The 2015 Enterprise Application Market in Higher Education

Business Intelligence Reporting and Data Warehouse Systems
Contents

What You Need to Know 3
Market Share 6
Management Strategy 8
Deployment Strategy 10
Case Study: Building an Enterprise Analytics Ecosystem at Washington University in St. Louis 12
Conclusion 14
Acknowledgments 14

Authors

Leah Lang, EDUCAUSE
Judith A. Pirani, Sheep Pond Associates

Citation for This Work


©2016 EDUCAUSE. Creative Commons BY-NC-ND 4.0.
What You Need to Know

Data-informed decision making is integral to operations and student success initiatives. As a result, business intelligence and analytics are among the top IT issues in 2016. With a focus on making disparate data accessible for multiple purposes, institutions are investing in the infrastructure needed to get data into the hands of those who need it. The jump in the rate-of-change ranking from 2013 to 2015 for business intelligence reporting (fifth in 2013, second in 2015) and data warehouse systems (sixth in 2013, fifth in 2015) reflects this focus (figure 1).

Figure 1. Characteristics of core information systems

*Rate of change is an indicator of how rapidly a system area is changing. It is a composite score based on year of current implementation and on plans to implement new systems or replace existing ones. Systems with the highest rate of change typically have been implemented recently or are expected to be implemented or replaced soon.
Definitions

**Business intelligence reporting:** A set of administrative functions and associated software systems that support planning and decision making by categorizing, aggregating, analyzing, and reporting on data resulting from transaction-processing systems.

**Data warehouse:** A central repository of data, often created by integrating other data sources and used for reporting and analysis.

Contributing to the jump in the rate-of-change ranking is the increase in institutions with these systems in place. In 2015, 9 in 10 institutions (88%) provided a business intelligence reporting system (figure 2), compared to 8 in 10 (80%) in 2013. Similarly, 8 in 10 institutions (79%) provided a data warehouse system (figure 3) in 2015, compared to 7 in 10 (71%) in 2013. In addition to institutions implementing new systems, more institutions are planning to replace their systems in the next three years than was the case in 2013. One-fifth of institutions (17%) plan to replace their business intelligence reporting system, and the same percentage plan to replace their data warehouse system, in the next three years, up from 13% and 14%, respectively, in 2013.
Figure 2. System provision and plans for change for business intelligence reporting systems

Figure 3. System provision and plans for change for data warehouse systems
Market Share

With rapidly changing products that are multifunctional and integrate with one another, the market for this space is increasingly difficult to quantify. One-third of institutions use multiple products for their business intelligence reporting systems (figure 4); one-quarter of institutions use multiple products for their data warehouse systems (figure 5). The balance of the market for both system areas is relatively heterogeneous, with one-third (31%) of the market using a business intelligence reporting system from one of the top 4 vendors—IBM, 13%; Evisions, 7%; Oracle, 6%; and SAP, 5%—and two-fifths (44%) of the market using a data warehouse system from one of the top 4 vendors—Ellucian, 16%; Oracle, 14%; Microsoft, 9%; and Blackboard, 5%.

Figure 4. 2015 business intelligence reporting system market
Figure 5. 2015 data warehouse system market
Management Strategy

Most institutions choose to implement their business intelligence reporting and data warehouse systems in-house (see figures 6 and 7). Another management strategy that some institutions choose, perhaps to gain efficiencies, is to share hosting with another institution. According to the 2015 ECAR report *IT Service Delivery in Higher Education*, about one-third of institutions share services. Although not prevalent, this practice is more common with data warehouse systems than business intelligence reporting systems.

Figure 6. Management strategies in use for top 4 business intelligence reporting solutions
Figure 7. Management strategies in use for top 4 data warehouse solutions
Deployment Strategy

Institutions most commonly use web-based applications for their business intelligence reporting (51%) and data warehouse solutions (32%). Another common method of deployment for both system areas is basic desktop application (29% for business intelligence reporting, 32% for data warehouse). Institutions using Oracle Business Intelligence Enterprise Edition are more likely to use a web-based application for their business intelligence reporting system than institutions using other solutions. Institutions using Blackboard Analytics are more likely to use a basic desktop application for their data warehouse system (see figures 8 and 9).

Figure 8. Deployment strategies in use for top 4 business intelligence reporting solutions
Figure 9. Deployment strategies in use for top 4 data warehouse solutions
Case Study: Building an Enterprise Analytics Ecosystem at Washington University in St. Louis

The growing importance of data in institutional strategy, student success, and operational efficiency can prompt colleges and universities to reevaluate their enterprise-wide analytics capabilities. This was the case when John Gohsman joined Washington University in St. Louis (WashU) in 2013 as vice chancellor for information technology and chief information officer. University leadership designated analytics improvement as one of his priorities in response to general dissatisfaction with the existing ineffective analytics capabilities among WashU’s schools and central offices.

