

Leveraging the Big Data Revolution

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Tap into Your Growing Data Stream To Optimize Sales and Marketing Initiatives... By Gaining Key Insights into Consumer Behavior and Profit Potential

Why Big Data Analytics? *Why Now?*

Extracting new, valuable, actionable insights from Big Data is a novel challenge for many companies worldwide. Why? Because the pure, unfiltered collection of data in and of itself is of diminishing value without contextual, robust, and prudent analysis.

The ability to extrapolate key inferences from business activities, consumer behavior, and macro trends that drive decisions of public and private sector organizations alike is often as much art, as it is science. And as data grows ever larger, wider, and more unstructured (e.g. text, audio, imagery), so does the promise of developing streamlined strategic directives by leveraging sophisticated analytics for big data.

Moreover, recent research indicates that within the next decade, the total volume of information managed by enterprise data centers is expected to grow exponentially by a factor of 50.¹ However, the technical development of analytics tools to glean meaningful value from Big Data hasn't tracked accordingly with this increased data growth.

Quant5 and Booz Allen Hamilton have joined forces to provide their expertise and perspective on the inherent challenges and potential opportunities presented by Big Data. We recognize the true value of analytics and visualizations of Big Data to help drive informed, thoughtful, and confident decision-making to reduce costs, discover new opportunities, and enable more efficient activities.

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While analytics are commonplace in today's corporate environment, the analytics game has undergone a vast transformation in recent years. Marked increases in data volume, and a plethora of diversity from social, sensor-related, web, and mobile data, are the obvious forces driving the growing urgency to extract new intelligence from Big Data. In today's tough business climate, enterprise clients are demanding multi-dimensional analytics that spans that enables several modes of insight.

¹ International Data Corporation. *The 2011 Digital Universe Study: Extracting Value from Chaos*. 2011

MODE OF ANALYSIS	INSIGHTS DEVELOPED
Impact Analysis	How have marketing expenditures impacted sales?
“What-If” Analysis	How much will sales increase in one year, two years and five years if sales teams get new product training?
Multi-dimensional Analysis	If product prices and discounts were adjusted for regional economic differences (but kept in a prescribed range) how much will sales be impacted?
Predictive Analytics	What is the right product and right price to offer next to the right group of customer in order to maximize profit.

