



CITO Research

Advancing the craft of technology leadership

Big Data for Big Industries

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Contents

Introduction: Why Does Big Data Matter to Me?	1
How the QlikView Business Discovery Platform Helps with Big Data	1
Big Data and Healthcare	2
Big Data and Financial Services	4
Big Data and Telecommunications	8
Big Data and Retail	8
Conclusion	9



It's no longer the case that all possible insights about an organization come only from a structured data warehouse full of vetted data developed inside one's own four walls.

Introduction: Why Does Big Data Matter to Me?

There is a new universe of data being created by smart meters, mobile devices, social media, RFID, web logs, and other sources. Meanwhile, many industries have only begun exiting the paper-based documentation era. It's no longer the case that all possible insights about an organization come only from a structured data warehouse full of vetted data developed inside one's own four walls. Embracing big data means accepting that you can gain valuable insights about your organization, your customers, and the world at large from external sources, and by looking at data in a new way.

Organizations in every industry need to explore big data and gain insights. However, to date there has been a critical gap between big data and tools that help businesspeople analyze it. CITO Research has endeavored to find new tools and methods to help companies use big data to its full potential. With the right big data tool, such as the QlikView business discovery platform, you can create a richer model of your organization and the wider world, recognize events you would not have discovered otherwise, and deliver a view from outside the organization of trends that give you a competitive edge, make concrete business improvements, and even save lives.

How the QlikView Business Discovery Platform Helps with Big Data

CITO Research has conducted a deep dive analysis of the leading data discovery vendor, QlikView. QlikView provides what it calls a business discovery platform, a variant of data discovery, that delivers self-service BI.

Unlike traditional BI tools, in which predefined reports and dashboards are static and limited to simple filters, selections, and drill-downs, CITO's experience with QlikView is that it enables business users to explore and streamline big data with ease, on their own. QlikView is a robust platform that's secure, app-driven, mobile, and facilitates collaborative decision making.

With big data, the data itself and the structure of that data are both constantly changing, often in unexpected ways. At the same time, no enterprise will be throwing out its carefully structured databases. To reveal actionable insights, a BI tool must simultaneously query structured and unstructured sources. With QlikView, this is not only possible, but intuitive.

Once processed, data is then presented in an associative experience in which every data point is associated with every other data point. In previous white papers, we've compared it to a fiber-optic spider web, where everything is con-



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Big Data for Big Industries

nected. Pulling on one thread, or making a selection, lights up the related elements in other fields, showing you new paths through the data and revealing new kinds of connections. That means user-driven analytical applications can be built on the fly, to ask questions that occur as data arrives.

CITO Research has found that QlikView is making a big difference in big data in several industries. The following is a series of snapshots that showcase the breadth and depth of business benefits and competitive differentiators being enjoyed by companies that have implemented QlikView.

Big Data and Healthcare

Healthcare providers such as hospitals, clinics, home health providers, and rehabilitation and hospice facilities collect and store a great volume and variety of patient data, from individual diagnostics to mass demographics. Turning that data into actionable information has proven difficult. Many healthcare entities still struggle to answer questions such as:

- What volume of patients can we expect?
- What is the likelihood that a patient will be a recurring patient, disregard medical advice, or miss scheduled appointments?
- How can we best supply a hospital with equipment and medicine?
- How should a hospital be staffed?
- How can we meet regulatory demands and new mandates without sacrificing service levels?
- How can we improve quality of care, patient satisfaction, and operating room and emergency department performance while reducing costs?

The data collected by hospitals spans from operational data, such as supply chain logistics and employee timesheets and work records, to medical data such as X-rays and MRIs. Medical data is often unstructured—think of a doctor's notes or images—and thus doesn't fit into conventional relational database frameworks or BI tools. Yet it often must be cross-referenced with plenty of data that does reside in those tools. The time saved, and the increase in accuracy achieved by combining all data sources in one view, are compelling to consider.

Healthcare providers collect vast troves of data but often don't gain much actionable insight because many processes are manual and different tools were designed to work with different types of data and are frequently in the hands of disparate groups. Now, healthcare providers can correlate patient-specific historical data with current lab results and relate that data to larger demographic data, such as a cross-section of the population likely to get the flu this year as determined by the Centers for Disease Control or historical drug reactions and interaction results across age, gender, and ethnicity—all in one place.



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Big Data for Big Industries

Additionally, the tools are in the hands of the people who need to make decisions quickly—doctors, nurses, and administrators.

By performing associative searches across structured and unstructured data, healthcare providers are changing the way they diagnose and treat patients. By necessity, healthcare has often taken a trial and error approach to solving medical problems. The process of sequentially proposing and discrediting diagnoses and treatments is not only inefficient but potentially harmful for the patient and costly for the provider.

