



# Rethinking Analytics for the Social Enterprise

by  
**Don Tapscott and Mike Dover**

Sponsored by



## Contents

<b>The Idea in Brief / Executive Summary</b>	<b>3</b>
<b>1. The Social Enterprise</b>	<b>5</b>
Social Networking and New Business Models	5
Social Media and the Customer	5
Collaboration and Social Workplaces	6
Zettabytes, Human Intelligence, and Intelligent Data	7
<b>2. A New Generation of Analytics for the Social Enterprise</b>	<b>8</b>
<b>3. Analytics and Competitive Advantage</b>	<b>10</b>
How Social Improves Predictive Analysis	11
<b>4. Analytics Can Improve Performance across the Social Enterprise</b>	<b>12</b>
Marketing	12
Customer Service	12
Manufacturing	13
Research and Development	13
Human Resources	14
Asset Management	15
Procurement	15
Finance	15
Logistics	15
Sales	16
Operations	16
<b>5. Five Industry Examples</b>	<b>17</b>
Health Care	17
Mining and Resources	18
Banking	19
Retail	19
Consumer Products	21
<b>6. Six Steps to a Truly Social Enterprise</b>	<b>21</b>
1. Ensure that Analytics is Core to the Organization's Mission and is Actively Used to Drive Decision-Making	22
2. Conduct an Organizational Audit	22
3. Choose Optimal Technology	22
4. Ensure Data Cleanliness and Leverage Information Exhaust	23
5. Build an Effective Team to Take Advantage of Analytics	23
6. Build Scenarios: Test and Retest	23
<b>Closing Comments</b>	<b>23</b>
<b>Acknowledgements</b>	<b>25</b>
<b>About the Authors</b>	<b>25</b>

## The Idea in Brief / Executive Summary

The practice of analytics is rapidly evolving. What was once the dominion of select analysts manipulating arcane, opaque spreadsheets based on data whose accuracy and timeliness were suspect, has now become a broader ecosystem where all team members (including participants from beyond the organizational walls) actively participate in collecting and acting upon information.

Today's volatile business environment rewards those who can innovate the most quickly and respond accurately to changing consumer sentiment. The staggering amount of data being created is a daunting challenge—research suggests that 2.7 zettabytes (the amount of data in fifty million Libraries of Congress) of information will be created in 2012, an increase of more than 48% from 2011.<sup>1</sup> The Social Revolution confirms the power of the individual voice and is leading to new collaborative business models where data is shared, analysed and treated differently. New analytics tools and capabilities are appearing in the marketplace.

Leading companies and technology providers are rethinking the fundamental model of analytics, and the contours of a new paradigm are emerging. The new generation of analytics goes beyond Big Data (information that is too large and complex to manipulate without robust software), and the traditional narrow approach of analytics which was restricted to analysing customer and financial data collected from their interactions on social media. Today companies are embracing the social revolution, using real-time technologies to unlock deep insights about customers and others and enable better-informed decisions and richer collaboration in real-time.

To take advantage of this data, firms need to deploy collective intelligence and build on information from many sources, far broader than simply historical sales and financial information. There are five main characteristics of the new analytics:

1. **Data is collected socially.** Innovative companies collect, organize and exploit

structured and unstructured data from as many sources as possible from inside and outside the company. The most interesting data is sourced from myriad social interactions of customers and prospects.

2. **Data is analyzed socially.** Rather than specialists accessing information as individuals, analytical tools penetrate through an enterprise and data is analysed in a collaborative fashion. As information becomes more trusted, transparent, and dispersed, it enables the true collective intelligence of enterprises and their business ecosystems. With more voices comes more creative and holistic feedback. This builds a broader picture and results in better informed decisions.
3. **Data and tools become mobile.** The personal computer used to be the main device to support analytics, but as technology improves and corporate information becomes more democratic, it is being replaced with apps running on powerful mobile devices, such as smartphones equipped with intuitive apps and data collecting capabilities, including video.
4. **Data is more visual.** Powerful new applications as well as enterprise software suites illustrate data through graphs, visuals, and interactive simulations. Such tools explain the data more fully, and enable better collaborative analysis and more innovative thinking, especially for “visual thinkers.”
5. **Data is more current and actionable.** Just as work is conducted in real-time, data can be collected, analyzed and distributed faster than ever before—in real-time. The implication of this phenomenon is that data is more accurate and complete and more useful to support innovative decision making and predictive modelling.

Used properly, the new analytics empowers individual workers and other contributors and drives value in all

areas of the organization. To extract maximum benefits, companies need to plan carefully, invest in the right infrastructure, and constantly iterate and innovate in a collaborative manner. At the same time, wider access to data increases risk, and risk management policy needs to be codified and enforced.

To extract maximum value, enterprises need to:

1. **Ensure that analytics is core to the organization's mission and is actively used to drive decision-making.** Recent research suggests that just about all organizations are using analytics in some form, but for most it is not a top management priority. Management needs to foster a culture where analytics is fully used and is embedded in strategy definition. To succeed, a company needs unwavering executive support, adequate funding, and performance metrics that reinforce the importance of the analytics platform.
2. **Conduct an organizational audit.** Determine what sources of structured and unstructured data are already available including customer records, financial data, information from the supply chain, and government statistics. Determine what additional information can be gathered from social media conversations, and develop a plan to capture it.
3. **Choose optimal technology.** Big data requires robust technology. Ensure that the enterprise solution you choose is robust enough to manage huge amounts of data from multiple sources.

Reinforce your enterprise architecture with strategic technology for team members. How will the data be presented to them so that they can make decisions and assess risk effectively? How will mobile technology—especially smart phones and tablet computers—enable them to collect, collaborate, and analyze information?

4. **Ensure data cleanliness and leverage information exhaust.** An analytics program will only be as good as the input data. Acting on bad data can seriously damage an enterprise. Take care to confirm data and understand the implications of error multiplication and when a body of data includes estimates.

If your operations collect information whose value is not apparent to your operation, determine whether it can be sold or shared with partners.

5. **Build an effective team to take advantage of analytics.** There will likely be a shortage of people with the applied mathematics skills required to develop and conduct analytics programs. Ensure that your organization is actively recruiting and retaining talent in this area.

In addition, it is important to properly train all team members who are making operational decisions based on analytics, especially with respect to risk management.

6. **Build scenarios, test and retest.** The most important benefit of an effective analytics program is predictive analysis. Running simulations should be standard practice for all areas of the organization.

## 1. The Social Enterprise

Notwithstanding Facebook's disastrous IPO, the buzz about all things "social" continues. We see social media, social marketing, social networking, social business, social music, social business models, social gaming—social *everything*.

Until recently "social" meant little regarding corporate strategies and operations. Firms used platforms like Facebook and Twitter for building communities and engaging customers. Some companies successfully use collaboration suites for their employees. But as social media comes into the mainstream of business operations it portends great transformation. A new "Social Enterprise" is emerging, with far-reaching implications for how organizations manage, analyze, and exploit all types of data including that from social media.

To begin, what is a Social Enterprise?

### Social Networking and New Business Models

Social media is a lot more than joining a gardening community, tagging a photo or finding a date online. Rather, companies are using social media to conceive, design, develop, and distribute products and services in new ways. The notion that you have to attract, develop, and retain the best and brightest inside your corporate boundaries is obsolete. With costs of collaboration plunging, companies can increasingly source ideas, innovations, and uniquely qualified minds from a global talent pool.

Social media is arguably becoming a new mode of production. Call it social innovation or social production, where peers create value, often outside the walls of traditional companies. There are new models of the firm emerging such as open platforms, ideagoras<sup>2</sup>, and peer production communities as vertically integrated firms of the industrial age unbundle into business ecosystems. This has important implications for data, as data and information once inside the boundaries of enterprises now flow in complex networks.

### Social Media and the Customer

The industrial age paradigm in marketing was enabled by traditional media. Print and broadcast technologies were centralized, one way, one-to-many, and controllable. With this media came the Four P's of Marketing (Product, Place, Price and Promotion) and dominant concepts of the Brand as an image, badge, promise, trademark, or "word in the mind." Industrial age marketing models emphasized pushing images, messages, and other marketing content.

A new "Social Enterprise" is emerging, with far-reaching implications for how organizations manage, analyze, and exploit all types of data including that from social media.

The new media are the antithesis to this paradigm—distributed, one-to-one, many-to-many, difficult to control, and more neutral. Rather than being a passive audience, the recipients are users, actors, and collaborators. They provide a platform for new kinds of engagement, communities, and customer co-creation.

The impetus for a new marketing model is also stimulated by a new generation of consumers. These "digital natives" of the Net Generation<sup>3</sup> have a very different culture than their Baby Boomer parents. They behave differently as consumers, such as subjecting products to intense scrutiny.

