Reaping the Rewards of Big Data
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INTRODUCTION:

In the current business environment, impacted by proliferating data, shrinking budgets and growing customer demands, organizations that can make the right decisions at the right time have a competitive advantage. There has been a business paradigm shift over the past several years. No longer is it adequate for business leaders to rely on just their judgment to make strategic decisions. Today’s business leaders must be equipped with as much information as possible to enable better decisions.

The key to obtaining actionable insights leverages the huge amounts of data that flood into organizations of all sizes and types. Business analytics provides the insights that help businesses make more informed decisions by using a combination of past data, responding to current business needs in real time, and predictive modeling to design a roadmap for future growth.

The amount of data streaming into businesses has been growing exponentially for years, and there is no sign that this explosive growth will slow. While managing this burgeoning data can be a headache, savvy organizations are leveraging this data to benefit their businesses.

Big data -- datasets that are too large to be gathered, stored, managed and analyzed by typical database software tools -- can generate plenty of value for organizations of all sizes and types. Organizations that are able to harness the power of big data can drive both operational efficiency and quality, leading to cost and labor savings and a competitive edge. Leveraging big data can also help companies streamline processes, fighting fraud and reducing errors.

Big data spans across:

- **Variety** – extends beyond structured, to unstructured data of all types: audio, video, click stream, log files
- **Velocity** – data gets created in real time, continuously and often time-sensitive big data must use it as it is streaming in to the enterprise in order to maximize its value to business
- **Volume** – Enterprises easily amass terabytes and even petabytes of information
- **Complexity** – processing of data for meaningful insights

“Value” is another key parameter that one needs to consider when making investments in big data analytics. Value can be measured as the return on investment delivered in tangible and intangible terms.

Gartner defines a strategic technology as one with the potential for significant impact on the enterprise in the next three years. Factors that denote significant impact include a high potential for disruption to IT or the business, the need for a major dollar investment, or the risk of being late to adopt.

Identified as one of the top 10 technologies for 2012, Gartner reports the size, complexity of formats and speed of delivery exceeds the capabilities of traditional data management technologies; it requires the use of new or exotic technologies simply to manage the volume and variety of data.
Leveraging big data can enable businesses of all kinds to:

- Make large volumes of information transparent and usable
- Drive operational efficiencies and help create process improvements, leading to greater operating margins
- Collect very granular information to reveal variability in customer buying patterns, personnel productivity and more
- Gain actionable insights that lead to better and more informed management decisions
- Glean important information that can help determine product and service improvements
- Improve customer segmentation, leading to more tailored marketing efforts and improved cross-sell and up-sell success

Organizations investing in big data must assess the value these investments will deliver over a period of time. The value delivered by big data-based initiatives should be quantum in nature and sustainable over a period of time.

While leveraging big data can add value to businesses of all types in myriad ways, finding qualified personnel with the skill sets necessary to perform and use big data analytics to an organization’s advantage will become more and more difficult in the future. According to research performed by MGI and McKinsey & Company’s Business Technology Office, by 2018 the United States alone could face a shortage of 140,000 to 190,000 people with the deep analytical skills and 1.5 million managers and analysts with required knowledge to use big data analysis for effective decision-making.

Outsourcing Center and Wipro performed a survey that looked at how organizations are managing and analyzing proliferating data, and determined how firms are leveraging big data for the benefit of their businesses. While not a comprehensive picture of how these organizations are approaching big data, the survey results identify some general trends in this emerging area. Survey respondents were from retail, financial services, transportation/logistics, manufacturing, healthcare, telecommunications and other industries.

How is your organization leveraging big data?
We live in the age of data. It’s not easy to measure the total volume of data stored electronically. However, IDC estimates the size of the digital universe at 1.8 zettabytes in 2011 and predicts that between 2009 and 2020, digital data will grow 44 fold to 35 zettabytes per year.

The volume, variety and complexity of data have grown significantly since 2008-2009, and organizations are facing daunting data-handling challenges. They look for a way to cost effectively store and process all these sources of data and to find a way to develop insights, which provides them with the ability to drive better decision making backed by data. Big data platforms can help organizations meet today’s big data-related challenges.

Big data has been a challenge to organizations for several years now. Organizations of all types are challenged by the massive amounts of data flooding their businesses. The added complexity of managing data variety
and velocity is compounding this challenge, while providing an opportunity to leverage the power of this new age data. Some types of organizations seem to have greater big data challenges and opportunities than others. However, organizations in all sectors can benefit enormously from a big data strategy.

According to the Outsourcing Center/Wipro research, big data is a challenge for more than half (57.6%) of all respondents’ organizations. More than a quarter (27.3%) said that big data is not a challenge, and 15.2 percent weren’t sure.