Using QlikView to analyze big data, healthcare providers are reducing the length of patient stays, holding down costs, and reducing readmissions. In the US, they're able to demonstrate the return on investment in going paperless and have introduced new electronic systems in order to receive funding through Medicare and Medicaid Meaningful Use requirements. Researchers are improving the quality of clinical trials by drilling more deeply into electronic records and spotting anomalies. Providers are making faster yet sounder and more objective decisions using a larger evidence base, driving better performance and care delivery—and saving more lives—in the process.

The UK National Health Service (NHS) uses QlikView to monitor its top issues and deliver the information each location needs to its board of directors. Because the system is publically funded, each location is under intense pressure to not only improve healthcare quality, but also to manage costs efficiently. The NHS looked at the utilization and performance of its surgical units in particular, from several angles.

The NHS collected data on the frequency of readmissions and missed appointments, the total time a patient spends in the operating room, the sufficiency and availability of medical supplies at the time of the operation, and the total amount of time a doctor spends performing surgery as compared with administrative or preparatory tasks. By using QlikView to find the gaps in these metrics, NHS was able to increase operating room utilization by 2%, saving £20,000 per week. That means patients not only get vital surgeries sooner but they're released from the hospital sooner, making way for more patients and reducing the likelihood that patients who receive operations contract a secondary infection.

The overall effect can be quite astounding; at NHS Acute Hospital, Colchester, there were 158 fewer mortalities in the year following the implementation of QlikView.

University Hospital Tübingen, a 1,500-bed hospital in Germany with 67,000 inpatient stays and 330,000 outpatient procedures per year, used QlikView to optimize its surgery units. The hospital wanted to increase the breadth and number of pediatric operations on an outpatient basis, without expanding its facilities, with the goal of generating one extra operating day every two weeks, for use by other surgeons and other patients.



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Big Data Empowers Healthcare

Within six months of deploying QlikView, University Hospital was able to gain a full day per week of time for more surgeries, double the original goal. Within two years, the hospital gained two full days' time per week for additional surgeries. The hospital is now able to perform more than 250 additional surgeries (60 pediatric and 190 others) per year.

Big Data and Financial Services

Financial services has always been a data-driven business, but since the advent of the widespread commercial use of the Internet, what was a relatively manageable interaction between professionals using specialized systems has ballooned into a deluge of big data from a wide range of sources with strong implications for traders, bankers, insurers, brokers, agents, and consumers.

Big Data and Banking

Retail and commercial banks have their own concerns, as shareholders place pressure on ever-larger banks to increase deposits and improve overall profitability. One of the major obstacles to doing so comes from the corporate structure of many large retail banks, which credits individual branches for accounts and services obtained by those branches. Global banking consolidation and the rise of ATMs and Internet banking have made banking in multiple locations relatively seamless for the consumer, but the banks themselves still struggle to align properly with the ever-changing customer.



Big Data for Big Industries

For example, a leading global bank has more than 1,000 branches and more than 3 million customers and performs hundreds of millions of banking transactions annually. The bank is faced with the challenge of analyzing all of the data generated by its diverse network of branches and customer transactions.

As a sample scenario, a typical customer might open an account at one branch, change home addresses several times over a few years, and perform most of his transactions at a branch closer to his workplace. Yet the original branch where he opened the account gets the credit for the products he acquires and the deposits he makes. It's also the branch that performs most of the interpersonal direct marketing to that customer—which is a problem if he's conducting 90% of his transactions at a different branch or location.

To address this challenge, the global bank built a QlikView application to provide executives with improved analytics for better decision making. The application takes feeds from multiple sources including a multi-terabyte Teradata data warehouse. It monitors all transaction records, allowing the bank to understand customer behavior so that they can conduct better-targeted cross-selling, offer better customer service, and maintain a more accurate internal revenue and compensation system. Customers now receive targeted offers from the branch they're using regularly rather than the branch where they opened the account. The result was a 3% improvement in deposit balance growth over set goals, a large amount considering the bank's national market position.

Big Data and Securities and Investments

The pace and scale of electronic securities trading has intensified tremendously over the past decade, and the amount of information available from execution venues such as exchanges, market data from commercial vendors, and internal analytical systems has never been greater. Many trading firms have had access to premium market data feeds from the likes of Bloomberg, Reuters, and FactSet for many years. Each of these systems has its own formatting and built-in analytics. However, locating trends and anomalies across these systems and comparing them to internal datasets has always been challenging for financial firms, which now add vast reserves of unstructured data from news sources and Internet transactions in reservoirs such as Hadoop.

Using QlikView, financial firms can now combine trader performance data, market data, unstructured news, user data, and general ledger data to gain previously impossible insights in one user experience. This affords the split-second decision-making power that makes a difference between winners and losers on Wall Street.



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QlikView's business discovery capabilities are vital not only for competitive purposes. They also help firms respond effectively to a regulated community on high alert in the face of rogue trading and rates-manipulation scandals. Additionally, regulatory requirements such as Basel III and Dodd-Frank require added transparency, agile analytics, and confidence behind decisions.