The progress of using social media for effective customer interaction is just scratching the surface. Many challenges remain. How can companies build wiki brands, and integrated customer experience platforms? What are the next breakthroughs in mobile and geo-spatial technologies? How can firms harness privacy and personalization for breakthrough results?

## Collaboration and Social Workplaces

Old vertically integrated hierarchies are giving way to companies that focus on what they do best and partner to do the rest. Business-webs—horizontally integrated business eco-systems—unlike their vertically integrated predecessors, demand greater levels of collaboration. Even with challenges such as miscommunication, time zone delays, and emailed, out-dated information, these new business-webs are typically more efficient than old companies because the tonic of the marketplace is brought to bear on every business function.

Today the sharing of knowledge amongst the various business-web partners is essential to a successful operation. Firms that collaborate more effectively and build better business-webs with lower transaction costs achieve important competitive advantages. This is a significant change in the way business is done. In a previous era, companies could appoint a relationship manager and funnel all communication between organizations through one individual so that a positive, consistent (if not accurate) image could be portrayed. This simplified the relationships and for weak bonds it was sufficient. Today inter-corporate bonds are the lifeblood of business. A company can no longer distance itself from its suppliers. One partner's problem will soon be everybody's problem if it causes a drop in sales or exposure to legal liability. Open collaborative access is necessary for the group to make the right decisions at the right time in order for all to succeed.

For these new business models, companies must adopt new cultural values. First, they need to be transparent. They need to open up so that partners can see what they are doing. Second, members must trust one another to deliver on their commitments. Establishing these new levels of trust requires far greater levels of communication and transparency. As the world becomes ever more connected, governments (including regulators), suppliers, customers, and (especially, these days) bankers will be under great pressure to demonstrate greater visibility.

New tools such as corporate social networks, wikis, blogs, ideation tools, tele-presence, tags, collaborative

filtering, next generation knowledge management, decision dashboards, and RSS feeds are boosting the metabolism of high-performance workplaces. Integrated suites of business intelligence tools as well as risk management and performance management applications now arriving in the marketplace have been shown to improve the pace of an organization, speed up innovation, reduce internal transaction costs, and make work more efficient—often contributing to employee satisfaction and retention. Such suites are becoming the operating platform for the 21<sup>st</sup> century enterprise.

To date though, many attempts to introduce social networking for employee collaboration have failed because they were not aligned with business objectives. Companies begin adopting social software without a clear vision of what is expected and what is necessary to succeed. Most have not addressed the complex people, process, and organizational issues of change.

With some enterprises demonstrating transformational wins, how to effectively leverage the social revolution in collaborative software is now percolating up to the C-level as a strategy issue.

Enterprises are just beginning to understand the data management and analytics implications of these new platforms, such as how these new tools can change decision making. Innovative tools and disciplines are required to make better decisions by harnessing the wisdom of human capital both inside a company and in its business-networks. The new discipline of Collaborative Decision Management (CDM) provides software and processes that engage the “wisdom of many” needed to help solve today's truly difficult problems. This requires, among other things, software that encourages full collaboration, enabling all participants to see the same information, at the same time, in a format that makes sense to them, and to be on the same page as their input contributes to the ultimate decision.

## Zettabytes, Human Intelligence, and Intelligent Data

The transformation of the enterprise around these themes of the social revolution is intersecting with an explosion of data, enabling a rethinking of nothing less than intelligence—for humans and for data itself.

The amount of data pouring into the social web is staggering. Every minute of every day, 48 hours of content is uploaded to YouTube, 47,000 apps are downloaded from Apple, 684,478 items are shared on Facebook, 100,000 new posts appear on Twitter, and two million search queries are sent to Google.

International Data Corporation (IDC) estimates that more than 1.8 zettabytes<sup>4</sup> of information were created and replicated during 2011—the same number of bits as there are stars in the universe.<sup>5</sup>

Andreas Weigend, former Chief Scientist at Amazon, estimates that the amount of data available about each American doubles every 18-24 months. Much of this data is held by enterprises. In all but two of the U.S. economy's biggest 17 sectors, companies with more than 1,000 employees store on average more data than the US Library of Congress.<sup>6</sup> Extrapolating the data growth suggests that in ten years there will be one hundred times more information collected for each person, and in twenty years there will be ten thousand times as much available.

However, one must keep in mind that the value of data should not be measured by number of bits. Given that one minute of high-resolution video requires as much memory as 480,000 pages of text, much of big data comprises thousands of digital photos and videos taken by tourists and traffic cameras.

Data is not only being collected by traditional devices, some of the most valuable enterprise data is collected through cost-efficient dedicated sensors. McKinsey research estimates that by 2011 there were more than 30 million networked sensor nodes collecting data for enterprises and that this amount is growing by more than 30% per year.<sup>7</sup> On a similar note, RFID tags generate two to three orders of magnitude more data

than conventional bar code systems. Also, in-memory technology is improving processing speeds of apps and changing the way people access data.

At the same time, storage is becoming cheaper. Kevin Kelly, editor of *Wired*, told the 2011 Web Expo and Conference that a \$600 disk drive can store all of the world's music. A terabyte of disk storage cost \$14 million in 1980, costs \$30 today, and is moving towards being available for free.<sup>8</sup>

Every minute of every day,  
48 hours of content is  
uploaded to YouTube, 47,000  
apps are downloaded from  
Apple, 684,478 items are  
shared on Facebook, 100,000  
new posts appear on Twitter,  
and two million search  
queries are sent to Google.

The explosion of data requires new thinking about how data can be managed and exploited. As social penetrates the enterprise and the economy we need to go beyond traditional views of the so-called "information age." It makes more sense to think of an emerging Age of Networked Intelligence. It is about connecting the brainpower of humans to collaborate on new, real-time, mobile platforms to create what could be called "intelligent data."

Our research suggests growing evidence that firms transforming themselves into Social Enterprises perform better. They have lower transaction costs and a higher metabolism. Decisions, when collaborative, tend to be better and more likely to be implemented. They are more innovative as they harness the intelligence of uniquely qualified minds outside their boundaries. And enriched with intelligent data, they can manage risk better.

## 2. A New Generation of Analytics for the Social Enterprise

Analytics has been key to business success for a long time. The practice predates the term Business Intelligence, which was coined in 1989 to describe a set of concepts and methods for improving decision making using fact-based support systems. From the earliest days of enterprise computing, leading-edge organizations adopted executive information systems—the predecessors of today’s analytics solutions—because these firms understood that decisions should be based on facts, not opinions or conjecture. As Dr. W. Edwards Deming famously opined, “In God we trust, all others bring data.”<sup>9</sup>

Today, analytics includes much more than Business Intelligence and incorporates other important concepts such as Master Data Management (MDM), Governance, Risk and Compliance (GRC), and Enterprise Performance Management (EPM).

Firms that adeptly leveraged data enjoyed substantial competitive advantage. But significant changes to the volume and type of data have increased the complexity and multiplied the possible rewards of analytics. First, as just noted, the staggering amount of data being created is daunting. The term “Big Data” refers to a body of knowledge that cannot be meaningfully handled without sophisticated technology. Second, the Social Revolution confirms that individual customers—especially the Net Generation—expect their opinions to be taken seriously. Third, the new volatile, complex business environment rewards those who can innovate the fastest and respond most accurately to changing consumer sentiment.

To take advantage of such data, firms need to deploy collective intelligence and build a truly social organization. There are five key characteristics of social analytic drivers:

1. **Data is collected socially.** Not only should all employees be encouraged and equipped to collect data within the company, but they

should also collect information from customers and others speaking about the company and its products. For example, a retail company must collect and comprehend a mix of structured (customer relationship management, supply chain, point-of-sale) and unstructured (social media, blogs, audio from call centre recordings) data. Customer sentiment data collected from listening to discussions on social media is more instructive and telling than a focus group. It is also more inclusive than any type of intercept research as it represents the opinions of the entire social web rather than just the people that the researchers contact.

2. **Data is analyzed socially.** True democratization of information is the key to bringing together the many minds within a department and beyond. As information becomes more trusted, transparent, and dispersed, it enables the true collective intelligence of the entire business ecosystem. A true Social Enterprise enables as many employees as possible to be involved in collecting information and empowers them to analyze, interact and iterate with it to make decisions based on analytics. Some estimate that within traditional analysis, only 25 percent of employees have access to the data. Within the Social Enterprise, 100 percent of the team will have access to the information that is relevant to make their jobs easier and empowered. They will also be encouraged (and expected) to share information and be collaborative across organizational silos.