Says Wipro’s Jayant Prabhu, principal consultant, even if organizations aren’t currently challenged by big data management and utilization issues, that’s likely to change in the future.

“Data volumes continue to explode with a proliferation of devices, social media tools, video usage, and emerging forms of both structured and unstructured data,” says Prabhu.

What’s more, says Prabhu, the rate of data explosion may be occurring faster than Moore’s Law. Data growth – especially unstructured data growth – poses a special challenge as the volume and diversity of data types outstrip the capabilities of older technologies such as relational databases. This also provides a great opportunity for organizations to leverage the combination of enterprise data with new age data forms to obtain better quality insights about their customers, operations, etc. In the future, the key challenge with big data will be its size and the fact that normal software and processes can’t handle it well.
FINDING #2: WHEN IT COMES TO BIG DATA, ORGANIZATIONS FIND IT DIFFICULT TO ANALYZE DATA SUFFICIENTLY, HANDLE EXTERNAL DATA AND REPORT DATA IN REAL TIME.

<table>
<thead>
<tr>
<th>What are your organization’s current Big Data-related challenges?</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unable to analyze data sufficiently</td>
<td>33.3%</td>
</tr>
<tr>
<td>Difficulty transforming analyzed data into actionable insights</td>
<td>27.3%</td>
</tr>
<tr>
<td>Infrastructure is inadequate to deal with large volumes of data</td>
<td>30.3%</td>
</tr>
<tr>
<td>Personnel/skill set issues: Don’t have skilled personnel on staff</td>
<td>27.3%</td>
</tr>
<tr>
<td>Reporting data in real time</td>
<td>36.4%</td>
</tr>
<tr>
<td>Handling external data</td>
<td>36.4%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

Massive amounts of data converge on organizations, which in turn have sometimes massive problems dealing with it. These challenges go beyond simply managing the data – they expand to putting the data to work to benefit the organization.

There are plenty of big data challenges facing organizations. First, the sheer scale of 100s of terabytes to Petabytes of data is impressive. Data – much of it semi-structured or unstructured – is coming from disparate sources with very little or no information on its scheme. Performing analytics on large datasets requires a different set of skills, technologies and techniques not commonly found in existing business and data analytics teams.
There is no doubt that big data analytics is taking on a life of its own and many companies are realizing significant benefits as a result. However, many organizations are still trying to figure out how to apply these approaches to their own businesses.

Organizations in the Outsourcing Center and Wipro study said that they have an assortment of big data-related challenges. The most often-cited issues are handling external data and reporting data in real time, with 36.4 percent of respondents identifying those issues as problematic. Also frequently cited, by one-third of survey participants (33.3%), is the inability to analyze data sufficiently.

Wipro’s Prabhu agrees that organizations face a wide variety of big data challenges. “Organizations need to understand that just having massive amounts of data does not automatically mean the data is usable or that it will ever be helpful,” he says. “It’s important to identify what data is useful and have the appropriate methods and software tools to process them and use them effectively for analysis. And organizations must be able to integrate that new information with existing data repositories within the enterprise.” It is also important that organizations evaluate every big data initiative thoroughly for the business value it can deliver. Every big data initiative should have the potential to deliver quantum business benefits in a sustained manner, ensuring that sufficient care has been taken to manage compliance and regulatory issues that can potentially arise.
FINDING #3: MOST ORGANIZATIONS STILL DO NOT HAVE A FORMAL STRATEGY IN PLACE TO DEAL WITH AND LEVERAGE BIG DATA.

While the deluge of data has been gathering force for quite some time, big data is still a relatively nascent area for most organizations. According to findings from the Outsourcing Center and Wipro survey, only just more than two in 10 (21.7%) firms currently have a formal strategy in place to deal with and leverage big data. While more than a quarter (27.3%) of organizations are now planning a big data strategy, more than 40 percent (42.4%) are either considering a big data strategy or don’t have one in place, nor are they considering such a strategy.

Of the organizations responding to the Wipro and Outsourcing Center survey that do have a strategy in place to deal with big data, more than 80 percent (82.8%) have had their program in place for less than three years. In fact, more than half of respondents reported that their organizations have implemented their big data strategy less than a year ago. Only 4.5 percent of responding organizations that have implemented a big data strategy have had this plan in place for between five to eight years.

How long has your organization had a strategy in place to deal with Big Data?

- Less than one year: 4.5%
- 1-3 years: 13.6%
- 3-5 years: 27.3%
- 5-8 years: 54.5%
“As data grows in volume, variety and complexity, organizations will face challenges to handle all the data that floods into their businesses,” says Prabhu. “They will look for ways to cost-effectively store and process all the sources of data to develop insights, and this will lead them to Big Data Platforms.”