The lack of an enterprise analytics ecosystem to support a university-level view and use of data lay at the heart of WashU’s challenge. For example, WashU acquired IBM’s Cognos business intelligence suite for the entire university but took a functional approach to data, using a series of data marts tied to various university operational systems. “It was easy to see why WashU could not cross these functional data sets,” explained Gohsman. “Each application area was building its own data mart for a very limited use. There wasn’t an enterprise-class data warehouse sitting under Cognos.” So Gohsman and the Washington University Information Technology (WashU IT) team—the university’s shared IT service provider—began to build WashU’s enterprise analytics ecosystem.

A first step was for WashU IT to create a dedicated team whose sole goal was to build an enterprise business intelligence/data warehouse (BI/DW) platform. WashU IT kept Cognos because of the tool’s quality and WashU’s amassed product experience and expertise but chose to create a new enterprise data warehouse. One core design principle was “data as a university asset,” and the new enterprise data warehouse reflects this, collecting and integrating WashU’s institutional data. “This differs from the former data mart structure in that the data warehouse is independent of the operational systems that feed data into it,” explained Gohsman. “Operational systems come and go, and if you replace an operational system, you may swap out your data asset without realizing it because your data can be tied to the operational system’s logic as well as its extract, transform, and load (ETL).”

Moving to an enterprise data warehouse promotes other benefits. It enables a university-level data perspective, where people pull out all relevant data according to institutional needs and context, without being stymied by silos created by the operational system data mart structure. Data enhancement tools—like data visualization—are added directly to the enterprise data warehouse, mitigating any operational system issues.

Other ecosystem components involve the data themselves. Gohsman is working with the university on data governance, as well as data policies around stewardship, ownership, definitions, and standards. These activities reinforced a university perspective when viewing and analyzing data, and they helped prioritize backlogged data projects.
Gohsman estimates it took 18 months to get the BI/DW team in place and gain traction on data management issues, and WashU is starting to see the benefits. Previous work to establish the basis for the data warehouse with HR and finance data has allowed new gains to be realized. For example, the data warehouse now supports end-to-end analysis of WashU research administration, including tactical planning of grants (from proposals to awards) and strategic analysis of the university’s research grant portfolio and its success. In addition, the BI/DW team is developing analytics for HR users to analyze trends in staff recruitment to identify opportunities to broaden the university’s diversity. The team is also helping Student Financial Services create a full picture of each student’s need, eligibility, and awards to optimize student funding allocations and align them with strategic university goals and priorities.

WashU’s enterprise analytics ecosystem continues to develop. For example, WashU IT plans to add more tools to help leverage university data and may eventually spin off data marts for unique and specific purposes. Work on data-related issues is ongoing.

Gohsman identified these lessons from his experiences:

- **Develop ecosystem and people in sync**: One important point is that this is an ongoing initiative, not an end-date project—in other words, it’s a continual evolution of ecosystem and users. Initially, user training may focus on basic concepts—e.g., data definition, stewardship, and warehouses. Communications build support and benefit awareness of the enterprise analytics ecosystem. As users gain understanding and experience, their skills mature. Questions change from “What happened?” to “Why did that happen?” to “Can I predict things?” These questions, in turn, drive evolution of the analytics ecosystem’s capabilities.

- **Apply others’ best practices**: Gohsman believes WashU’s institutional analytics capability got off the ground faster by applying peer institutions’ experiences and using resources from organizations such as EDUCAUSE and Gartner whenever possible. For example, peer institution experiences influenced these two important decisions: WashU’s data policies and governance focus on roles and the difference between data ownership and stewardship, and the enterprise BI/DW team is independent from application groups to foster horizontal—not vertical—thinking about university data.

Gohsman believes WashU’s implementation illustrates the challenge facing today’s higher education institutions. “It’s really about making good, steady progress in leveraging our institutional data for improved decision making. Every institution has to figure out how to do this and make it its own.” To do so, however, requires institutional commitment and resources, which the WashU leadership generously provided.
Conclusion

Although the road to integrated data systems with insightful reporting can be long, more and more institutions are making the trek. They are doing so with mostly centralized, in-house systems that leverage multiple solutions to get the job done. Institutions like Washington University in St. Louis have found success thinking of this integrated set of systems as an analytics ecosystem that evolves over time with users whose skill sets also evolve. Institutions that commit to building their analytics capacity over time rather than at a point in time will be well equipped to face the changing requirements and demands for outcomes and efficiencies.

Acknowledgments

ECAR wishes to thank John Gohsman, Vice Chancellor for Information Technology and Chief Information Officer, Washington University in St. Louis, for his help with this case study.

Notes


2. Leah Lang and Judith A. Pirani, BI Reporting, Data Warehouse Systems, and Beyond, research bulletin (Louisville, CO: ECAR, April 23, 2014).


About the Enterprise Application Market Series

The Enterprise Application Market report series from the EDUCAUSE Center for Analysis and Research focuses on data from the EDUCAUSE Core Data Service (CDS) to better understand how higher education institutions approach various information systems. Market share and system rate of change are among the metrics highlighted in this series. Information provided for this series was derived from the Information Systems and Applications module of CDS. For reports in the 2015 series, responses from 510 institutions were analyzed. Only U.S. institutions are represented in this series.