Effective analytics goes beyond the analysis of customer information. Departments can work collaboratively around internal data derived from budgets, financials, key performance indicators, risk management processes and operational results. In addition, sharing and collecting data with suppliers, vendors, and partners can solve problems with sales, operations planning, and inventory.

Organized data shared across departments can be analyzed to identify root causes of issues where that granularity of data was not previously available. For example, consider a department that consistently shows higher-than-average shipping costs. Deeper analytics could reveal that it more frequently had to use expensive overnight shipping because of poor sales planning. Or perhaps there were varying exceptions granted by sales managers working outside of normal parameters to close contracts with demanding customers. The analysis conducted across silos enables a macro view that can determine the true profitability of customers.

3. **Data and tools become mobile.** As organizations continue to globalize, mobile devices will become even more important business tools. In many parts of the world, it is already the primary tech device. By 2010, more than 4 billion people were using mobile phones and the portion of these that are smartphones is growing by 20 percent annually.<sup>10</sup> The number of mobile phones in use in China is approaching 1 billion. For most of these people, the mobile phone is their sole conduit to the Internet. Half a billion in China are already online.<sup>11</sup>

The personal computer used to be the main device to support analytics, but as technology improves and corporate information becomes more democratic, it is being replaced with apps running on mobile devices. Smartphones can collect data in a detailed and efficient manner making front-line employees critical information gatherers. Apps running on phones and tablets are useful, intuitive, and powerful. Mobile devices increase the effectiveness of information capture, delivery, and analysis. Exceptions and real-time opportunities can be shared with employees immediately. Information can be collected in an organized and efficient fashion without the loss of

accuracy that can occur when reports are manually filled out from memory.

4. **Data is more visual.** Powerful new applications as well as enterprise software suites illustrate data through graphs, visuals, and interactive simulations that explain the data better than raw numbers. This enables better analysis and more innovative thinking especially for those people who “think visually.” The interface for data analysis has improved as well.

By 2010, more than 4 billion people were using mobile phones and the portion of these that are smartphones is growing by 20 percent annually. The number of mobile phones in use in China is approaching 1 billion. For most of these people, the mobile phone is their sole conduit to the Internet. Half a billion in China are already online.

Traditionally, business intelligence was calculated within complicated spreadsheets, a format that is intimidating for many and not ideal for collaboration for anyone. For many front-line employees, a better option is a custom-app running on a tablet computer that illustrates information in an accessible and easy-to-manipulate fashion. For example, a tablet computer that displays information in a graphically accessible manner with an intuitive interface can enable an employee to visualize and better understand the impact of changing

conditions and thus make more informed decisions on how to react.

Customizable, visual dashboards highlight the information that is important and relevant at any given time. For example, a supply chain manager’s information flow might include information such as reducing stock outs, inventory and logistics costs, and on-time delivery levels. Exception reports based on changes caused by traffic or weather conditions could be brought forward so that the manager can make adjustments which enhance customer experience.

**Former Hewlett-Packard CEO  
Lew Platt famously stated “If  
only HP knew what HP  
knows, we would be three  
times more productive.”**

5. **Data is more current and actionable.** The business environment is changing rapidly and businesses demand immediate access to information. Data can be collected, analyzed, and distributed faster than ever before, enabling it to be exploited in real-time. The implication of this phenomenon is that data are more accurate and complete, and more useful to support innovative decision making and predictive analysis. In the past, many employees were reluctant to make decisions because they either did not receive the information they needed or did not trust the information that they did receive. Accurate, well-organized and verified information increases employee confidence in acting on it and employee participation also inputs more information into the system, creating a virtuous cycle. Powerful analytics enables individuals to do their jobs better by providing them with accurate, organized, and up-to-date information.

The information can be described in multiple ways, adapting to variables such as native language and reading ability (simpler languages or icons can help here), complexity of response (a junior employee might be given a single instruction, while a more experienced colleague might select from multiple choices), and level of autonomy (some choices will require approval from someone higher in the company and will include a method to send the request). At the same time, data governance is important; employees need to be trained how to articulate the risks (or at least manage the risks) inherent to interpreting data.

Having the right information available at the point of customer decision is very powerful—and mobile devices make this possible. A Motorola study revealed that when equipped with mobile technology, 75 percent of retail associates report providing a better in-store shopping experience. The same study indicated that 67 percent of shoppers cite a better experience in a store where associates and managers use the latest mobile technology to present real-time data.<sup>12</sup>

### 3. Analytics and Competitive Advantage

According to a 2011 study by Bloomberg Businessweek, companies are rapidly adopting analytics—and the most interesting and powerful applications are analytics related to social activity. Only 3 percent of 930 respondents indicated their companies were not using any form of analytics. (Those individuals surveyed may not have been aware of use within the company.) In addition, 43 percent of companies indicated that the overall usage of business analytics has increased moderately over the past twelve months, and 15 percent indicated that it had increased significantly.

Analytics can help consolidate organizational knowledge in a useful and searchable manner. Former Hewlett-Packard CEO Lew Platt famously stated “If only HP knew what HP knows, we would be three times more productive.” The problem is that information is either not recorded or is recorded in a manner that is difficult

to access or interpret. Nor does organizational memory need to be limited to current employees; alumni networks enabled by technology continue to collaboratively generate insights.

Well-organized data and applications to access it can help deploy collaborative decision-making and can change the entire atmosphere of an organization. The opening story of *Wikinomics: How Mass Collaboration Changes Everything* describes how Goldcorp, a Canadian mining company, leveraged the insight and expertise of smart people all over the world when it published its geologic information of a seemingly spent mining site and ran a contest that rewarded people who used innovative technology to identify promising spots to dig for gold. Rob McEwan found that the implications of the contest went beyond finding gold (and it found a lot—110 new sites, 80 percent of which proved fruitful)—it changed how the company operated.<sup>13</sup> The spirit of openness permeated the organization and people and departments with previously limited communication now collaborated openly.

Companies actively compete on data-driven decision-making. For example, harnessed data makes it easy to test hypotheses to evaluate investment opportunities and even operational changes. Harrah's Entertainment was one of the first major companies to promote a CIO (former professor Gary Loveman) to the top job. The Total Rewards system he introduced (similar to a frequent flyer program) used algorithms to determine which type of perk would be most tempting to its frequent players. One innovative, if invasive, use of technology that Harrah's deployed is the attachment of RFID tags to the name tags of servers, allowing managers to monitor traffic on the casino floor. Studying this data illustrates which areas of the casinos are underserved, although it also illuminates if any employees are slacking off. Tim Stanley, CIO of Harrah's Entertainment, focused on the positive: "If this enables us to staff the casino properly and realize when and where we're under-resourced, then our waitresses aren't killing themselves out on the floor and can earn more tips and our customers are happier."<sup>14</sup>

The best scenario planning is conducted across organizational silos, collecting data and negotiating potential trade-offs and adjustments with departments across the entire company. For example, the finance department can be invited to participate in market predictions about sales forecasting so that it can gain visibility and manage risk about the impact to cash flow. In addition, operations can participate so that the supply chain adjusts to changing marketing conditions in real-time. Conducting the sales forecasting with an organized platform increases the inclusiveness and reduces versioning issues inherent with email communication. Also, the organized record of the conversation within a platform remains available for debriefing and auditing purposes.

#### How Social Improves Predictive Analysis

One of the most important benefits of analytics is how it improves predictive analysis by incorporating the rich data shared via social networks. While changing prices to respond to market dynamics is impressive, a higher order impact can be made by truly addressing a "market of one" and personalizing a campaign to an individual consumer. Amazon was one of the most innovative pioneers of *collaborative filtering*, a process by which a company suggests products based on previous purchases and searches by comparing them to its database of similar customer behavior. Since Amazon does not have the burden of maintaining inventories in multiple retail outlets (and, in fact, often does not have possession of a product at all before it is purchased), it can make suggestions for rare or unusual products at the end of the "Long Tail."<sup>15</sup> Similarly, LinkedIn uses a robust analytics algorithm to suggest additional contacts to users and make detailed predictions about career path patterns of its members.

