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25TH ANNIVERSARY

Changing the Game with Big Data

Using Big Data And Analytics To Build Today's Financial Business.

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Following a successful season, the Oakland A's hoped to return to the playoffs in 2002. As memorably recounted in the book, *Moneyball,* the road to the World Series was going to be much more challenging following the loss of Jason Giambi and Johnny Damon to free agency. The A's had one of the smallest payrolls in baseball. Oakland simply didn't have the financial resources to outbid big-market teams. So the A's had to get creative.

"Firms that don't utilize this kind of data are effectively missing an opportunity to connect to customers, employees, and competitors"
—Sudhir Chaturvedi

The team's GM, Billy Beane with Paul DePodesta and J.P. Ricciardi, used data analysis to uncover undervalued players. They broke down the contributions of the departed players to their component elements and sought undervalued players who could contribute collectively. These departed superstars accounted for 200 runs. The A's needed to assemble replacement players that could match that cumulative production.

Ultimately, the A's looked for causal relationships between stats and performance. Looking at unconventional statistics often led to interest in players overlooked by other teams. Because past performance is no guarantee of future success, the A's used predictive analytics to build a winning team that won 103 games in 2002, set a 20-straight win record, and returned to the playoffs.

The use of baseball statistics to help build a ball club is one thing. What about big data and analytics in the finance? Data is the oil of the 21st century. It is created both internally and externally. It is both structured and unstructured. It is the raw material that financial services need to leverage effectively for long term success.

For example, with mobile devices, more global customers can touch their bank anywhere, anytime. 60% of the world's population—more than 4 billion people—use mobile phones today. 12% of those people have smartphones. Social media is also driving data growth unimaginable just a few years ago. According to some estimates, global digital content will increase 30 times in the next 10 years.

It all gives rise to new indicators produced by big data, such as an internet sentiment index based on the interest generated in social media channels like Twitter and Facebook. An increase in social investing sites can collect data such as calls over multiple investing sites, while creating a "social sentiment index." These indices can reflect mass investment sentiment and may become as powerful as fundamental releases.

Firms that don't utilize this kind of data are effectively missing an opportunity to connect to customers, employees and competitors. The widespread adoption of these technologies is driving next-generation financial services such as mobile banking, and a self-service channel that generates massive amounts of transactional data. According to McKinsey, financial services store more data on a per-firm basis than all other industries.

Like we saw in *Moneyball*, there's plenty of valuable information available that isn't being used. Historical and predictive analytics can be used to optimize operations and automate decisions. It can be used to manage risk, create transparency and prevent fraud. Big data analysis can also segment customer groups and gauge customer sentiment through social media.

Wall Street traders have historically relied on high velocity market data to take advantage of market inefficiencies. Today pricing adjustments move in milliseconds and inefficiencies are becoming harder to find. Consequently some traders are hoping to gain an advantage by analyzing unstructured data that falls outside traditional

data streams. This unstructured data includes daily stock feeds, social media and blog content. Analyzing millions of tweets, for example, can be interpreted as a large-scale emotional thermometer for society as a whole. Converting this unstructured data into machine readable data is an example of largely untapped sources of information that can help traders gain a competitive advantage and make more timely trading decisions.

Investment managers require more sophisticated tools to identify profitable investment opportunities. Big data can provide the "sophistication" that every investment manager yearns for. It may change how they work and how financial markets operate. According to a research study by the University of Texas, Fortune 1000 companies could gain $2 billion a year in employee productivity by increasing usability of their data by just 10%!

Most financial institutions are prototyping big data analytics in their research labs to evaluate the appropriate use-case and stability of these technologies. Infosys is involved in suggesting appropriate use cases and developing and testing the code for the use case. As you start to consider adding Big Data capabilities to your financial institution's reporting and analytical mechanisms, there are a number of key issues that should be considered:

First, view big data as a catalyst to improve efficiency and strategic direction on an enterprise-wide scale. Legacy systems too often prevent the integration of big data and sophisticated analytics. Incumbents tied to legacy infrastructures need to compete with agile new attackers that are able to quickly process consumer data.

Second, acknowledge a new way of managing that relies on analysis of unique data. Today, managers must exploit internet-scale data-sets to discover new businesses and predict consumer behavior.

Next, understand the origins and principles of data analytics and ask informed questions. Useful data is often the by-product of efforts to reach other business goals. For example, managing credit risk may generate useful consumer behavior data for credit card marketers. While business units may appear unrelated, ask questions to identify areas where sharing data among business units is useful. There is value in aligning common technical infrastructure, definitions and analytics.

Finally, proactively manage data storage—including cloud and data-as-a-service. Backing up big data requires a system that is fast, cost-effective and reliable. Avoid redundancy in data. Identify and backup unique data that can't be re-created, such as point-in-time data.

Once you've identified opportunities where the big data can provide business value, it's vital to define and measure the expected return-on-investment. You can see the impact along the various lines of business.

Unstructured data doesn't have a predefined data model because it is typically text-heavy. Think email and social media. This type of data is often overlooked by organizations because its unpredictable nature makes it difficult to understand using traditional databases. Unstructured data software can uncover unique consumer insights.

Consumer banking is characterized by a large number of relatively small-value financial transactions and a large number of customers. Unstructured data and predictive analytics can be used to monitor customer sentiment, to target marketing campaigns and to cross-sell opportunities.

Commercial banking is characterized by smaller volumes of large-value transactions. Risk management is key. Big data and distributed network computing can be used to track the riskiness of an asset portfolio and analyze the impact of increased risk on individual clients. It can also be used to monitor real-time data flow from financial statements, analyst opinion and other news sources.

Capital markets and investment banking requires massive amounts of outside information including real-time asset pricing, financial forecasting, and portfolio management data. Batch processing can provide real-time analysis of news feeds and foreign exchange and their impact on asset pricing. Complex event processing can analyze the value of tens of thousands mortgage-backed securities by reviewing the credit-worthiness of millions of individual homeowners. Such a system has already been built for Wall Street traders.

Governance, risk and compliance initiatives are largely influenced by constantly evolving and often unclear regulation guidelines and requirements. Here, simulation analysis using big data tools can measure risk using Monte-Carlo and stress-testing scenarios. Batch and parallel processing can be used to ensure timely responses to compliance requirements. The benefits of these strategies are transparency, fraud detection, and managed risk.

View big data as a catalyst to improve efficiency and strategic direction of the entire organization. Assess any gap between current IT capabilities and what is necessary to capture big data opportunities.

Finally, partner with experts who have the technical capabilities and domain expertise to provide Big Data solutions. This includes experience in analytics, security, cloud, and infrastructure architecture.

Also, consider your partner's talent pool. There is a shortage of talent necessary to take advantage of big data. According to a McKinsey study, 140,000-190,000 deep analytic talent positions and 1.5 million data savvy analysts and managers will be needed to take full advantage of big data in the U.S. Furthermore, organizational leaders often lack understanding of the value in Big Data as well as how to unlock this value. Make sure your partner understands this value and has the resources to make it a reality.

Like the Oakland A's proved, unconventional data analysis can lead to real competitive advantages. It's up to you to refocus your business strategies with the understanding that data is the vital raw material in our information economy.