole to come up with a one stop shop to dump all data relevant to each agency and have a dashboard in OAKS or in Cognos that can point to this comprehensive list of data and create an easy to use customizable agency specific dashboard.

Stakeholder input

Strategies utilized

OhMi utilized a number of methods in order to gain stakeholder input during its project, including e-mails to agency finance directors, a survey distributed to agency senior management, phone calls to agency senior staff, and interviews with OAKS representatives. As the team worked with these multiple stakeholders, we found that individual needs to each agency (and even within each agency) varied considerably. Truly, items of vital importance to a chief budget officer were not the same as a priority to a purchasing coordinator. We believe that implementation of a dashboard would need to be easily customizable and targeted to the individual.

Difficulties

Another difficulty in implementing a dashboard within an agency would be the need to customize the dashboard based on the time of year. During the beginning on the year there are some pieces of information that are needed on an almost daily basis. Monitoring operating purchase orders from the previous year is very important until the November close date and then this information is irrelevant for the intervening 6 months. At the end of the year agencies are hyperaware that all appropriations must be spent or encumbered before the close of the year. Monitoring the remaining balance for each fund becomes much more important to ensure that appropriations are not lapsed. Not only are there different needs based on the time of the year, but many payments are strictly cyclical and only need to be monitored weekly (waiver payments for DODD and likely Medicaid payments by the Department of Medicaid), bi-weekly (payroll costs), or monthly. To provide a daily update on fund activity changes that occur infrequently would be unwieldy.

Recommendations

In discussion of our group's project with key stakeholders, we have found that the OAKS development staff's vision for their system is strikingly similar to our own dashboard conception. Furthermore, the OAKS team's emphasis on training is heartening, as an enterprise business intelligence dashboard system is useless without agency buy-in. The downside, though, is that OAKS does not currently capture all agency data and our survey revealed some reticence to burden the database with additional data. Should the implementation of bridge software be effective for the OAKS team, so long as it does not slow report generation, we recommend that the team begin exploring the integration of agency-specific, non-expense information. Again, though, the issue with a lack of hierarchical data may serve as an impediment to full utilization of OAKS.

Additionally, the State's shift to the Office 365 package is itself a move to a business intelligence atmosphere. Microsoft's new Excel 2013 includes the capability for a self-serve BI, while pairing Excel with the new SharePoint 2013 allows creation of Business Intelligence centers that can be shared with internal stakeholders[21]. Research firm InfoTech claims that, as over 63% organizations use Excel as an analytics tool, yet few consider themselves business intelligence users, Microsoft began leveraging Excel's market share to grow into BI. With both OAKS-BI and Microsoft's package, the State appears to be increasing its potential KPI visualization options in quick, sort order. It is possible that some combination between Power BI and OAKS may be the way to go for agencies, in that OAKS could potentially bridge its tables to Power BI as one data source of many.

Yet we are adamant that simplicity should remain a mantra of this project. A McKinsey & Company research study[22] determined that, when information systems are dysfunctional, performance suffers. A chief area of dysfunction the company identified was in capturing and generating data that wasn't relevant to corporate decision making. In other words, business intelligence systems hobble themselves when they spit out data that is largely useless and crowds out useful data. DOMO, a cloud BI provider, considered this act, a focus on meaningless measures, one of the most common mistakes in crafting a business intelligence strategy[23]. For the end user, the agency dashboard and final repository of knowledge should be clean, simple, unified, and accessible. This would likely require the creation of an analytics team in each agency, which would meet regularly.

Team OhMi suggests that the State creates an easier way for agencies to create and modify their own dashboards. Each agency should have a couple trained dashboard experts (in the way that Apple stores have a "genius bar") who could guide CFOs and fiscal staff in modifying dashboard items and KPI measurements. This system would be similar to the existing BI representatives

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[21] Decide Whether Microsoft Business Intelligence 2012 Fits the Bill, InfoTech Research Group, 2012
[22]
http://www.mckinsey.com/insights/business_technology/data_to_dollars_supporting_top_management_with_next-generation_executive_information_systems
[23] https://www.domo.com/assets/downloads/resources/7-deadly-sins.pdf

(and "BISC" workgroup system) from each agency, but would require significantly increased amounts of training. The resource increases toward training, though, would be massively offset by the saved time from the elimination of wasteful, duplicative data collection process. The age of finance staff's daily hassling with functionality issues[24] and largely meaningless charts in the three-decade-old Excel must end.

We also suggest that employees and stakeholders should keep in mind that further investment will always be difficult to justify. Agency directors may like the sound of a "one stop shop" to judge the fiscal and operational health of their organization (as with the Power BI dashboard), but may demand a cost savings plan, which would be nebulous and difficult to quantify. How does a workgroup quantify agency readiness? Directors and staff should keep in mind that dashboarding and integration of KPIs falls within the area of business transformation and thus serves as a driver, itself, of organizational efficiency. The Information Technology and Innovation Foundation (ITIF) has found that business and financial operations in state government has a high ease of automation in relation to other state functions[25], and that Ohio can realize a savings of up to $281 million over the next five years through IT-enabled productivity improvements in its operations. ITIF reports that, in March 2014, Indiana Governor Mike Pence ordered state agencies to work with the Office of Management and Budget and Office of Technology to create improvements and efficiencies in state operations:

> Pence realized that sharing data, and the insights the state could glean from analyzing that data, could lead to cost savings and solutions to complex problems. Indiana publishes data for 60 agencies to a public-facing website, the Management and Performance Hub (MPH), with key performance indicators (KPI) and an interactive dashboard, which helps the state identify trends, shortcomings, and opportunities to improve programs and services. The software for Indiana's MPH cost the state $2.5 million, with an annual $550,000 maintenance fee. However, the state hopes to use this data analytics engine to tackle its most salient problems, such as the state's infant mortality rate, recidivism, and associated costs. This technology allows inquiries that once took hours to take only minutes, and state reports that once took a month to prepare now take 30 minutes[26].

Biased as we are, the team believes that finance professionals should play a lead role in the area of agency transformation. As a recent editorial by Ricoh CFO Gary Crowe put it[27],

> As we analyzed the problem [of being held back by traditional ways of thinking and acting], I realized that finance could play a

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[24] http://fortune.com/2012/10/01/confessions-of-an-excel-addict/

[25] http://www2.itif.org/2015-next-wave-it-state-government.pdf

[26] Ibid.

[27] http://ww2.cfo.com/enterprise-performance-management/2015/08/cfos-role-business-transformation/

> bigger role than anticipated in helping drive change. As CFO, I had an opportunity to play a key role in the culture change.
>
> …
>
> Adjusting our KPIs is helping us propel the cultural transformation that we and our customers need. If there had been any doubt about our commitment to full-fledged transformation, it disappeared when we started to measure services-oriented activities in every operational category we could. You now see evidence of the transformation not only in the metrics, but in our hallway conversations, our presentations, our sales, and the way customers, partners, analysts, and the media talk about us.

Team OhMi strongly agrees with this stance. If any specific overarching value (beyond our specific recommendations) should be gleaned from our project, (and as the group has stated numerous times throughout this document) it is that organizational transformation will, and should, originate in an agency's finance department, in conjunction with the agency's IT area. As technology continues to change the way that organizations approach data management, efforts by Finance to maximize operational efficiency and effect greater cost savings will naturally intersect with this drive for organizational transformation.

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