The “Big” Data Challenge

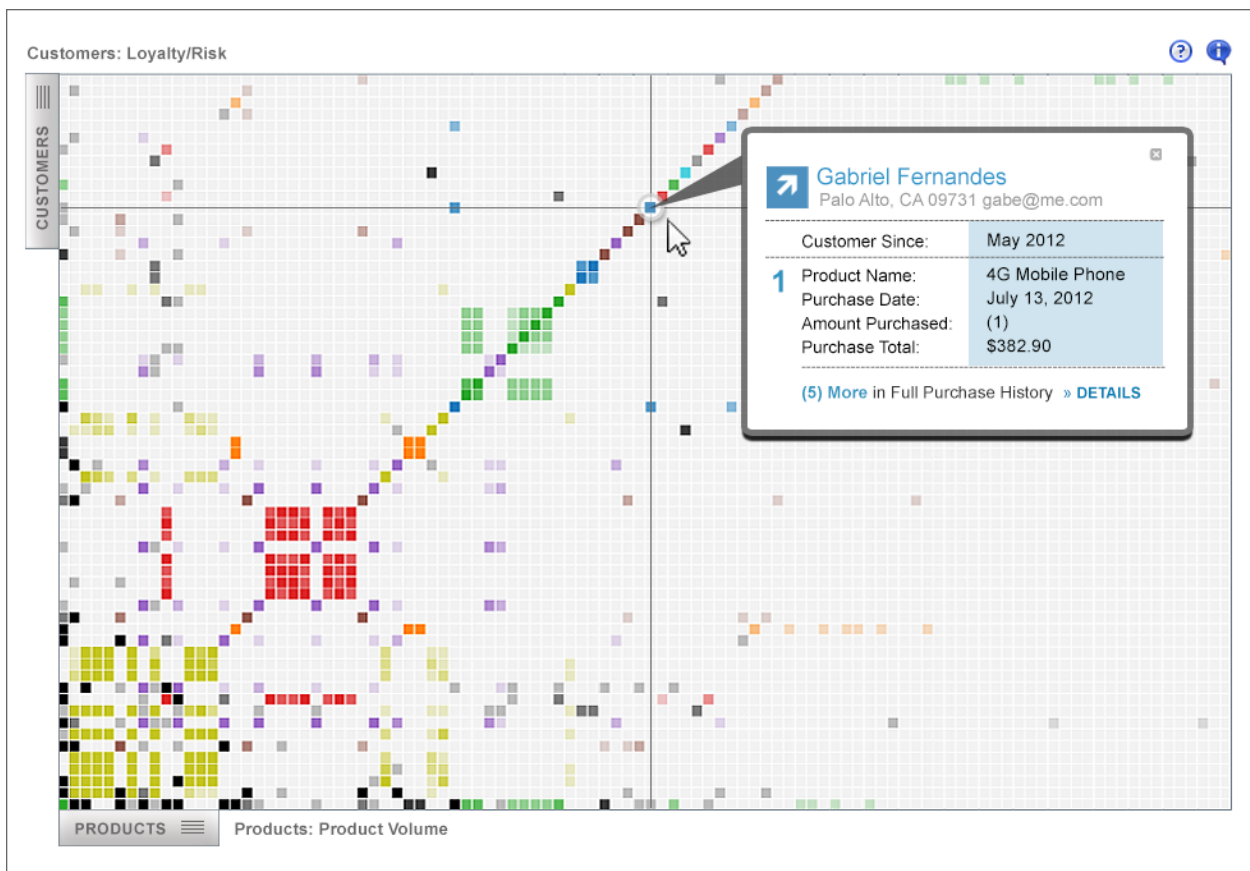
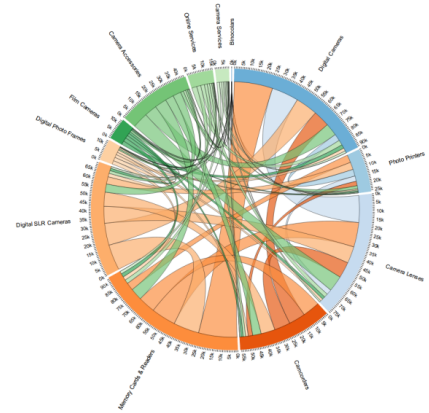
Most organizations are aware of the “big” data issues accommodating increasing data volumes; however an additional challenge in many organizations is that data is collected through several independent systems (e.g., one for accounting, billing, budgeting, e-commerce and finance) – **What we refer to as “Wide Data”**. More recently, consumer behavioral data is made pervasive via social networking, websites, blogs, customer support forums, review sites and mobile application usage. For many companies, however, this data remains siloed because:

- **Legacy software systems were not designed to deliver interdepartmental intelligence.** Instead, they remain highly specific to the business need they were originally designed to address.
- **Data is delivered in various formats that are not readily digested by all data-related systems, especially analytics systems.** Without a standardized data warehouse strategy, structured data from diverse sets is often difficult to integrate.
- **Analytics groups are not aligned with the new interdisciplinary and interdepartmental requirements of today’s state-of-the-art analytics.** These groups are often focused solely on initiatives that are highly scientific, market-specific, or specific to a specific function (e.g., corporate finance).

When companies realize that they should go beyond conventional analytical methodologies there is a sobering realization that they are limited by their inability to access data, lack analytical horsepower inside their organization, or lack the bandwidth to properly interpret data. Internal analytics teams are often overwhelmed by data or underwhelmed with the analytics results. Despite the time spent in analysis, clear recommendations and directives are often still absent, greatly impacting the confidence in decisions.

Visualizations Unlock the Mysteries behind Big Data

Communicating insights from Big Data is perhaps the biggest challenge for organizations with long-held or so-called “traditional” business practices. While technological advance can solve the data architecture and distributed computing challenge, and analysts can employ sophisticated analytics techniques, conveying meaningful information to decision makers is the biggest gap for most businesses. This is where customized and interactive visualizations of data can enhance Big Data projects by making analytics more intuitive, dynamic, faceted, dimensional and therefore potentially more valuable and accessible.

