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Big Data: Still in the Early Stages of Adoption

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Organizations are becoming aware that big data initiatives are critical as they have identified obvious business opportunities that cannot be met with traditional data sources, technologies, or practices.

The multitude of devices, users, and generated traffic all combine to create a proliferation of data that is being created with incredible volume, velocity, and variety. As a result, organizations need a way to protect, utilize, and gain real-time insight from big data.

Enormous amounts of data are being generated daily by smartphones, sensors, video cameras, smart meters, and other connected devices, adding to the huge store of information from traditional sources. This data avalanche represents a potential gold mine of insights, which poses a challenge to IT professionals and businesses to extract strategic value from their data.

Despite the big data phenomenon, the scalability issues that historically constrained IT systems have been neutralized to some extent. Vendor platforms are more adaptable and scalable; user practices are likewise more diverse, incorporating techniques and methods that are appropriate to the era of big data. As a result, organizations have the unprecedented ability to mine and analyze big data for valuable business insights.

To get more business value from big data, organizations are experimenting with analytics of all kinds. Retooling for the era of big data is not a question of starting from scratch and does not require radically reinventing the data warehouse. An important adjustment to big data for data warehouse environment would be to acquire analytic tools that are new to the organization, that do data mining and statistical analysis, so that discovery and exploratory analytics could be done.

Global Scenario

After a few years of experimentation and early adopter successes, 2013 will be the year of larger scale adoption of big data technologies. Organizations have increased their understanding of what big data is and how it could transform the business in novel ways. The new key questions have shifted to what are the strategies and skills required? and how can we measure and ensure return on investment? Most organizations are still in the early stages, and a few have thought through an enterprise approach or realized the profound impact that big data would have on their infrastructure, organizations, and industries.

Organizations are undertaking their big data initiatives in a rapidly shifting technological landscape with disruptive forces that produce and demand new data types and new kinds of information processing. They turn to big data technology for necessity and conviction. Organizations are becoming aware that big data initiatives are critical because they have identified obvious business opportunities offering great potential that cannot be met with traditional data sources, technologies, or practices. In addition, media hype is often backed with rousing use cases.

This makes IT and business leaders feel that they are behind competitors in launching their big data initiatives. Not to worry, ideas and opportunities at this time are boundless, and some of the biggest big data ideas come from adopting and adapting ideas from other industries. Still, this makes it challenging to cut through the hype when evaluating big data technologies, approaches, and project alternatives.

Despite these challenges, by 2015, 20 percent of global 1000 organizations are predicted to have established a strategic focus on information infrastructure equal to that of application management. In anticipation of big data opportunities, organizations across industries are provisionally collecting and storing a burgeoning amount of operational, public, commercial, and social data. Yet in most industries, especially government, manufacturing, and education ' combining these sources with existing underutilized dark data such as emails, multimedia, and other enterprise content often represents the most immediate opportunity to transform businesses. By integrating and analyzing a variety of data sources, not just individually, organizations are believed to achieve the most extraordinary business insights, process optimization, and of course decision making.¬†

Businesses are increasingly managing and deploying information more effectively than ever, but certainly not with the well-honed asset management discipline applied to their traditional material, financial, or other intangible assets. The application of formal information valuation models will allow IT, information management, and business leaders to make better-informed decisions on information management, enrichment, security, risks, purchasing, collection, usage, bartering, productization, and disposal. The worldwide business intelligence (BI) software revenue is expected to reach USD 13.8 billion in 2013, a seven percent increase from 2012. The market is forecast to reach USD 17.1 billion by 2016, according to Gartner, Inc.

CIO appetite for BI is complemented by more-tactical buying in business units for departmental and workgroup analysis, as well as for personal BI, enabled by the nexus of forces comprising cloud, mobile, social, and information. However, in the near term, growth will be hampered by sluggish macro indicators, as well as by slowing sales cycles of multimillion-dollar end-to-end BI deals. Compared with the 16 percent growth in 2011, 2013 and the coming years are expected to be slower, with growth in high single digits.

The emerging data-as-a-service trend could significantly grow the market for BI and analytics platforms. Today, the business model is largely driven in which organizations license software capabilities build analytics applications. However, organizations will increasingly subscribe to industry-specific data services that bundle a narrow set of data with BI and analytics capabilities embedded. In time, most companies, regardless of their business model, will need to provide a data-as-a-service offering. Therefore, this trend has the potential to grow the market significantly as a range of vendors look to embed a BI and analytics platform provider's software capabilities into their data-as-a-service offerings.

Spur Investment in IT

Big data is predicted to increase enterprises IT budgets in the future based on technology, personnel, and expertise requirements. As a result, cloud adoption may affect the rate of adoption and benefits of big data efforts.