Predictive analysis has also played a major role in Netflix' success. The company developed an algorithm that predicted what movies a customer would enjoy based on his or her viewing history and product ratings compared to millions of other customers. According to CEO Reed Hastings, "If the Starbucks secret is a smile when you get your latte, ours is that the website adapts

to the individual's taste."<sup>16</sup> Even though this recommendation system was very effective, Netflix launched a contest with the goal of improving the system. The \$1 million prize was awarded to "Bellker Pragmatic Chaos," a squad from AT&T Labs Statistics Research group whose system, among other things, was able to fine-tune recommendations based on "the mood of the day"—the same customer was likely to choose different movies (and rate the experience differently) on Friday evenings than Monday mornings.<sup>17</sup> However, the challenging trade-off between the effectiveness of analytics and customer privacy came into play. The contest did not continue in its original format after a lawsuit claimed that the raw customer data Netflix supplied to entrants didn't provide Netflix' customers with the degree of anonymity they had a right to expect.<sup>18</sup>

#### 4. Analytics Can Improve Performance across the Social Enterprise

Analytics can aid problem resolutions across functions and between companies and supply chain partners by identifying root causes and simulating alternative solutions. Integrating information across departments can improve performance in each. For example: sales departments can focus on customers that have solid enough financials that they are likely to honor contracts; finance can know which companies will pay on time; marketing can understand how the market is responding to its offerings; and human resources will be able to assess employee sentiment. To truly generate competitive advantage through analytics, the entire enterprise needs to be involved. Some of the specific departmental benefits are as follows:

- **Marketing** can respond in real-time to customer sentiment in a granular fashion that was not possible before the advent of social media. For example, when a new product is released, its impact can be immediately measured based on social chatter. Is the product being discussed, and if so are the reviews positive? Organizing consumer demand and point-of-sale data along

with sentiment information gathered from social networks into a structured format instructs the marketing department whether a product should be re-branded, tweaked, or discontinued.

Dynamic pricing is not a new concept, but analytics makes it much more powerful. A simple example is a soft drink machine that adjusts the price based on ambient temperature. Further, a European beverage company improved its forecasting accuracy by 5 percent (a significant figure, given the razor thin retail margins in the industry) by analyzing three data points—temperature, rainfall, and hours of sunshine in a given day.<sup>19</sup> More sophisticated models can take into account factors such as severe weather (Walmart famously discovered through analyzing customer data that the demand for beer and pop-tarts spikes in areas where hurricanes are expected),<sup>20</sup> traffic (sensors could detect if a load of produce had been in transit too long or may have suffered damage due to erratic driving conditions), competitive intelligence (quickly responding to competitor's promotions), or even social conversation (if people are actively tweeting about an event, local merchants may need to increase inventory or change assortment).

Decisions by the marketing department are increasingly based on analytics; according to Gartner research, by 2017 American Chief Marketing Officers will spend more on technology than will Chief Information Officers.<sup>21</sup>

- **Customer Service** can quickly respond to customer feedback whether it is handling a negative post on Twitter or thanking a loyal customer for a positive blog post. Analysis of social networks including Facebook, Twitter, Google+, and LinkedIn provide a real-time barometer of customer sentiment. In some

industries, review sites such as Angie’s List, TripAdvisor, and Yelp are even more important than the social media platforms. Tony Hsieh, founder of Zappos and a serious social media participant himself (more than 2.48 million Twitter followers as of July 2012), has always been a firm believer that the idea that a company decides what its brand message is has been replaced by the marketplace making that decision (see text box).

“Brand building today is so different than what it was 50 years ago.

50 Years ago you could get a few marketing people in a small room and decide, ‘this is what our brand will be,’ and then spend a lot of money on TV advertising and that was your brand.

Today, whether it is an employee or a customer, if they have a good or bad experience with your company they can blog about it or Twitter about it and it can be seen by millions of people. It’s what they say now that is your brand.”

– Tony Hsieh  
CEO and Founder, Zappos

Customer experience suffers when there is not a single version of the truth, or adequately codified customer history. For example, a customer phones in for support and becomes frustrated with multiple versions of her account information or worse—no apparent recognition of her at all. This problem can be alleviated by Master Data Management (MDM) which refers

to a set of processes and tools that consistently define and manage the processes for collecting, aggregating, matching, consolidating, quality-assuring, persisting and distributing corporate data throughout an organization to ensure consistency and control in the ongoing maintenance and application of this information. This means that the descriptions and classifications of information such as inventory are identical across the organization as data becomes the key competitive differentiator.

- **Manufacturing** can respond to customer service data to make adjustments for projects. A robust analytics platform allows users to simultaneously manage demand and supply chain while considering financial implications leading to a unified view of operations. For example, when a hardware manufacturer shipped laptops with the wireless connectivity turned ‘off’ they were inadvertently growing customer service expense (as well as negative comments on social media). An analysis of their call center data identified a very high call incidence of users calling to request help connecting to the internet. The issue was identified and the manufacturer responded by changing the shipping status of wireless connectivity to ‘on’. This saved \$150,000 in near term call center expense. Similar issues can be identified by monitoring online chat.
- **Research and Development** can reduce expenses as well as product development cycles by listening carefully to customer conversation whether it happens on an “official company site” or on social media platforms. Companies with an active user community have particularly rich content with which to work. For example, if much of the discussion in a software group laments the difficulty of “feature x” or expresses a desire for “feature y”, then the next release should include a more intuitive version

of x and introduce y. Typically the most active users of these communities are very loyal to the product and are eager, even excited to act as beta testers for new releases. In the event that the company does not want to introduce a feature on its own, it can provide evidence of consumer demand and a built-in test market to incent third-party developers.

More than 70 percent of executives surveyed by McKinsey said they regularly generate value through their web communities.<sup>22</sup> Co-innovation programs directed at customers can also glean insights from front-line staff. When Starbucks launched its MyStarbucksIdeas program, most of the ideas implemented came from employees.

84 percent of highly engaged employees (versus 31 percent of disengaged employees) believe that they can positively impact the quality of their organization's products and 72 percent, versus 31 percent that believe they can positively affect customer service.

- **Human Resources** can measure employee sentiment, employer brand, and employee risk and knowledge management in real-time and analyze the data by location, gender, job role, or whatever other subgroup is relevant. This evaluation can be completed not just through “official” polls and surveys but also by listening to chatter on sites such as the Vault.com and Glassdoor, as well as LinkedIn and alumni groups, and even by analyzing language in email and other company correspondence. JetBlue

monitors a “crewmember net promoter score”—every month, employees are asked if they would recommend working there to a friend. This data is used to evaluate employee satisfaction.<sup>23</sup> In addition, a strong analytics program will assess the specific financial risk of the loss of a key employee.

Too often the first time a manager hears of star employees’ dissatisfaction is when they announce that they are leaving for another opportunity. Sentiment analysis can look for such language clues as “happy” and “frustrated” to assess overall morale as well as evaluating employee preferences. In fact, a 2011 study by the Corporate Executive Board indicated that the top six indicators of employee retention did not involve salary increases. In order, they were: job-interest alignment, manager quality, co-worker quality, people management, respect and a collegial environment.<sup>24</sup>

In addition, better organized and robust performance metrics help identify top performers for promotions and reveal employees with opportunity/vulnerability areas so that they can receive training or be disciplined or terminated. During the recruiting process, the time to find good candidates is reduced, and more precise job descriptions can be developed based on the characteristics of successful incumbent employees.

Research conducted by Towers Perrin revealed that 84 percent of highly engaged employees (versus 31 percent of disengaged employees) believe that they can positively impact the quality of their organization’s products and 72 percent, versus 31 percent that believe they can positively affect customer service.<sup>25</sup> Proper use of analytics can also measure and allow planning for items such as compliance and diversity.

Analytics can help staff projects effectively and identify high potential employees. As the Lew Platt quote earlier suggests, enterprises contain a tremendous amount of talent and uniquely-qualified minds. The challenge is to be able to identify the finance department staff member who happens to have expertise relevant to a marketing initiative. This expertise identification can be accomplished through structured data such as diligently updated employee profiles, but also by analyzing unstructured data such as employee emails, blog posts and texts.

- **Asset Management** is empowered by employees carrying mobile devices equipped with cameras that can capture details about conditions of equipment as well as warranty information. For example, heavy equipment manufacturer Caterpillar encourages mobile analytics past the company walls to include the extended team such as those servicing the equipment. Optimizing performance based on seemingly mundane aspects such as equipment maintenance and proper matching of equipment to tasks can yield huge savings. Due to the asset value of large equipment, a small percentage improvement in asset management can yield significant savings. The social aspect at play here is that front line staff members who previously would have no such role are now actively participating in optimizing asset management.
- **Procurement** can more strategically plan how the entire organization makes purchasing decisions and can better negotiate bulk pricing by combining disparate purchases by different departments. Also, since inventory can be analyzed in real-time, purchasing unnecessary material can be avoided, reducing carrying costs, product obsolescence and waste. Well-organized, accurate, up-to-date information can also optimize the mix between internally- and externally-sourced product in a manner that

may appear counter-intuitive at the division level (see the Arch Coal example in Section 5).