Conventionally, there have been three types of systems for doing business intelligence & analytics: data warehouses, databases and data marts. With customers demanding lower cost, higher performance and integrated hardware and software for data-intensive operations, vendors began to provide the data appliance-based massive parallel processing solutions with shared-nothing architecture. With the advent of 64 bit computing and declining memory prices, service providers also began to offer in-memory analytics to improve performance by running queries at the storage layer and reducing the disk I/O operations. In addition, business applications have also started providing in-process analytics within the application to reduce the time for making decisions and get instant analysis of generated data.

“The digital age and data revolution are fast changing the business landscape,” says Prabhu. “Organizations now need to look for alternates to handle huge data generated from various external and internal touch points that cannot be gracefully stored, processed and analyzed using the existing IT infrastructure due to the sheer volume, variety and complexity of the data.”
FINDING #4: BECOMING MORE OPERATIONALLY EFFICIENT IS CONSIDERED THE BIGGEST BENEFIT OF IMPLEMENTING A BIG DATA STRATEGY.

What do you consider the key benefits of implementing a Big Data strategy? (Indicate all that apply.)

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive operational efficiencies</td>
<td>72.7%</td>
</tr>
<tr>
<td>Boost productivity</td>
<td>45.5%</td>
</tr>
<tr>
<td>Drive innovation</td>
<td>40.9%</td>
</tr>
<tr>
<td>Fight fraud</td>
<td>18.2%</td>
</tr>
<tr>
<td>Gather information leading to more targeted products and service offerings</td>
<td>50.0%</td>
</tr>
<tr>
<td>Maintain a competitive edge</td>
<td>50.0%</td>
</tr>
<tr>
<td>Create new growth opportunities</td>
<td>50.0%</td>
</tr>
<tr>
<td>Do not see major benefits of implementing a Big Data strategy</td>
<td>4.5%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

In today’s business world, with growing demand for timely and relevant information, planning a forward-looking big data strategy is important to ensure organizations can effectively leverage data from all available sources and quickly turn it into a competitive advantage. By planning for the future and keeping an eye on strategy, companies will see not only performance increases but also major business successes. With a sound strategy in place, big data can actually help provide the key to unlocking an organization’s next big opportunity. A big data approach that analyzes massive amounts of information can produce results within minutes or hours, rather than weeks, providing a competitive advantage to organizations that will be able to make faster and more strategic decisions.

Nearly three-fourths (72.7%) of all participants in the Wipro and Outsourcing Center study specified that they consider driving operational efficiencies to be the biggest benefit of implementing a big data strategy. Other key benefits of a big data strategy identified by the survey respondents were in the area of better meeting...
consumer demand or facilitating growth, with 50 percent of participants indicating that the ability to gather information leading to more targeted product and service offers, creating new growth opportunities and maintaining a competitive edge. Also deemed important are productivity boosts, with 45.5 percent of respondents choosing this benefit, and driving innovation, with 40.9 percent of participants indicating this as a key benefit of a big data strategy. Less important is big data’s ability to fight fraud. A scant 4.5 percent of participants do not see major benefits of implementing a strategy to manage big data.

Big data allows organizations to capture data and iteratively discover what’s within it by using multiple models and even by making early decisions, which differs from using a typical data warehouse that needs organizations to capture the data, integrate it and put it in a warehouse – and then do analytics to make decisions. Organizations of all types can benefit from big data, but the strategy varies based on the complexity of the variety, volume and velocity at which the data is generated.

“Putting big data in place will help organizations to identify useful data and devise appropriate methods and software tools to process and use the data effectively for analysis,” says Wipro’s Prabhu. “Organizations will be able to integrate that new information with existing data repositories within the enterprise and develop insights to transform their decision-making capabilities. New forms of data provide new insights that can potentially transform the way businesses are run. The three-tier architecture will also speed the decision-making processes. Insights that typically take days, or even weeks, can now be made available in real or near real time, which can change the entire complexion of the way businesses are run.”
FINDING #5: LACK OF MEASURABLE ROI IS THE BIGGEST ROADBLOCK TO IMPLEMENTING A BIG DATA STRATEGY.

In your opinion, what are the biggest roadblocks to implementing a Big Data strategy within your organization?

<table>
<thead>
<tr>
<th>Answer Options</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of measurable ROI</td>
<td>45.5%</td>
</tr>
<tr>
<td>Process reengineering is too daunting</td>
<td>27.3%</td>
</tr>
<tr>
<td>Too much resistance to cultural change within my org.</td>
<td>18.2%</td>
</tr>
<tr>
<td>Organization currently lacks skill set/talent required to implement and manage</td>
<td>31.8%</td>
</tr>
<tr>
<td>Consider big data initiatives solely for large companies</td>
<td>9.1%</td>
</tr>
<tr>
<td>Initiative too costly/Lack budgetary resources</td>
<td>13.6%</td>
</tr>
<tr>
<td>Data security</td>
<td>4.5%</td>
</tr>
<tr>
<td>Privacy concerns</td>
<td>18.2%</td>
</tr>
<tr>
<td>Policy issues</td>
<td>4.5%</td>
</tr>
<tr>
<td>Big data is not a concern for my organization</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Participants in the Wipro and Outsourcing Center survey identified several roadblocks to implementing a big data strategy within their organization. The most-identified barrier is lack of measurable ROI, specified by nearly half (45.5%) of respondents.

