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The Data Economy: Why do so many analytics projects fail?

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Key considerations for deep analytics on big data, learning and insights.

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What is big data? Big data, which means many things to many people, is not a new technological fad. In addition to providing innovative solutions and operational insights to enduring challenges and opportunities, big data with deep analytics instigate new ways to transform processes, organizations, entire industries and even society. Pushing the boundaries of deep data analytics uncovers new insights and opportunities, and "big" depends on where you start and how you proceed.

Big data is not just "big." The exponentially growing volume of data is only one of many characteristics that are often associated with big data, such as variety, velocity, veracity and others (the six Vs; see box).

According to Gartner Research, the worldwide market for analytics will remain the top focus for CIOs through 2017 [1]. According to Gartner, more than half of all analytics projects fail because they aren't completed within budget or on schedule, or because they fail to deliver the features and benefits that are optimistically agreed on at their outset.

Today, an abundance of knowledge and experience exists to have successful data and analytics-enabled decision support systems. So why do so many of these projects fail, and why are so many executives and users still so unhappy? While there are many reasons for the high failure rate, the biggest reason is that companies still treat these projects as just another IT project. Big data analytics is neither a product nor a computer system. Instead, it should be considered a constantly evolving strategy, vision and architecture that continuously seeks to align an organization's operations and direction with its strategic business goals and tactical and operational decisions. Table 1 includes a list of common mistakes that can doom analytics projects.

Key Considerations for Deep Analytics

We live in an era of big data. Whether you work in financial services, consumer goods, travel, transportation, healthcare, education, supply chain, logistics or industrial products and professional services, analytics are becoming a competitive necessity for your organization. But having big data – and even people who can manipulate it

The six Vs of big data

• Volume (data at rest): terabytes to exabytes, petabytes to zettabytes of lots of data
• Velocity (data in motion): streaming data, milliseconds to seconds, how fast data is being produced and how fast the data must be processed to meet the need or demand
• Variety (data in many forms): structured, unstructured, text, multimedia, video, audio, sensor data, meter data, html, text, e-mails, etc.
• Veracity (data in doubt): uncertainty due to data inconsistency and incompleteness, ambiguities, latency, deception, model approximations, accuracy, quality, truthfulness or trustworthiness
• Variability (data in change): the differing ways in which the data may be interpreted; different questions require different interpretations

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successfully – is not enough. Companies need managers who can partner effectively with analysts to ensure that their work yields better strategic and tactical decisions.

Big data with deep analytics is a journey that helps organizations solve key business issues and opportunities by converting data into insights to influence business actions and drive critical business outcomes. As organizations try to take advantage of the big data opportunity, they need not be overwhelmed by the various challenges that might await them.

The six Vs of big data

• Value (data for co-creation and deep learning): The relative importance of different complex data from distributed locations. Big data with deep analytics means greater insight and better decisions, something that every organization needs.
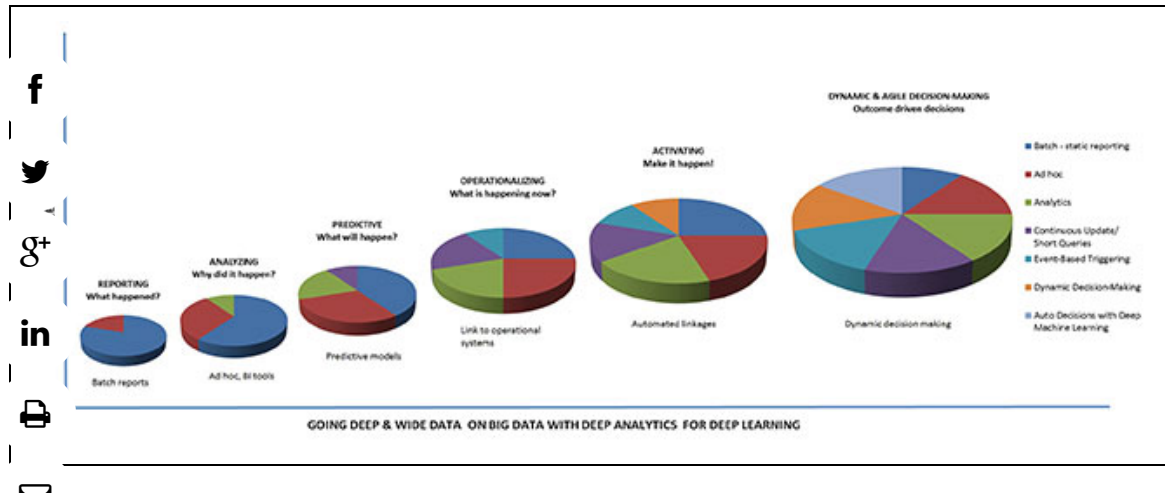
Managers will need to start their journey by [2]:

Identifying clear business need and value. Almost everything needs to be a business rather than a technology solution. Before companies start collecting big data, they should have a clear idea of what they want to do with it with from a business sense. Here's what you need to consider:

Turn over part or all of big data solution delivery to business leaders. Project management and ownership from business (not IT) in big data solutions is the key for success. In the meantime, make sure to have clear alignment between business and IT.

Partner with business peers to identify opportunities and solutions. If we talk about big data, the impact of these projects should also be "big." Create a cross-organization team and involve all stakeholders early in the game.

Value co-creation of value with customers. Overall business objective should always be about customers. If one of the initiatives is about big marketing outcome, than it should be about how to set up customer-centric marketing, how to provide targeted dynamic advertisement, how to engage customers and how to manage personalized shopping.

Start small – with an eye to scale quickly. While big data solutions may be quite advanced, everything else surrounding it – best practices, methodologies, org structures, etc. – is nascent. No one has all the answers, at least not yet. Understand why traditional business intelligence and data warehousing projects can't solve a problem.

Small, simple and scalable. When launching big data initiatives, avoid 1) getting too complicated too fast, and 2) not being prepared to scale once a solution catches on. Big data solutions can quickly grow out of control since discovering value from data prompts wanting more data.

Identify what part of the business would benefit from quick wins. Look for opportunities that will show quick wins within no more than three months. Success brings more people to the table.

This is not a one-time implementation. Understand that this is a living and evolving organism that will grow exponentially very fast. It is a culture change in the company with the way that you collect and use data, and the way you make outcome-based decisions.

Develop a minimal set of big data governance directives upfront. Big data governance is a chicken-and-egg problem – you can't govern or secure what you haven't explored. However, exploring vast data sets without governance and security introduces risk.

New processes to manage open source risks. Most big data solutions are being built on open source software, but open source has both legal and skill implications as firms are: 1) exposed to risk due to intellectual property issues and complex licensing agreements; 2) concerned about liability if systems built on open source fail; and 3) required to use technology that is often early release and not enterprise-class.

New agile processes for solution delivery. Successful firms will embrace agile practices that allow end users of big data solutions to provide highly ~~active~~ tive inputs throughout the implementation process.

Integrate structured and unstructured data from multiple sources. ~~Integra~~tion of data is one of the most important and also complex ~~proce~~sses to serve efficient and effective decision-making. In terms of data, ~~inclu~~des machine data, sensor data, videos, audio, documents, ~~enterpr~~ise content in call centers, e-mail messages, wikis and, indeed, ~~large~~ volumes of transactional and application data.

~~S~~haring is key. In order for a company to build a big data ecosystem ~~that~~ drives business action, organizations have to share data.

~~A~~ strong data infrastructure to host and manage data. Make sure ~~to h~~ave secured and reliable in-house and/or hosted data (e.g., cloud) and ~~inform~~ation management infrastructure.

Think about what information do I collect today … and what analytics should I perform that can benefit me and others.