Analytics can aid risk assessment with respect to possible financial issues with suppliers by monitoring financial information, labor issues, and raw material shortages as well as other relevant conversations. In addition, information about how often a supplier delivers product late, incompletely or inaccurately, as well as how effectively and efficiently it provides after-sales service can be used to determine the true cost of doing business with each company—it may not be the “low-cost supplier.” Only social behavior that crosses organizational silos can enable these improvements.

- **Finance** can take advantage of an integrated organizational strategic plan to make better decisions and extend more optimal operational parameters to the other departments. For example, it benefits from more accurately produced sales forecasting, most importantly with respect to cash flow. This analysis provides a double benefit of avoiding cash shortages which require expensive financing as well as reducing the amount of cash that is not being used in the most strategic fashion.

Budget planning is an area that can benefit greatly from collaboration as it cannot be completed in a vacuum and requires input from all sectors of the company. It can benefit even more by considering unstructured data from outside the organization such as evaluating threats to cash flow and other concerns based on information gleaned from social media chatter.

- **Logistics** operates with greater confidence based on trusted data. For example, a supply chain manager can get end-to-end visibility in the supply chain to understand the root cause of issues and make better decisions. The logistics managers benefit from easy access to

data (organized so that managers can drill down for more granular information) and can make it easier to collaborate with other departments. For example, marketing can be told that there is a surplus or delay in product delivery which might require a discount to move product and since this is done strategically, a planned discount in a non-affected SKU could be reduced or eliminated, thus not affecting the overall company net margin.

Similarly, if a disruption to the supply chain is shared with the finance department, it can make adjustments to cash flow planning. For example, McKesson uses algorithms to improve its order flow; in fact, the transformation of their supply chain has eliminated more than \$100 million in working capital.<sup>26</sup> Robert Gooby, vice president of process design, reinforces that technology can deliver significant costs, and reports “We need to be outstanding in our execution, and lower costs...We need to reduce our write-offs to the millions, not hundreds of millions. And when you are talking about that level of accuracy, you have to rely on data and analytics.”<sup>27</sup>

In the case of a recall, analytics comes into play on multiple dimensions. First, it can be used to identify the precise target of the recall so that as little of the supply chain is affected as possible. Second, customer sentiment can be measured to determine the appropriate level of response and outline the brand management process.

- **Sales** can better forecast demand using robust tools which feed into other departments, particularly manufacturing, supply chain, and marketing. The mere fact that sales forecasts will be closely monitored should encourage salespeople to take the process more seriously. In any case, sales departments who “sandbag” or deliberately under-forecast in order to “beat their quota” will easily be identified.

A single source of numbers allows decisions to be made more easily, reduces arguments at the sales management level, and enables meaningful inquiries into root causes of customer issues. An effective CRM system allows companies to make better decisions with respect to sales strategy by curating information about previous sales history, return rates, support history, and historical margins. This information can be used to develop a strategy to optimize margins and customer satisfaction and reveal true profitability by client. Also, a strategic view of data can reduce the discounting inherent with customers who wait for end of quarter discounts by creating more accurate forecasts throughout the period.

Companies like Cisco have made their “sales playbook” into a wiki, allowing representatives to update it in real-time based on experiences they have in customer meetings. Information including market intelligence and customer pain points are now much more timely and relevant than what is provided from “on high.” High-end music component supplier Bowers & Wilkins reports great success through having sales reps show up at client meetings armed with accurate, real-time data about purchase history and outstanding accounts, as well as inventory on hand. Not only does this make the salespeople more effective, the company also reports that it improves customer experience.

- **Operations** will have a clearer view of the impact of new products coming down the pipeline. Careful planning is crucial to the success of new products; materials must be sourced, manufacturing must be planned and marketing and sales need sufficient lead time to introduce the product to the market. Success here is essential. Procter & Gamble, for example, estimates that 50 percent of its sales growth each year can be attributed to new products.

Technology is being used to improve employee health and safety risk. Not only is it a morally valuable analysis to provide people with a safe working environment, it also makes sense from financial and strategic points of view. For example, FleetRisk Advisors, a unit of Qualcomm Enterprise Services, analyzes 9,000 data points including schedules, internal and external stresses, weather, training, and driver experience to calculate the risk of a specific truck driver having a collision within the next 28 days. Intervening with the 10 percent of fleet drivers most likely to have a collision reduced collisions by 60 percent, cut worker compensations claims by 72 percent, and drove down voluntary turnover by 81 percent.<sup>28</sup>

“People are not so personally engaged in their health, and health, at the end of the day is about behavior change. When we look at chronic diseases, it’s the same sort of four or five behaviors that predict all the chronic diseases with some genetic overlay. And when we look at why people die early, 40 percent of the pie is behavior change. It’s one hundred decisions we make per day. Giving patients generic information has little impact. We need personalization. Just as we see mass customization in other industries, that’s what needs to happen in medicine.”

## 5. Five Industry Examples

### Health Care

McKinsey Research predicts that better use of data within the US Health Care system will generate more than \$300 billion per year through a productivity growth of 0.7 percent.<sup>29</sup> Scientists such as Larry Smarr at the California Institute of Technology have argued convincingly that we will never have a true science of medicine until we have much more granular data about the health of large populations over long periods of time. “Researchers would not know your name or home address,” says Smarr, “but I would very much like to know what your glucose level is, what’s your lipid profile, and maybe even things about your lifestyle: are you obese, or are you a smoker?” Once in possession of this level of medical data concerning millions of individuals, researchers could begin to reliably inform those disciplines of medical practice that are subject to scientific methods. For example, evidence-based medicine could be used to choose the methods to ensure the best prediction of treatment outcomes.<sup>30</sup>

Dr. Mike Evans, an innovative health care thought leader (visit [myfavouritemedicine.com](http://myfavouritemedicine.com) to view his viral hit video “23 and 1/2 hours: What is the single best thing we can do for our health?”) explained “People are not so personally engaged in their health, and health, at the end of the day is about behavior change. When we look at chronic diseases, it’s the same sort of four or five behaviors that predict all the chronic diseases with some genetic overlay. And when we look at why people die early, 40 percent of the pie is behavior change. It’s one hundred decisions we make per day. Giving patients generic information has little impact. We need personalization. Just as we see mass customization in other industries, that’s what needs to happen in medicine.”<sup>31</sup>

Technology can provide much of the information that Dr. Evans discusses. High-tech toilets, costing about \$6,000 can provide data such as weight, BMI, blood pressure, and blood sugar levels and send the analysis to your computer in a smart graphical interface.<sup>32</sup> Personal devices like Fitbit, Striv, and Jawbone calculate

similar data as well as information about sleep quality through motion measurement and user input. Jawbone CEO and co-founder states, “we’re looking at \$4.4 trillion in health costs over the next decade related to heart disease and diabetes,”<sup>33</sup> a number which can be greatly reduced if people can receive the necessary preventive information in a timely, easy to use fashion. These devices also involve a social aspect as users share data over the network for educational and competitive purposes.

At an enterprise-level, the field of biosensors is exploding; the industry is worth \$13 billion per year and will continue to grow as the baby boomer generation ages. Currently, most of the research (6,000 academic papers on the subject were published last year) deals with technologies to detect and track diabetes and cancer and suggest personal treatment based on lifestyle, genetics, and responsiveness to treatment. The X-Prize Foundation has offered a \$10 million prize for the development of a Star Trek-style “Tricorder”, a device that can diagnose an illness through a simple scan.<sup>34</sup>

Online communities such as PatientsLikeMe are great examples of collaborative health communities that are flourishing on the web. Its members—100,000 and growing—share personal details of their medical histories (covering more than 1,200 conditions) with fellow members. The data they contribute is aggregated to track patterns and responses to various reported treatments. The company running the community recoups its costs by rendering member data anonymous and selling it to third parties such as pharmaceutical companies, insurance companies, and financial services firms.

Given the personal nature of healthcare, privacy is very important so data needs to be scrubbed as much as possible to remove personally identifying information. Consider, for example, a person being turned down for an insurance policy because pictures or comments on their Facebook profile indicated that they represented a greater risk than basic demographic information would suggest.

Although some members of the health care industry are massive organizations (such as insurance and pharmaceutical companies), much of the data is collected at many disparate individual doctors’ offices and clinics. Not only does this lead to redundancy and multiple versions of data, it also leaves the majority of the “data exhaust” untapped and unmeasured.

### **Mining and Resources**

Companies in the mining and resources industry have found many innovative ways to deploy analytics. For example, Valero Energy Corporation deployed analytics to democratize information, generate a “single version of the truth” across locations, and build customizable dashboards for employees that provided greater data visibility throughout the organization. During the first year of deployment, it generated more than \$120 million of savings while improving corporate governance. Employees could generate useful customizable reports without involving the IT department.