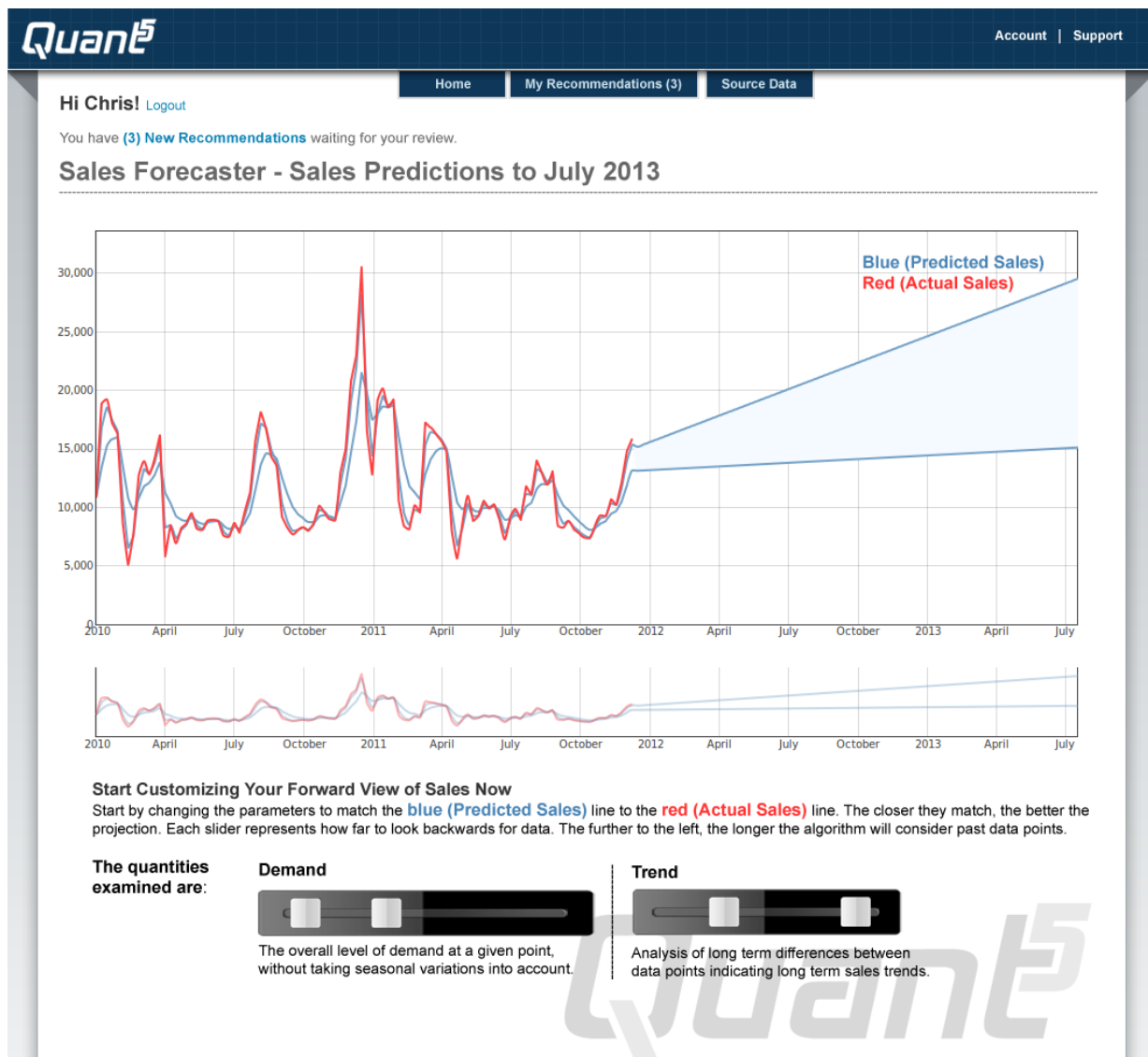


In this interactive visualization the dotted line represents the intersection of products and customers, and the concentrations that occur reflecting on loyalty and risk of churn. A customer record is highlighted on above right, showing how a user can drill down to individual records and uncover details about customers, products and sales.

