

Delivering new insights and value to consumer products companies through big data



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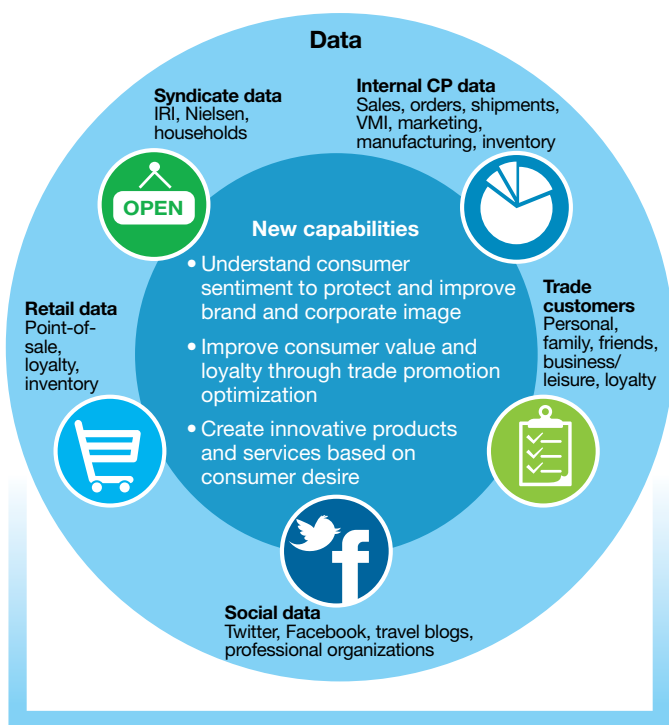
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For years, consumer products (CP) companies have relied on traditional data warehouse and business intelligence solutions, and data from internal and external sources to improve operations and profits. Internal data sources typically include shipment, supply chain and financial information. External data is usually comprised of some combination of scanner data and consumer demographic, preference, loyalty and sentiment information that is provided on a weekly or monthly basis by independent research organizations such as Nielsen or Information Resources, Inc. (IRI), and increasingly from large retailers such as Walmart, Kroger, Costco and Target.

External data is delivered in batches, usually weekly, and must be processed and stored in a data warehouse before it can be viewed or analyzed. Processing, which includes improving data quality, resolving dimensional integration issues and harmonizing data from multiple sources, can take many hours or several days. The cost and effort for CP companies to manage and integrate these increasing external data volumes is significant; larger organizations often receive 40 to 50 TB of external data weekly—which translates to more than 2 petabytes annually—that they must harmonize and store.

CP companies want to supplement these existing data sources by accessing and analyzing new information from new sources to help them better determine what consumers really think about new products, promotions, advertising or pricing; how new offerings are being received by consumers and retailers; and where there are opportunities to make immediate improvements. Most companies want to capture contextual conversations and other widely available sources of unstructured data from social media, blog commentaries and other sources in real time, and put them side by side with structured data in their information ecosystem for a much clearer picture of what is going on (see Figure 1).

Supplementing existing data sources for new marketing capabilities



Although data warehouse and business intelligence technologies help CP companies analyze historical data, they were not designed to process wide varieties of high-velocity data as it arrives and offer immediate insights. CP companies that want to incorporate streaming data from new structured and unstructured sources, glean faster intelligence, and perform immediate, predictive analytics on data will need to deploy big data technologies. These technologies can deliver significant benefits to CP companies, including the ability to:

- Implement more targeted marketing campaigns for specific geographies or individual consumers
- Track and respond to promotions in real time to ensure the most profitable outcomes
- Identify which promotion strategy will yield the best results in a specific chain or cluster of stores
- Determine which new product options are the most profitable and least risky to pursue
- Better assess product price elasticity before implementing price changes
- Manage inventory and logistics in real time
- Perform predictive analytics across all areas of the business to improve performance
- Process larger volumes of data faster, including batch data provided by external sources

This white paper provides an overview of the state of big data today and describes how CP companies can benefit from new technologies, how big data implementations help manufacturers improve outcomes and increase customer loyalty and satisfaction, what companies need to consider when deploying big data solutions, and how IBM can help CP companies realize successful results from big data implementations.

Figure 1. Analyze social media and consumer information data sources to gain customer insights and take informed sales, marketing or services actions.