Firms in this sector have a high level of responsibility involving governance and reporting. Jamie Oswald, Manager of User Group at Arch Coal, states, “There are a lot of regulations in the United States dealing with coal mining. Information that we need to fill out forms is populated directly from our Enterprise Information Management engine. It increases accuracy and by automatically completing calculations, saves a ton of time.”<sup>35</sup>

The mining industry is asset-intensive, and close monitoring of warranty information can have significant effect on the bottom line. According to Roy Cheria, Manager of Mining Systems and Reporting at Arch Coal, “We always monitored warranties for heavy capital well, but not for smaller assets (e.g. those worth \$1,000 and less). Now, we use business intelligence to notify users when the warranty is about to expire.” Specifically, employees use video phones to capture the information about the asset and transmit it back to a database. Roy reports that this close monitoring significantly reduced overall costs and at least 10% of

the savings would not have been captured without robust analytic reports and notifications.

Analytics also helps make seemingly counter-intuitive purchasing decisions such as buying from an external client rather than an internal source. For example, a business analytics dashboard allows Arch Coal to engage in price arbitrage and dynamic pricing. Roy describes, “If I see a \$30/ton contract, and it cost \$10 at one of our mines, but \$8/ton from our competitor, I can use the competitor and increase our margin.”<sup>36</sup> Of course, the dashboard allows Arch to conduct further analysis to see if the net profit increase compensates for the reduced capacity in its own operation.

### Banking

The 2008 collapse of the stock markets is a direct reminder of the fact that effective use of analytics is a key success factor in the banking industry. As the world becomes more interconnected and financial products become more sophisticated, it is more important than ever to have technology and processes to adequately monitor risk. The enterprise software involved must be rigorous enough to run complex simulations to ensure that portfolio risk remains within acceptable parameters. All manner of information should be considered when assessing risk including structured data such as financial results and credit scores, and unstructured data such as social media discussions and geopolitical analysis.

Specifically within the realm of risk management, bankers need to consider criteria such as delinquency and default levels of outstanding loans, the strength and volatility of investment vehicles, changing characteristics of loans, the strength of currencies (especially with the uncertainty surrounding the Euro), rate of payment and liquidity information, and implications of international relations including wars and sanctions. While the analysis needs to be robust and complete, the results need to be shared democratically across the organization so that risk management can be institutionalized.

Analytics also plays a strong role in the governance and compliance arenas. Since the 2008 debacle, accounting standards have increased. Legislation such as the Dodd-Frank Wall Street Reform and Consumer Protection Act, the European Market Infrastructure Regulation, and frameworks such as the International Financial Reporting Standards has raised the bar for the clarity, completeness, accuracy, and analysis of information.

At the same time, customer expectations are increasing. Analytics can play an important role here by listening carefully to customer sentiment to avoid customer churn, closely monitoring customer demands and behaviors to support customized offerings that will increase lifetime customer profitability, and evaluating the same information to provide early warning of customer default.

### Retail

Retail is a channel with a high potential to deploy analytics for competitive advantage. “Social shopping”—especially among young people—is a rising phenomenon. McKinsey research estimates that within the US retail market, big data can lead to a 0.5-1 percent annual productivity growth which will translate into a potential net margin increase of more than 60 percent.<sup>37</sup> This improvement will allow traditional retailers to survive in an increasingly competitive environment (see text box).

For example, analytics can provide a defense against the damaging trends enabled by customers equipped with smartphones. “Showrooming” refers to the process by which people come into retail stores to browse for products, perhaps even try them out before searching for the product online to find the lowest price. (There are apps available that will make this process easier by scanning the bar code then diverting to a website with a “buy it now” button.) In this case, the retail store has provided the space, employees, and inventory but receives no financial benefit. In fact, showrooming was one of the key reasons why Best Buy recently reported disappointing quarterly returns.<sup>38</sup>

This situation represents a great opportunity for social—having people on site trained to recognize behavior such as showrooming and respond by engaging the browser, trying to intercept the lost sale while offering to cross-sell or up-sell in a non-intrusive manner. Note: many analysts believe that Best Buy overplayed here, alienating customers by focussing on the hard sell of items such as extended warranties. Larry Downes, co-author of *Unleashing the Killer App*, wrote a scathing op-ed in *Forbes* that contained the quote: “To discover the real reasons behind the company’s decline, just take this simple test. Walk into one of the company’s retail locations or shop online. And try, really try, not to lose your temper.”<sup>39</sup>

Technology enabled retail sets the bar for bricks and mortar retail.

Amazon is threatening bricks and mortar competitors in a brand new way, by offering same day delivery. Analytics will play an important role, enabling an efficient supply chain based on high-tech warehouses located in urban centers. The company is investing more than \$500 million and hiring 10,000 people in California alone.<sup>40</sup>

The Apple store generated more than \$5,647 in sales per square foot, seventeen times that of the national retail average.<sup>41</sup> In fact, the sales figure is such an outlier that malls report average sales as two line items; one with and one without the Apple Store.<sup>42</sup> One of the innovations of the Apple Store is that there is no need to “go to the cash register”; one of the perky employees can cash you out via an iPhone and either print or email your receipt. Since a new cash register costs about the same as an Android tablet,<sup>43</sup> a much more powerful, intuitive, and portable machine, more retailers will go this route.

Business process data is fairly straightforward, but customer and product data tends to be extremely complex. The data on a single inventory item may include SKU, package quantity, size, color, weight, price, safety characteristics (e.g. flammability), environmental characteristics (e.g. recyclability), sentiment, and several hundred other attributes. And the data on a single customer can be just as extensive.<sup>44</sup>

One of the key aspects that retailers need to master is the multi-channel environment. Customers expect that they can receive the same assortment, buying terms and discounts regardless of whether they purchase online or in-store. Some analysts are now using the term “omni-channel,” reflecting the fact that consumers are more frequently using different channels even for products from the same retailer. In fact, a majority of consumers expect that items ordered online should be returnable at a retail store. Analytics can be deployed to help turn the situation into a positive. Details about the customer’s history can provide clues as to what they would like to purchase instead. It could also help avoid fraud, by determining if the product being returned was not properly purchased, or was acquired at a discounted rate or under different terms (perhaps in a different geography). Many consumers expect this practice to become standard practice. 60 percent of global respondents to a Cap Gemini study say that by 2014, the “convergence of retail channels will be the norm,” and 51 percent of these expect that by 2020 many physical stores will exist merely as a place to show products available for online order.<sup>45</sup>

Analytics can come into play by calculating and alerting staff to the profitability and expected future returns of the client to determine how much effort should be expended trying to salvage the sale. As an example, Walmart has banned certain customers because they have returned products too many times. Similarly, mobile phone companies have banned subscribers who have called customer service too many times or were abusive to call center staff.

Analytics can also be used to optimize assortment by location as demand often differs by details such as

demographics, weather, promotions, and seasonality. And these this will change throughout the year because of aspects that include tourism and the school year. Traditionally in the retail industry, especially within the fast-fashion sectors, styles are seasonal and slow-moving items need to be discounted (sometimes deeply) to move excess product. A well-organized system of identifying trends quickly, supported by just-in-time manufacturing, can dramatically raise margins and generate significant competitive advantage.

### Consumer Products

In order for retail companies to optimize the use of analytics, suppliers from the consumer products industry also need to participate. For these organizations, analytics can play an important role throughout the product cycle from strategic planning (e.g. innovative simulations within the demand curve), product development (e.g. crowdsourcing of product solutions through ideagoras), manufacturing (e.g. optimal use of inputs from a cost and quality standpoint), marketing (e.g. real-time analysis of promotion effectiveness), sales (e.g. dynamic pricing in response to changing market conditions), and distribution (e.g. optimal distribution routes).

While data should be democratic and accessible by all in the organization, the most effective solutions require highly trained mathematicians and strategists to analyze the data correctly. The most complex calculations are made at this level before the organized information can enable decisions to be made in real-time by the right people in the organization.

When both the retail and consumer products organizations are on the same page with respect to analytics, the partnership can really thrive. For example, Procter & Gamble and Walmart work closely with each other to share information for mutual benefit and use information exhaust for a competitive advantage. In a similar vein, P&G meticulously calculates distribution costs and transparently offers retailers better prices for more efficient ordering (for example, ordering a SKU by the truckload directly from a warehouse). While P&G is demonstrating leadership in this area, there is still plenty of room for improvement industry-wide. Research conducted by IDC in late 2010 showed that consumer product companies responded to the question “has your organization implemented a business intelligence/analytics solution” at a rate lower than 14 of 16 industry segments.<sup>46</sup> While it is important for retail companies to stay on top of fickle customer sentiment, it is even truer for consumer products companies. After all, the retailers can always send the product back and sell something else. This is precisely why active listening to conversations on social media as well as disciplined analysis of all structured and unstructured data is so important. If a product is not resonating with the market is important to figure out the reasons and put a solution in place. If there is an impending shortage of an input product that will impact the supply chain, a substitute may need to be found, or product mix or pricing may need to be altered. If a controversy about your product is brewing on social media, a counter-attack will be in order. An effective analytics strategy and robust predictive modelling capability can help with all of these challenges.

