DETERMINE THE BUSINESS POTENTIAL OF BIG DATA ANALYTICS

Analytics Valuation Methodology: a proven technique for successfully exploiting big data analytics
Big Data and advanced analytics\(^1\), especially when used in combination, have the potential to transform the very fundamentals of business. But where and how does an organization apply big data, advanced analytics, and new technologies like Hadoop in order to have the biggest business impact? In addition, what can be done to ensure the successful deployment of these new capabilities, especially given the historically high rate of failure for mainstream adoption of new technologies?

To increase the probability of success, EMC\(^2\) Consulting has developed a process that helps companies identify where and how to deploy big data analytics in a way that will deliver the biggest business impact. This approach, called the Analytics Valuation Methodology, provides the following key benefits:

- Ensures that the big data analytics initiative is focused on the business opportunities that provide the optimal trade-off between business benefit and implementation feasibility.
- Builds the organizational consensus necessary for success by aligning the corporate resources around common objectives, financial goals, key performance indicators, and priorities.

This perspective describes EMC Consulting’s time-tested Analytics Valuation Methodology for helping companies identify where and how to apply big data analytics to power their strategic business initiatives. The methodology is used to determine the economic or business value of big data analytics by aligning it to the organization’s strategic business initiatives.

**ANALYTICS VALUATION METHODOLOGY**

The Analytics Valuation Methodology was originally developed to address the historically high rate of failure in data warehousing. It was estimated that between 40 to 70 percent of all initial data warehousing projects failed\(^2\). The major reasons for failure were: 1) lack of active user involvement in the data warehouse initiative, and 2) lack of focus on delivering compelling business results or benefits.

The methodology used in the EMC Analytics Valuation Methodology addresses these issues by following a simple premise—business opportunities must drive all information technology deployments. While a “technology-led approach” is useful for helping an organization gain insight into “what” a new technology does, it is critical that the business priorities drive the “why,” “how,” and “where” to implement new technologies.

**RESEARCH STRATEGIC BUSINESS INITIATIVES**

The Analytics Valuation Methodology begins by identifying the organization’s Strategic Business Initiatives. A strategic business initiative is a cross-functional business priority, championed by a senior executive, that will deliver compelling financial or business value to the organization. It has goals that are measured by key performance indicators and a well-defined delivery timeframe (typically 12 to 18 months in duration).

The prospective list of strategic business initiatives can be identified through the following:

- **Financial Information**—For public companies, published financial data (e.g., annual reports, 10-Q’s, and financial analyst briefings) is reviewed. The company’s annual report provides information on the company’s strategy, plans, and economic drivers. The president’s letter within the report will typically yield three to five strategic business initiatives that are a focus of the company.
- **Public Sources**—Additional information is also obtained from the Internet. This research provides information and insights not only about what a company is doing, but also about industry trends and key competitors. Sites such as http://www.hoovers.com and http://www.edgar-online.com provide additional information.

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\(^1\) We define “Advanced Analytics” to encompass statistical analytics, predictive analytics, and data mining.

ASSESS BIG DATA ANALYTICS BUSINESS IMPACT

The next step in the methodology is to assess how and where big data analytics could have the most impact on the organization’s business. A key outcome of this process is a list of “analytics opportunities” that can be used to drive or support the organization’s strategic business initiatives.

An “analytics opportunity” takes the form of an action statement or directive, and contains the key performance indicators against which success or effectiveness can be measured. For example, a retail bank might have the following “analytics opportunities” in support of a “customer cross sell” strategic business initiative:

- Increase the number of repeat purchases for strategic products (e.g., personal loans)
- Increase the number of services purchased by each customer (e.g., has savings account, auto loan, and mortgage)
- Increase the frequency of purchases (e.g., increase credit card usage)

USE VALUE CHAIN ANALYSIS TO IDENTIFY “ANALYTICS OPPORTUNITIES”

Value Chain Analysis is a concept from business management that was first described and popularized by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*. Value Chain Analysis is a method to identify all of the elements in the linkage of activities a firm relies upon to derive its profits and economic value. It begins with securing the necessary materials and services, through manufacture and distribution of products and services, and ends with the marketing, sales, and support to the end customer.

Ideally, Value Chain Analysis is executed by working backwards in the value chain from the organization’s customer. Beginning the analysis with the end customer helps in identifying and mapping the different functions that need to collaborate in support of the value chain.

Let’s use the retail industry value chain as an example. The first step in the value chain analysis is to identify what the end customer is trying to accomplish. This could be:

- Acquire product and/or services from a reliable manufacturer
- Acquire at the lowest price
- Acquire with easiest convenience
- Acquire complementary products and/or services

Working backwards from the end customer in the value chain, the next player is the retailer. The retailer “owns” the customer relationship, which is probably the single most important relationship throughout the entire value chain. The retailer’s business objectives could therefore include:

- Service as many customers as possible
- Service at the highest reasonable price/margin per customer segment
• Service at the lowest possible costs per customer segment
• Service at the optimal service level per customer segment

This process continues until each of the major business functions within the company has been covered.