Big data presents an opportunity for IT to add value and create stronger relationships across lines of business that help the bottom line and increase revenue. The projects can help provide opportunities for the IT department to become more of a strategic partner within their organizations. Many companies are discovering that big data projects need to span multiple lines of business requiring new levels of inter-company collaboration. While technology is important to big data solutions, people are needed with the special skill set and creativity to imagine and realize data's full potential. There is a growing need for more IT professionals to be trained in this specialized area.

Big Data Infrastructure

Enterprises of all types are betting on big data analytics to help them better understand customers, compete in the market, more rapidly discover insights to help improve products and services, and increase profits. Given the high degree of interest in analytics and the vast quantity of unmined data, the first step most organizations need to take on the path toward realizing the benefits from big data analytics is to implement an appropriate infrastructure to process big data.

Though most enterprises are not starting entirely from scratch, having already developed data warehouses and related business intelligence (BI) solutions, most realize that big data analytics require a different infrastructure than what they have used historically for data warehousing and BI. Many organizations, therefore, plan to invest in a new solution infrastructure to realize the promise of big data.

Challenges

While most companies are collecting, storing, and analyzing data, many are struggling with both the business and IT challenges of big data. Big data could provide a competitive edge for those who can take advantage of data in new and creative ways.

IT managers are witnessing several obstacles to adopting big data solutions including security, budget, and staffing. Data security and risk management is a major concern. The sheer volume of data, the number of ways to access data, and lack of budget for security are the reasons why securing data in big data projects is such a challenge.

In the past, when the network infrastructure was straightforward and perimeters used to exist, controlling access to data was much simpler. However, as data became available through the Internet, mobile devices, or the cloud having a firewall was not enough. Companies were trying to solve each security problem in a piecemeal manner, tacking on more security devices like patching a hole in the wall. But, because these products did not interoperate, one could not coordinate a defense against hackers.

In order to meet the current security problems faced by organizations, a new paradigm shift needs to occur. Businesses need the ability to secure data, collect it, and aggregate into an intelligent format, so that real-time alerting and reporting can take place. The first step is to establish complete visibility so that the data and those who access the data can be monitored. There is a need to understand the context, so that one can focus on valued assets, which are critical to the business. Finally, utilize the intelligence gathered so that one can harden the attack surface and stop attacks before the data is exfiltrated.

"Organizations are realizing that data analysis can lead to enhanced productivity, a stronger competitive position, and greater innovation - all of which can have a significant impact on the bottom line and find new avenues for top-line growth. Analytics make all the more sense for Indian enterprises as the transaction volume of businesses are high and hence there is a growing demand for business intelligence and analytics in the country. One of the key characteristics of big data is value through low-density and high volumes of data. As CIOs look at deploying a big data strategy to sift through mountains of data to find the gold nugget, it is important that they do not lose sight of why they are doing this, follow an enterprise architecture approach, focus on the value it provides to the business, ask questions like how it supports and enables business objectives, and properly align and prioritize big data implementation with business drivers. Analysis from big data in itself has limited relevance. It is when such findings are correlated with the existing enterprise data such as past purchase history and customer demographics that the true value can be extracted in the form of better segmentation models or more targeted up-sell schemes, and so on. Enterprises should look at big data investment as an extension to their existing information architecture. User departments may be tempted to buy in decentralized fashion, which can result in IT standards and governance being compromised. It is critical therefore that CIO's upfront insists on standards and governance not being compromised while at the same time promoting agility. Security in the big data world is even more crucial. Enterprises should invest in integrated security solutions to ensure that big data insights generated from the integration of old world structured data and the new world unstructured data is not compromised in any way."

Sheshagiri Anegondi
Vice President, Technology, Oracle India

"Big data is no longer confined to the realm of technology. Today, it is rising to the top of the business agenda, given that the analysis of big data can help solve long-standing business challenges and transform processes, organizations, entire industries, and even the society itself. More and more data is being captured about more things at a much faster speed than ever before. Data is now growing at an explosive rate and is coming from sources as diverse as sensors, social media posts, digital pictures and videos, purchase transaction records, and cell phone GPS signals and more. The vastness of big data is challenging organizations to harness and build powerful strategies and analytical models around actions and behaviors that once lay beyond the reach of statistical interpretation. Big data today is increasingly becoming an in-demand tool for everyone from a growing range of enterprise clients to public officials. Organizations are eager to learn how to harness big data and develop the new skills needed to turn raw information into smart insights. Big data is not just about collecting the data, it is about the insights one learns from the data, and more importantly how fast one can act on that data to convert the insights into business value. With increased use of smart phones and rise of social media, telecom service providers have tons and tons of data available. The challenge lies in using the big data insights in a way that differentiates it from competition."