## 6. Six Steps to a Truly Social Enterprise

Competing on analytics is tremendously challenging. While data should be democratic and accessible by all in the organization, the most effective solutions require highly trained mathematicians and strategists to analyze the data correctly. The most complex calculations are made at this level before the organized

information can enable decisions to be made in real-time by the right people in the organization.

Human nature, of course, also needs to be considered. Sharing information across organizational silos makes sense in principle, but divisional rivalries, competing priorities and even organizational routine are obstacles that need to be overcome.

The more information (especially customer data) that is shared throughout the organization, the greater is the risk of privacy breaches. It is important to craft, publicize, and enforce meaningful and comprehensive social media and data privacy policies.

**1. Ensure that Analytics is Core to the Organization’s Mission and is Actively Used to Drive Decision-Making**

Since almost all firms claim to use analytics in some form, the key to realizing competitive advantage is to optimize its use and enable the social aspect. In order to do so, organizations need to fully buy into the process and support the mission from the executive level and reinforce its value through performance metrics. Employees should be empowered to collect information, drive corporate alignment and make decisions (including calculated risks within acceptable parameters) based on social data.

A research study conducted by Canadian firm Agent Wildfire identifies that the keys to launching successful technology-enabled collaboration are due more to management support than the actual technology. In fact, the top four criteria<sup>47</sup> for a program’s success listed by the executives were:

- The customer/member experience provided
- An idea/concept worth a conversation
- Clear objective/mission/value statement
- Expert moderation/dialogue management

**2. Conduct an Organizational Audit**

We have seen how analytics can generate significant value in all areas of the organization. One of the first steps is to develop an internal power team that can lead an audit in every department to determine the best way to deploy information. What data would empower employees to do their jobs better? What interface and technology would make it easier for them to succeed? How can analytics assist risk management as well as performance management?

The other key aspect of the audit is to determine what data already exists. First, look at data that is already being collected by day-to-day operations and financial recording. Then, investigate publicly available information such as government reports. Determine what information can be gleaned from analytics. Figure out how business partners can aid your effort—and consider the information value they bring while negotiating contracts. Finally, identify what information you would like to have but currently cannot access—and make a plan on how to get it.

**3. Choose Optimal Technology**

Now that you know what information you have and what you need to get, decide what technology is needed to make it happen. Especially for the team members collecting information and collaborating based on the results, make the interface as intuitive and scalable as possible. Think portable devices enhanced with in-memory, and strategically deploy “the Internet of Things—including sensors.”

Big Data requires powerful technology. At the top enterprise level, make sure that the meta-program is powerful enough to run scenarios and to squeeze as much value out of your analytics program as possible. Ensure that the enterprise software vendor offers a robust

breadth of technology that is integrated to ensure that analytics is delivered appropriately.

#### 4. Ensure Data Cleanliness and Leverage Information Exhaust

Look carefully at your data and ensure that it is accurate and usable. Deploy master data management such that there is “one version of the truth” and a single definition of terms. Decide who creates the data, who has access to it, and how both the data and device are secured.

Develop a robust but easy to follow privacy policy so that team members understand what parameters they should follow when using and reporting data. This consideration is particularly important when dealing with sensitive information such as financial or medical data.

Take advantage of information exhaust. For example, McKinsey research estimates that 90 percent of the data created by the medical industry is abandoned. Even if that data is of no immediate use to the hospital where it is created, there is certainly a lost opportunity for the data to be used by a research or educational facility. For example, MasterCard analyzes purchasing patterns of its customers and sells the data to merchants.<sup>48</sup>

#### 5. Build an Effective Team to Take Advantage of Analytics

Most analysts predict a coming shortage of skilled workers with the applied math skills to adeptly analyze and operationalize this influx of data even with the help of platforms and algorithms. Also, comfort with reviewing if not manipulating data will be a requirement of the executive suite. McKinsey Research estimates that there is currently a shortage of 1.5 million managers who can analyze big data to make reasoned decisions. According to Tom Davenport, co-author of *Competing on Analytics*, “if you want to get analytics and fact-based

decision making going in your organization, hire an experienced analytical executive to catalyze your efforts. These are people who know business, know analytics and know how to get things moving in organizations through trusted relationships and rapid, reliable delivery.”<sup>49</sup>

Figure out what skills your organization needs to add to support your analytics process and actively recruit for them.

#### 6. Build Scenarios: Test and Retest

One of the main benefits of a robust analytics program is running scenario planning—take advantage of this opportunity to test and retest ideas to find out what works best. The deeper the data, the more complicated the simulations you can run.

Do not over-react to numbers, especially those pertaining to customer sentiment. Jennifer Evans, CEO at Interpreter Analytics, advises clients against reacting to a “false spike”—a temporary reaction on social media that is not core to a brand’s image or material to its ongoing health—often citing the Arab proverb, “the dog will bark, but the caravan will move on.” Instead, she suggests that firms work to build an engaged community that will come to the company’s defense when required.<sup>50</sup>

### Closing Comments

Analytics can be transformative within an enterprise, but it is hard work to make it happen. Innovative organizations need to invest not only in the appropriate technology but also in human capital. This investment will represent an ongoing commitment—the data overload and increased customer expectations that we talk about will continue to accelerate and technology and analytical aptitude will need to keep up.

Inspire and motivate the people you have and actively hire based on analytical experience and acumen. Take a hard look at your culture and performance metrics. Are

performance metrics in place to encourage data sharing? Does the corporate philosophy reward smart risk taking? Are your employees empowered to make decisions and assess risk based on information? Is the data they act on up-to-date, accurate, and well-organized? Are they equipped with the right technology?

Finally, are you actively listening to and collaborating with your customers and prospects? Most of what you need to know about your brand and the demands of your market is being discussed every day on social media platforms. In addition, there is much information to be gleaned from the blogosphere, the interactions of your employees at the point of sale, the experiences of your suppliers, government reports, published financial data, and your corporate brand community. Smart companies are not just actively listening, but communicating back—and most importantly, using that data for competitive advantage.

## Acknowledgements

The authors gratefully acknowledge SAP for funding the research leading to this paper. However, the views expressed herein are independent of SAP and any other technology company and we take full responsibility for them. We also acknowledge Tapscott Group contributors Joan Bigham, Bill Gillies, Deb Harrity, Derek Pokora, Jody Stevens, Amish Kapoor and Bob Tapscott. We are also grateful for the input from thought leaders at SAP including James Fisher, Russ Hill, Padmini Ranganathan, Jason Rose, Nic Smith, Siobhan Collopy and Holly Simmons.

## About the Authors

### Don Tapscott

Don is one of the world's leading authorities on innovation, media, and the economic and social impact of technology and advises business and government leaders around the world. In 2011 Don was named one of the world's most influential management thinkers by Thinkers50.

He has authored or co-authored 14 widely read books including the 1992 best seller *Paradigm Shift*. His 1995 hit *The Digital Economy* changed thinking around the world about the transformational nature of the Internet and two years later he defined the Net Generation and the "digital divide" in *Growing Up Digital*. His 2000 work, *Digital Capital*, introduced seminal ideas like "the business web" and was described by BusinessWeek as "pure enlightenment." *Wikinomics: How Mass Collaboration Changes Everything* was the best-selling management book in 2007 and translated into over 25 languages.

The Economist called Don's newest work *Macrowikinomics: Rebooting Business and the World* a "Schumpeter-ian story of creative destruction" and the Huffington Post said the book is "nothing less than a game plan to fix a broken world." Over 30 years he has introduced many ground-breaking concepts that are part of contemporary understanding of the Internet and its impact on business and society. His work continues as a Chairman of the Tapscott Group, a member of the

World Economic Forum, Adjunct Professor of Management for the Rotman School of Management at the University of Toronto and Martin Prosperity Institute Fellow.

### Mike Dover

Mike is an associate of The Tapscott group and highly connected research executive who has spent the past fifteen years investigating how technology impacts business and society. In his book, *Wikibrands: Reinventing your Business in a Customer-Driven Marketplace*, Mike investigates how companies deploy technology to enable meaningful conversations and co-create with their customers. *Wikibrands* was named one of the top 10 business books of 2011 by *Booklist Magazine* and won the silver medal for 2011 Marketing Book of the Year awarded by *Expert Marketeer*.