“Measuring ROI is really only possible when an organization can carry out a requirement analysis to identify what data is useful with each business case and have the appropriate methods and software tools to process and use them effectively for analysis,” says Prabhu.

Another oft-cited hurdle includes a lack of skills within the organization required to implement and manage such a strategy, with nearly a third of respondents (31.8%) citing this option.
Organizations find it difficult to get individuals with the right skill sets to define the big data analytics requirements. These organizations also cannot easily handle large amounts of data coming in from various sources with their existing platforms. To remedy the situation, they should look for new technologies on a Big Data Platform.

Many firms seemed daunted by the process reengineering required to implement a big data strategy. More than a quarter (27.3%) of survey participants said this was a key roadblock.

Prabhu believes that implementing a Big Data Strategy is not a daunting effort in terms of process reengineering. “A big data Strategy involves handling data from new age sources like logs, social media and machine-generated data. The complexity comes from handling large volumes,” explains Prabhu. “Instead of focusing on process reengineering, organizations should look at their analytical systems and evaluate the three-tier next-generation architecture with the co-existence of enterprise data warehouse platforms and big data.”

A “three-tier” architecture would help organizations manage and leverage big data in the least intensive manner. The first tier is the traditional data warehouse and the data mart layer for managing and storing enterprise data. The second tier is the data appliance and in-memory computing layer to drive better performance on data-intensive operations. And the third tier is a big data platform that will store, process and analyze data coming in from the new data form factors with the ability to integrate result sets back into the first and second tiers. This third tier would utilize platforms based on Hadoop and similar configurations for managing data volumes and variety.

In order to make the big data strategy implementation process smoother, organizations need to identify useful data from various sources, have the appropriate methods and software tools to process, and use them effectively for analysis. An outside service provider can be a big help in this regard, since providers can bring consulting expertise to help organizations identify the right business case for implementing a big data strategy. “Firms that can process huge volumes of data and derive meaningful insights faster than their peers will have a competitive advantage,” notes Prabhu.

“Organizations will be able to then exploit all the sources of data that they can collect and manage, leveraging the data as an asset and drive competitive advantage, rather than focusing on internally-generated data and managing information,” he adds.
CONCLUSION:

Anyone in business today can see the exploding amount of data, which truly is growing exponentially with the proliferation of devices, social media, and video usage. Organizations need the ability to disseminate, understand and ultimately benefit from these increasing volumes of data. These organizations will be in a position to win customers, gain competitive advantage and succeed based on their ability to leverage their data assets.

In order to fully leverage the massive – and increasing – amount of data flooding in to their enterprises, organizations should adopt a Big Data strategy.

Wipro offers a full range of big data consulting and implementation services that can help organizations of all types and sizes harness the power of exponentially increasing amounts of data for competitive advantage and to drive organizational efficiency.

For more information about Wipro’s analytics services, please visit http://www.wipro.com/services/analytics-information-management/Pages/business-analytics.aspx.
ABOUT WIPRO TECHNOLOGIES

Wipro is the first PCMM Level 5 and SEI CMMi Level 5 certified IT Services Company globally. Wipro provides comprehensive IT solutions and services (including systems integration, IS outsourcing, package implementation, software application development and maintenance) and Research & Development services (hardware and software design, development and implementation) to corporations globally.

Wipro’s unique value proposition is further delivered through our pioneering Offshore Outsourcing Model and stringent Quality Processes of SEI and Six Sigma.

ABOUT WIPRO COUNCIL FOR INDUSTRY RESEARCH

The Wipro Council for Industry Research comprising of domain and technology experts from the organization aims to address the needs of customers by specifically looking at innovative strategies that will help them gain competitive advantage in the market. The Council in collaboration with leading academic institutions and industry bodies studies market trends to equip organizations with insights that facilitate their IT and business strategies.

ABOUT OUTSOURCING CENTER

Outsourcing Center is the world’s most prominent Internet portal for authoritative information on outsourcing. The Center’s mission is to build the industry by helping people understand how to create value through outsourcing. We pride ourselves on supplying a trusted and objective third-party perspective to our opt-in subscriber base of more than 115,000 through consistent editorials, research, whitepapers and the annual Outsourcing Excellence Awards.