New security and compliance procedures to protect extreme-scale data. In order to succeed with big data, new processes must be developed that recognize and protect the special nature of extreme-scale data that may be largely unexplored.

Be ready to support rapid growth. Big data solutions can grow fast and exponentially. They can start as a pilot with a few terabytes of data, then becomes a petabyte very quickly. Since the same data can be used different ways and reanalyzed for new insights easily, nothing ever gets deleted.

Funding must move out of IT for big data success. Funding for these projects should come from outside of the CIO organization and move to a marketing or sales organization, for instance, so that the business has a vested stake in the game.

Create a road map that gradually builds the skills of your organization. It's important to create a road map that allows you to gradually build the required skills within your staff, minimize risk and capitalize on previous successes to gain more support. In the organization, there will be new roles and responsibilities such as the data scientist, who possesses a blend of skills that includes statistics, applied mathematics and computer science.

This is different than any current decision support solution. With big data, organizations should look for new capabilities, such as: using advanced analytics to uncover patterns previously hidden; visualization and exploration to help the business find more complete answers, with new types and greater volumes of data to best represent the data to the user and highlight important patterns to the human eye; enable operational decision-making with on-demand stream data by making floor employees into analytic consumers; and turn insight into action to drive a decision – either with a manual step or an automated process. And most important be ready for rapidly increasing benefits and complexities from the six Vs.

Table 1: Common mistakes for analytics projects.
Failing to build the need for big data within the organization
Islands of analytics with "Excel culture"
Data quality and reliability related issues
Not enough investigation on vendor products and rather than blindly taking the path of least resistance
Departmental thinking rather than looking at the big picture
Considering this as a one-time implementation rather than a living eco-system
Developing silo dashboards to answer a few questions rather than strategic, tactical and operational dashboards
Not establishing company ontology and definitions for "single version of truth" culture
Lack of vision and not having a strategy; not having a clear organizational communications plan
Lack of upfront planning; overlooking the development of governance and program oversight
Failure to re-organize for big data
Not establishing a formal training program
Ignoring the need to sell success and market the big data program
Not having the adequate architecture for data integration
Forgetting rapidly increasing complexities with …volume, velocity, variety, veracity, and many more

What is Next in the Data Economy?

Organizations have access to a wealth of information, but they can't get value out of it because it is sitting in its most raw form or

in a semi-structured or unstructured format [3]. As a result, they don't even know whether it's worth keeping.

So where is deep analytics for deep learning headed in the next few years? The exciting news is that many organizations are already realizing the value of big data analytics today. Insight-driven, information-centric initiatives will be deployed where the ability to capitalize on the six Vs of information will create new opportunities for organizations to exploit. By combining and integrating deep analytics, local rules, scoring, optimization techniques and machine learning with cognitive science into business processes and systems, decision management helps deliver decisions that are consistently optimized and aligned with the organization's desired outcomes.

Social analytics will ensure businesses know how, when and where to creatively engage with individual consumers and social communities to foster trusted, one-to-one relationships and better understand and manage the way their companies are perceived. Integrating demographic and transactional data with what can be learned about attitudes and opinions allows organizations to truly understand the motivations and intents of its constituents to better serve them at the right time and place.

analytics will help organizations uncover previously hidden patterns, identify classifications, associations and segmentations, and make highly accurate predictions from structured and unstructured information. Organizations will use real-analysis of current activity to anticipate what will happen and identify drivers of various business outcomes so they can the issues and challenges before they occur. Many decisions will be done automatically by computers that also have learning capabilities.

you are in a process of starting a big data journey, consider this question: What should our big data with deep analytics ap look like to achieve our objectives?

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Acknowledgement

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Organizations of all sizes and types are awash in data possibilities, yet most of them cannot capitalize on the potential for a variety of reasons. The good news, however, is that with the right decisions and focus, these possibilities can turn quickly into realized opportunities.

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