Previously, Mike was a member of the senior management team of New Paradigm, the think tank founded by Don Tapscott in 1992. He was responsible for operations, content quality, and client management for multi-year research studies. The research in these programs formed the basis for the bestselling books *Wikinomics: How Mass Collaboration Changes Everything* and *Grown Up Digital: How the Net Generation is Changing Your World*.

Mike has contributed to more than a dozen bestselling business books and has collaborated with bestselling authors including Don Tapscott, Joe Pine, Richard Florida, Keith Ferrazzi and Neil Howe. He holds an MBA degree from the Richard Ivey School of Business at the University of Western Ontario, London, Ontario, is a member of the World Futurist Society, a Pro Analyst at Giga Om and an advisor to The Next 36. He is currently on the Marketing Faculty at Humber College in Toronto, Ontario.

<sup>1</sup> “IDC Predicts 2012 Will Be the Year of Mobile and Cloud Platform Wars as IT Vendors Vie for Leadership While the Industry Redefines Itself”, *IDC*, December 1, 2011.

<sup>2</sup> The term Ideagoras refers to places on the Internet where large numbers of people or businesses gather to exchange ideas and solutions. This term is a portmanteau of the modern English word idea and the ancient Greek word agora. An agora was an open “place of assembly” in an ancient Greek city-state where trade occurred.

<sup>3</sup> Generation characterized by birth years between 1977 and 1997.

<sup>4</sup> A zettabyte is equal to 1 trillion gigabytes.

<sup>5</sup> “The 2011 Digital Universe Study: Extracting Value from Chaos”, *IDC*, June 2011.

<sup>6</sup> Brad Brown, Michael Chui, and James Manyika, “Are you ready for the era of ‘big data;?’”, *McKinsey Quarterly*, October 2011.

<sup>7</sup> James Manyika et al, “Big Data: The next frontier for innovation, competition, and productivity”, *McKinsey Global Institute*, May 2011.

<sup>8</sup> Michael Driscoll, “Building data startups: Fast, big and focused”, *O’Reilly Media*, August 2011.

<sup>9</sup> Thomas Davenport and Jeanne Harris, *Competing On Analytics: The Science of Winning*, *Harvard Business Press*, 2007.

<sup>10</sup> James Manyika et al, “Big Data: The next frontier for innovation, competition, and productivity”, *McKinsey Global Institute*, May 2011.

<sup>11</sup> Zack Whittaker, “China’s online population rockets to 538 million”, *C-NET*, July 20, 2012.

<sup>12</sup> “75 percent of Retail Associates Report Latest Mobile Technology Leads to Better Customer Experience, According to Motorola Solutions Survey”, *2011 Motorola Solutions, Inc.*, Dec 20, 2011

<sup>13</sup> Don Tapscott and Anthony D. Williams, *Wikinomics: How Mass Collaboration Changes Everything*, *Portfolio*, 2008, p. 8

<sup>14</sup> “Las Vegas casino goes for RFID”, *Will Sturgeon, Silicon.com*, April 21, 2005

<sup>15</sup> The term Long Tail is a statistics term that is used to describing the retailing strategy of selling a large number of unique items with relatively small quantities sold of each enabled by Internet search. The Long Tail was popularized by Chris Anderson in a *Wired* magazine article and in his book *The Long Tail: Why the Future of Business Is Selling Less of More*.

<sup>16</sup> Jeanne Harris, “Distinctive Capabilities: Winning with Analytics”, *Outlook*, May, 2007.

<sup>17</sup> AT&T Labs, <http://www2.research.att.com/~volinsky/netflix/>

<sup>18</sup> Ryan, Single, “Netflix Spilled Your Brokeback Mountain Secret, Lawsuit Claims”, *Wired*, December 17, 2009.

<sup>19</sup> Brad Brown, Michael Chui, and James Manyika, “Are you ready for the era of ‘big data;?’”, *McKinsey Quarterly*, October 2011

<sup>20</sup> Constance L. Hays, “What Walmart knows about Customers’ Habits”, *New York Times*, November 14, 2004.

<sup>21</sup> Lisa Arthur, “Five Years from Now, CMOs will spend more on IT than CIOs do”, *Forbes*, February 8, 2012.

<sup>22</sup> “How companies are benefitting from Web 2.0: McKinsey Global Survey Results”, *McKinsey Quarterly*, September 2009.

<sup>23</sup> Tom Davenport, Jeanne Harris, and Jeremy Shapiro, “Competing on Talent Analytics”, *Harvard Business Review*, September 24, 2010.

<sup>24</sup> Meghan Casserly, “What Employees Want More than a Raise in 2012”, *Forbes*, December 15, 2011.

<sup>25</sup> Dan Crim and Gerard Wijts, “What Engages Employees the Most, or the Ten C’s of Employee Engagement”, *Ivey Business Journal*, March/April 2006.

<sup>26</sup> David Kiron et al, “Analytics: The Widening Divide: How companies are achieving competitive advantage through analytics”, *MIT Sloan Management Review*, Fall 2011

<sup>27</sup> David Kiron et al, “Analytics: The Widening Divide: How companies are achieving competitive advantage through analytics”, *MIT Sloan Management Review*, Fall 2011

<sup>28</sup> Jeff Chrissey, “Predictive analytics: The next step”, *Commercial Carrier*

*Journal*, June 2012.

<sup>29</sup> James Manyika et al, “Big Data: The next frontier for innovation, competition, and productivity”, *McKinsey Global Institute*, May 2011.

<sup>30</sup> Don Tapscott and Anthony D. Williams, *Macrowikinomics: Rebooting Business and the World*, *Portfolio*, 2010, p 190.

<sup>31</sup> Don Tapscott and Anthony D. Williams, *Macrowikinomics: Rebooting Business and the World*, *Portfolio*, 2010, p 189.

<sup>32</sup> Aaron, Saenz, “Smart Toilets: Doctors in Your Bathroom”, *Singularity Hub*, May 12, 2009.

<sup>33</sup> Bruce Upbin, “Jawbone Moving into Personal Health, Getting IPO-ish”, *Forbes*, July 14, 2011.

<sup>34</sup> Chris Wickham, “Analysis: Biosensors the canary in a coalmine worth \$13 billion”, *Reuters*, July 22, 2012.

<sup>35</sup> Interview with Jamie Oswald, conducted by Mike Dover, December 2, 2010.

<sup>36</sup> Interview with Roy Cherian, conducted by Mike Dover, December 2, 2010.

<sup>37</sup> James Manyika et al, “Big Data: The next frontier for innovation, competition, and productivity”, *McKinsey Global Institute*, May 2011.

<sup>38</sup> Martha C. White, “Best Buy shrinks as ‘showrooming’ persists”, *Bottom Line on NBCNews.com*, May 31, 2012.

<sup>39</sup> Larry Downes, “Why Best Buy is Going out of business...gradually”, *Forbes*, Jan 2, 2012.

<sup>40</sup> Farhad Manjoo, “I Want It Today: How Amazon’s ambitious new push for same-day delivery will destroy local retail”, *Slate*, Wednesday, July 11, 2012.

<sup>41</sup> Kim Peterson, “Apple is the King of Retail Sales”, *Money*, April 19, 2012.

<sup>42</sup> Interview with John Williams, Senior Partner at J.C. Williams Group, conducted by Mike Dover, July 9, 2012.

<sup>43</sup> Eric Savitz, “Mobile: The Biggest Change To Hit Retailing In 50 Years”, *Forbes*, July 9, 2012.

<sup>44</sup> Russ Hill, “Data Governance in Retail: It’s all about the data and the attributes”, *The Decision Factor* blog, May 19, 2011.

<sup>45</sup> Thad Reuter, “Online Shoppers see the future and what they see are showrooms”, *Internet Retailer*, July 10, 2012.

<sup>46</sup> Simon Ellis, “The Application of Business Intelligence to Facilitate Decision-Making in the Consumer Product Industry”, *IDC Manufacturing Insights*, November 2010.

<sup>47</sup> Agent Wildfire, *Canadian Management Community Survey*, 2010.

<sup>48</sup> Jacques Bughin, Michael Chui, and James Manyika, “Clouds, big data, and smart assets: Ten tech-enabled business trends to watch”, *McKinsey Quarterly*, 2010

<sup>49</sup> “Making Business Analytics Work: Lessons from Effective Analytics Users”, *Bloomberg Businessweek Research Services*, 2012.

<sup>50</sup> Interview with Jennifer Evans, conducted by Mike Dover, May 18, 2010.