For example, a leading Wall Street firm uses QlikView to directly enable federal regulators to analyze hundreds of millions of trades without having to assign staff to the task of producing error-prone manual reports, or to accompany auditors on exhaustive digs through electronic and paper files. Instead of camping out at the firm for days on end, waiting for employees to scramble to get answers to ad-hoc questions, auditors can launch these queries on their own and get answers



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Big Data for Big Industries

instantly. The number of inquiries, and the amount of time and expense spent in pursuing them, has declined substantially. The firm also has thousands of QlikView users internally, spanning front, middle and back office functions across sales, marketing, research, trading, finance, operations, risk, and HR.

Big Data and Insurance

The overall profitability of insurance companies is heavily impacted by the amount of money collected on underwriting policies (premiums) and the amount of money paid on losses (claims). Generally, these decisions are made based on pooled groups of historical customers related to statistics around geography, catastrophic events, risks, and so on. This abundance of data makes targeted decision-making very difficult, especially as insurance companies have many isolated, legacy data sources and analytical tools.

Several major US insurance firms now use QlikView to analyze transaction-level claim, underwriting, and investment detail. Insurers can now correlate data across individuals and groups, cross-referencing claims with underwriting, actuarial, risk, and fraud detection data. Additionally, much of the data in an insurance claim is non-numerical and contains unique textual commentary. QlikView makes it possible to analyze unstructured text data against structured forms in the same platform. With millions of claims filed each year, large insurers can't examine each claim at the same level of detail, but QlikView helps these firms effectively analyze each incoming claim, flagging issues that merit further manual investigation by a Special Investigations Unit (SIU).

An American insurer entering the international market uses QlikView to accelerate and enhance policy management as its customers move from country to country, all of which have different laws, regulations, and data standards. Patterns of fraud and demographic trends that were once completely opaque have now emerged because of QlikView's ability to gather all forms of data from multiple sources and immediately display associations.

A Tier 1 American insurer was using a traditional BI product to conduct claims analysis on large volumes of frequently updated claims transactions. Projects using the traditional BI technology took an average of 7 months to deploy. Implementing QlikView on the same dataset, projects were deployed in 7 weeks or less. More importantly, the insurer was able to find cases of fraud using QlikView that went undetected using traditional BI reporting methods.



Big Data and Telecommunications

Telecom companies are taking on millions of transactions and facing more pressure to maximize efficiency, reduce customer churn, and comply with regulations. Each time a connection is made from one relay point to another, a Call Detail Record (CDR) is created. Telco companies often generate hundreds of millions of CDRs per day that must be archived for possible future analysis, especially as concerns about terror networks, fraud, and electronic espionage are on the rise.

A wholesale leading global wholesale carrier, a world leader in mobile data, uses QlikView to perform rapid, ad-hoc investigations of hundreds of millions of records, often in pursuit of a small handful of critical details. Using associative analysis, the carrier can see correlations that would have been impossible to find using traditional BI and data warehouse tools. Further, the carrier can spot them in a matter of minutes, rather than the days or hours that would be spent on a traditional query. That's a critical time gap to close with direct accurate actions in the case of issues, incidents, drops, increases, and other activity.

Big Data and Retail

Meta Information Architects, a data consultancy division of WPP, uses QlikView to help entertainment, retail franchises, and ecommerce businesses make better use of the information they have. Meta used QlikView as a development platform to meet customer needs for enhanced insight into consumer behavior.

A large pizza chain wanted to identify products that were losing money and should be discontinued. Meta helped the company analyze 57 million transaction records, consolidated from 35 separate data sources. They covered 500 pizza sales outlets in the US across multiple venue types. Using QlikView, Meta was able to develop a due diligence tool to analyze all of that data. The tool took two developers only 10 working days to build, accelerating time to value.

Using the due diligence tool and looking across store details such as location and square footage, product details, transactions, and yearly store financials, Meta was able to develop an overview of KPIs customized for each level of the business, including board members and individual franchisees. Each franchisee was able to view disparate datasets in a centralized location, over a secure browser interface. Store owners could learn collectively from each other's findings with regards to product selection and other metrics. The company saved \$500,000 by using QlikView to explore its data and cull unprofitable menu items.

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Conclusion

Big data represents a big opportunity for many industries, if organizations make an effort to place the right tools in the hands of decision makers. Much of the value of unstructured big data from new sources will come from correlation with the standardized, structured enterprise data businesses and institutions have carefully been collecting and managing for decades. CITO Research has determined that the QlikView business discovery platform will play a major role in delivering big data in a way that is useful to everyone. With QlikView, big data becomes a powerful asset for supporting a universe of organizational goals, from complying with regulations to holding down costs to keeping the human race happier and healthier.

CITO Research

CITO Research is a source of news, analysis, research, and knowledge for CIOs, CTOs, and other IT and business professionals. CITO Research engages in a dialogue with its audience to capture technology trends that are harvested, analyzed, and communicated in a sophisticated way to help practitioners solve difficult business problems.

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