Kaushik Bhaskar
Director, Information Management Software, India Software Lab, IBM

"The big data market is on the verge of a rapid growth spurt. Experts indicate the digital universe will grow by a factor of 300, from 130 EB to 40 trillion GB by 2020. Increased awareness of the power of big data and analytics will allow organizations to make evidence-based and consumer-oriented decisions with

high impact on business operations. A worldwide survey of IT leaders by Gartner reveals that 42 percent of respondents had invested in big data technologies, or are planning to do so within a year. ,Ã®Business intelligence is set to transform business organizations through robust and faster decision making, anytime access to information, improved customer retention, increased market share, and better inventory management. BI renders precise historical data, facilitates forecasting and trending, real-time updates, synthesizing cross-functional data, and making business predictions. A proliferation of big data mobile applications today provides access to key business metrics, reports, and dashboards, and other critical business information on the go. BI permits companies to obtain essential demographic, psychographic, geo and behavioral customer intelligence to improve profitability, loyalty, and retention. BI helps organizations leverage market data to build, and continually modify predictive models, identify up-sell and cross-sell opportunities, thus gaining market share. Inventory aggregations and trends revealed by BI can help control important demand planning variables such as fill rates, lead times, or supplier performance thus avoiding over-stocking as well as stockouts.

Big data is pervasive. In a predominantly digital landscape, propelled by big data and increasing volumes of e-transactions, consumers today are generating vast data footprints - online and offline. Organizations can harness this data to form a new marketplace through analytics and behavioral targeting.

In India, the public sector draws special attention in this regard. It is well known that all public enterprises face major fiscal, managerial, and technological challenges. The government is becoming one of the largest generators and consumers of big data in the country, which has the access to an ever-increasing wealth of data including spatial and location data. Big data can play a critical role in driving more focused and evidence-based policy design and service implementation. The private sector also holds huge amounts of data and leads the way in how this data is analyzed to create new business models. It has been estimated that somewhere between 80-90 percent of the data that banks have is unstructured. The industry faces challenges not only in sheer data volumes but also in data variety, and timeliness in which such data needs to be aggregated and analyzed. Big data can enable financial institutions to structure this content, improve business efficiencies, and gain important insights."

Neeraj Jaitley
President-Enterprise Solutions Business, HCL Infosystems

"Big data is still in its nascent stage in India in terms of adoption. Lack of knowledge or information regarding big data; lack of awareness of skilled implementers of big data in India; occurrence of big data situation largely in big organizations due to their internal complexity and scale of operations are few reasons for low adoption of big data. It may not be the same case for an SME. They are more likely to seek solutions for issues like setting up IT infrastructure. However, they can make use of big data to get the data foundation layer right first as their business grows.

Currently, the biggest drivers are financial trading, analysis on online customer behavior, media research, and social media. The skills, practices, and tools currently viewed as big data solutions will persist, as leading organizations will have incorporated design principles and acquired the skills necessary to address big data concerns as routine flexibility in the future. Big data analytics is a crucial component of big data solutions. Effectively managing old and new resources and acquiring the tools that can interrogate and make sense of the data is a part of the equation. Organizations need to get good RoI for their big data solutions. Vendors are an integral part in helping organizations get sophisticated and reliable results out of the tons of data generated. If organizations are able to see the need for big data and data analytics in terms of input versus output, the growing opportunities are huge. This is a good strategy to have in place while implementing big data."

Amit Luthra
National Manager,Storage and Networking Solutions, Dell India

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"Big data, if leveraged by organizations in the right way, can be a game changer for the business of any organization. Some of the most popular and advanced businesses have already exhibited how big data solutions have enabled them to build radically innovative software applications, viz. Facebook, Google, and Yahoo. The Web companies have been early adopters of big data because of volume of un-structured information generated on an ongoing basis. Real-time operational intelligence, collection, storage, and large-scale data processing of unstructured data, event logging into high-performance operational data stores, converting the offline archives to active archives are some of the key application use-cases, where organizations should start testing waters on what big data has to offer.

There are multiple factors that need to be considered for implementing it in the enterprise. Identifying the right use-cases, alignment with business objectives, leveraging/complementing the existing infrastructure, simplifying big data implementation are some of the challenges faced by most of the organizations considering implementing it. To mitigate these challenges, organizations need to form cross-functional teams, work with business more closely, innovate by thinking out-of-the-box, and discovering the right applications and above all define strategy and road map for implementation of big data. Due to some of these challenges, there is a very cautious approach to big data and lots of organizations are still figuring out the right time and approach for big data."

Munwar Sharif
Co-Founder & Chief Technology Officer, CIGNEX Datamatics

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