Visualizations can provide an intuitive and engaging reading of complex data, as well as enabling faster decision-making. Interactive visualizations can also provide quick answers, but afford enterprises the unique ability to explore underlying data through manual human manipulation of that data.

Visual representations of complex data activate the right side of the brain, while pure data and analytics activate the left

By allowing users to interact directly with data, micro or macro adjustments can be made to account for industry experience, knowledge, and other intangible factors that may not be accounted for in accumulated data, which produce visualizations such as the one shown below.



In this interactive visualization the blue line represents historical data while the red line is predicted sales; the growing gap between them is highlighted over time. Also on this screenshot are the variables underlying this sales forecast: Demand and Trend.

CASE STUDY 1: Customer Segmentation for a Business-to-Consumer Company

This “B2C” company has more than 200,000 customers and a product line that was divided into 90 categories (and more than 2,000 individual SKUs). Recently, they sought to run their first all-inclusive customer segmentation to understand:

- The various ranges of customers’ purchases, both historically (pre-Web) and recently (post-Web);
- Which products were selling and which were not; and
- How customers purchased products.

FOUNDATIONAL DATA	Four years of customer records and product purchases, demographic information, sales data, marketing activities and expenditures, Web and social data.
METHODOLOGY	Statistics employing cluster analysis, multivariate analysis, matrix completion and predictive modeling.
RESULTS	This project resulted in the company adopting recommendations of product offers for specific customer segments through the use of promotions and coupons (share via email and Website). The conversion rate associated with emails opened — and resulting purchases — increased 23%. Annualized associated revenues increased 12%.

CASE STUDY 2: Customer Lifetime Value and Churn Risk for a Business-to-Business Company

This “B2B” company has a product line consisting of six high-priced products and approximately 2,000 customers. They wanted to know:

- Which customers could be sold more products in the future,
- Their customer lifetime value (CLV), and
- Which customers were the most likely to reduce spending or churn?

FOUNDATIONAL DATA	Eight years of product sales data, marketing activities and marketing expenditures.
METHODOLOGY	Customer clustering and segmentation, estimate average inter-purchase time and willingness to spend per Product, and discounted time series analysis

RESULTS

As an outcome of the findings, the company changed its sales strategy and personnel coverage. Executive management increased the number of customer service representatives (CSRs) to reduce churn but chose against hiring additional and expensive sales reps. Today, each sales rep and CSR have very specific product-related sales goals, marketing programs and expenditures were better aligned, and company managers have expanded goals and criteria for assessing the health and success of the sales and marketing teams.

Conclusion

Businesses today must manage large volumes of data, while also extracting new insights from this data to meet strategic initiatives, financial goals, operational targets, and competitive challenges. This requires knowledge of both big data and analytics, and an innovative approach to gain a deeper understanding of both areas.

Quant5 and Booz Allen Hamilton, have the experience and technology to meet these challenges head-on and get companies on a sustainable path to success.

About Quant5

Quant5™ is a leader in transforming exponentially growing mountains of unstructured and heterogeneous data into actionable business optimization. By leveraging Quant5's Customer Analytics™ software as a service (SaaS) big data solution, business organizations gain deeper, richer and more accurate insight into customers, marketing activities and budget, and the company itself. This intelligence leads to uncovering new business opportunities, making better (and faster) decisions, and speeding time to market and gaining/maintaining competitive advantage. For further information on Quant5, please visit: www.quant5.com, call: 617-401-3142, or email: info@quant5.com.

Doug Levin is the co-founder and CEO of Quant5, Inc. He has nearly 30 years of corporate, international and entrepreneurial experience in the software industry.

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About Booz Allen

Booz Allen Hamilton is a leading provider of management and technology consulting services to the US government in defense, intelligence and civil markets, and to major corporations, institutions and not-for-profit organizations. Booz Allen is headquartered in McLean, Virginia, employs approximately 25,000 people and had revenue of \$5.86 billion for the 12 months ended March 31, 2012. To learn more, visit www.boozallen.com (NYSE: BAH). For more information about Booz Allen's Cloud, Decision and Mission analytics services, please visit: <http://bit.ly/MPtOHJ>.

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