How big data benefits CP companies

The 2013 report “Analytics: The real-world use of big data in consumer products,” produced by the IBM Institute of Business Value and the Saïd Business School at the University of Oxford and based on the results of the 2012 Big Data @ Work study survey, stated that, “Big data presents many promising and differentiating opportunities for consumer products companies. With extensive supply chains, often hundreds of unique brands and brand variations to manage, and millions of customers to serve, these companies rely on data and information to keep products moving from supply to store. Data about operations, products, suppliers, vendors, distributors, sales, inventory, merchandising, competitors, commodity markets and untold other dimensions form the basis for nearly every decision a merchandiser must make. Consumer products companies must ultimately appeal to fundamental customer wants and needs. While new sources of

data like social media offer opportunities to uncover insights into consumer purchasing decisions and preferences, they also present new challenges associated with ingesting, managing and analyzing new types of data, such as free-form text, videos and geo-location coordinates. Companies also face the task of keeping up with the speed and granularity of data from existing sources as new technologies increase the capability to analyze it.”¹

As the report indicates, CP companies that deploy big data technologies can realize significant business benefits. Figure 2 shows three types of big data deployments that can yield the greatest returns:

- Enabling micro-market campaigns
- Optimizing promotions
- Facilitating real-time demand forecasting

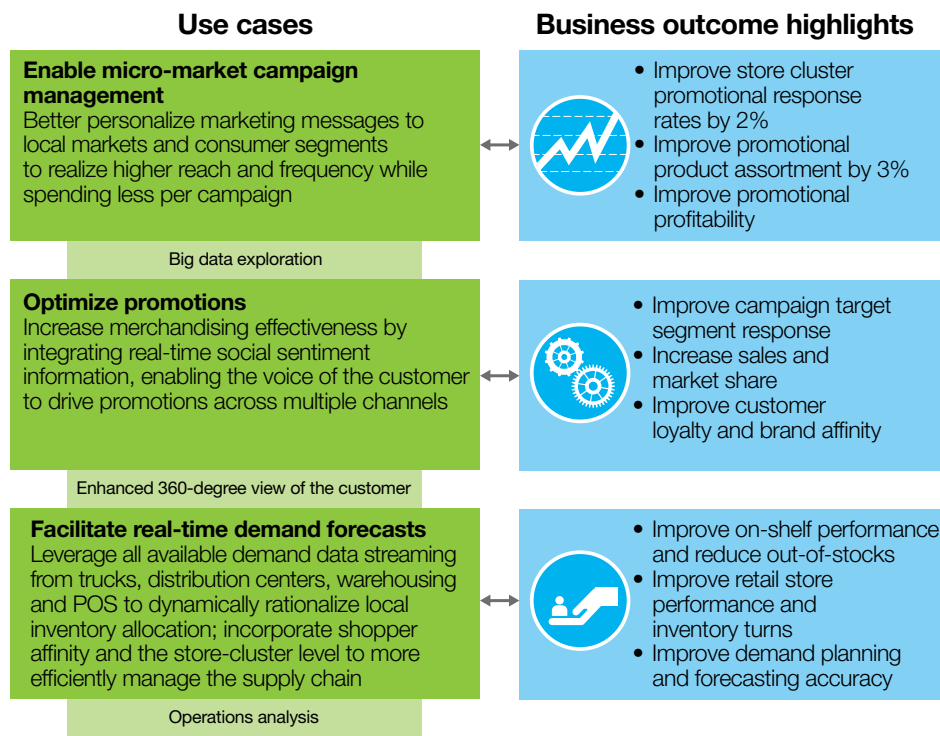


Figure 2. Three types of big data use cases that most often result in improved business outcomes.

The following information details the new capabilities that big data technologies provide in these three areas and shows how CP companies can benefit.

Micro-market campaigns

Micro-market campaigns target specific individuals or groups of consumers to improve the outcomes of marketing programs and create better customer relationships. By offering more personalized marketing messages to local markets, different consumer segments or individual consumers through micro-market campaigns, CP companies can realize higher reach and frequency while spending less on campaigns.

In the past, CP companies were limited in terms of the methods they could employ for highly targeted campaigns. They used either direct mail or email campaigns, or developed online relationships with specific consumers or consumer segments, presenting them with offers tailored to their demographics or known preferences. Without big data technologies, CP companies could not effectively leverage social media platforms or branded sites to promote products to a large number of targeted consumers or change marketing campaigns midstream to improve outcomes. They also could not immediately process and analyze large volumes of high-velocity online feedback about campaigns and their effectiveness.