Next, each business objective is decomposed into its supporting business opportunities. For example, if the retailer’s business objective is to “service as many customers as possible,” then the following could comprise a set of supporting business opportunities:

• Open new physical outlets
• Acquire new physical outlets
• Expand existing physical outlets
• Open or expand a virtual (web-based) outlet
• Increase promotions to draw customers to the outlets
• Offer a frequent flyer program to attract new customers
• Deploy a database marketing program targeting new potential customers

The results of this analysis will be a robust set of business opportunities against which big data analytics could be deployed.

CONDUCT A VISION WORKSHOP

The final step in the Analytics Valuation Methodology is to conduct the Vision Workshop. This is a facilitated process that brings together business stakeholders and their supporting IT professionals to identify analytic opportunities that support the organization’s strategic business initiatives. The Vision Workshop is designed to achieve the following objectives:

• Drive agreement and group consensus from all participants regarding the prioritization of the identified business opportunities from a business (financial) perspective. This quantification might take the form of either hard dollars, return on investment, or ranking versus other projects (e.g., high, medium, and low).
• Drive agreement and group consensus regarding the roughed-out feasibility of implementing each of the different business opportunities. This feasibility is based upon the technology, project, and organizational issues identified earlier.
• Drive agreement and group consensus regarding the ranking of the business opportunity against the criteria of business value and implementation feasibility. This is where the opportunity matrix, which we will discuss later in the paper, plays center stage.

BUSINESS QUESTION BRAINSTORMING

The workshop begins with a discussion of the strategic business initiative upon which to focus. The executive business sponsor plays a key role by providing additional detail on the strategic business initiative including specific objectives, key stakeholders, key performance indicators, and timeframe. This is also a good time to discuss the set of actions or decisions that one would want to make in support of the strategic business initiative (e.g., reallocate marketing spend, consolidate vendors, and improve supply chain operations).

The next step in the workshop is to have each of the business stakeholders brainstorm the questions they need to ask and answer in support of the targeted business initiative. The questions are captured on 3”x5” sticky notes; one question per note. Each note also captures enough detail to be able to identify the metric(s) being measured and the dimensionality (“by analysis”) of the question. For example:

• “Show me the number of products held by household by zip code, customer segment, and week, trended over the last six months.”
• “Rank the order of products held by household in the current month compared to the absolute and percentage change from the previous month.”

Brainstorm questions that support the targeted business initiative, and place them on a flipchart.
Each question is then placed on flip charts (order is not important at this time).

Next, the business questions are grouped into “analytics opportunities.” Participants are brought around the flip charts and similar questions are grouped together into common “themes” or opportunities. There are frequently several questions that have the same metric (e.g., revenue, margins, and products per household) but have different dimensionality (e.g., products, geographies, branches, customer segments, weeks, daily, and months). Questions that have the same metrics but have different dimensionality are grouped into common “opportunities” and given a descriptive name (e.g., revenue analysis, customer up-sell analysis, and branch performance analysis).

**USE OF THE PRIORITIZATION MATRIX**

The prioritization matrix is the capstone of the Vision Workshop. It drives group consensus around the relative business benefit of each analytics opportunity against its implementation feasibility (as denoted by [A] through [F]). It uses group dynamics to place each of the analytics opportunities on the appropriate grid based upon the factors of business benefit and implementation feasibility. The placement of the analytics opportunities is key to the consensus process—the group agrees during the process to the “right” relative placement of the analytics opportunity on the matrix.

Note: on the business value vertical axis, we are more concerned with the relative placement of the analytics opportunities versus determining the absolute value on each one. During the workshop, participants state why they placed a particular analytics opportunity on the chart relative to another analytics opportunity.

The final version of the prioritization matrix not only tells organizations where to begin, but yields a roadmap that identifies where to best leverage big data analytics in support of the organization’s strategic business initiatives.

**SUMMARY**

The Analytics Valuation Methodology is a powerful and engaging process for:

- Driving mutual business and information technology alignment against a common set of goals
- Ensuring organizational buy-in for the system and the business problems being targeted with the project
- Providing a set of metrics against which a project’s success and progress can be measured
- Reducing the likelihood of failure due to a lack of focus on meaningful business opportunities

The process is a critical step on the path to successfully driving business value from a big data analytics initiative. Given the significant business potential, these initiatives require the appropriate amount of upfront investment in order to “Begin with an end in mind,” as quoted by Stephen Covey.