Big data systems enable CP companies to capture and analyze high-velocity Internet data such as tweets, Facebook postings and blog commentary, and modify campaigns on the fly based on what they learn about consumer sentiment. The ability to quickly access and leverage this information allows companies to spend less money on certain areas of marketing while still getting the intended—or better—results.

Promotion optimization

In-store promotions can range from simply lowering a product's price for a limited time to a combination of price reductions, building an in-store endcap or other product displays, and sampling the product in stores. Different promotional strategies have varying effects on sales and profitability. For example, reducing a product's shelf price can be implemented at a fairly low cost and will result in increased sales, but not at the same level as advertising the price reduction in a weekly advertisement, or advertising and promoting the product on an in-store display.

CP companies with access to greater amounts of data leverage their promotional dollars more effectively by more accurately predicting which types of promotions will result in the best outcomes (increased volumes, profits or customer goodwill) in a particular chain or cluster of stores within a chain. In the past, most field sales personnel had to choose promotional strategies based on limited data or by simply guessing what might work best for the stores in their territory. With big data technologies, CP companies can gather years of historical store-level pricing, volume and promotion information. Field sales personnel can then use reports to easily review the data in context, and perform “what-if” analyses to predict the best promotional price and most cost-effective promotional strategy for consumers in a specific region or cluster of stores.

Once promotions are underway, field sales personnel can use big data to help improve the profitability and results of promotions by tracking consumer sentiment about the promotion from social media and other information sources in real time and better understand how consumers are responding to specific offers, track inventory levels at participating stores and rectify problems in nonparticipating stores.

Real-time demand forecasting

Accurately predicting the quantity of products that shoppers will purchase is always a challenge, yet it becomes more complicated as additional promotions occur. Companies that can accurately project demand and closely manage inventory levels will significantly reduce inventory costs and increase profitability.

Big data technologies can help CP companies gain deeper insights into demand signals, more efficiently manage and optimize inventory levels, and perform “what-if” analysis that more accurately correlates price elasticity with demand. If streaming data from trucks, distribution centers, warehouses and in-store point-of-sale systems can be immediately analyzed, then inventory can be rerouted or loads shifted as needed. Access to consumer sentiment, localized information and price elasticity analytics also helps CP companies gain better insights into pending or upcoming demand spikes or dips.

During promotions, companies can gather real-time shipment and point-of-sale pricing information to ensure that stores that have committed to running a promotion are actually participating. If stores have not implemented a promotion, field sales personnel or retail store managers can be contacted to fix the problem, which will help improve the overall profitability of a promotion.

What CP companies should consider when implementing big data technologies

As CP companies add big data solutions to their IT ecosystem, they must ensure that the new systems and processes can provide the capabilities they need now and in the future.

The first step for all companies embarking on a big data journey is to define a business information strategy that links information requirements to business objectives. The strategy should identify where big data technologies will best support business objectives and specify how new data will ultimately be used.

When an information strategy has been defined, companies must then select big data technologies that meet their information requirements, achieve business objectives and provide them with the most trusted, accurate and timely data. Most CP companies will be best served by a comprehensive big data platform capable of processing and rapidly analyzing growing volumes of retailer, consumer, and other structured and unstructured data sources. The big data platform should be capable of on-the-fly analysis of the wide variety of information types relevant to the company’s business without the need for complex data warehouse projects. Finally, the platform needs to validate, cleanse and harmonize data from internal and external sources, ensure high levels of data quality, enable easy integration of disparate data sources and provide built-in data governance capabilities.

Big data implementations must provide multidimensional views of data that can be customized for specific job roles such as marketing, sales, finance, research and development, or logistics. Different job functions need to view data in different ways to perform their job functions easily and most efficiently.

Most importantly, big data technologies must provide a variety of analytics capabilities to address the specific business challenge they are being deployed to address. From detecting and presenting new intelligence in real time via alerts or an actionable report, to ongoing analysis of specific data in a repeatable way, plus predictive analytics that employ powerful algorithms to provide insights far beyond just seeing more data.

IBM big data solutions for the CP industry

Leading CP companies worldwide are using the IBM big data platform to make better decisions and improve business outcomes. The IBM big data platform includes the following:

- **IBM® InfoSphere® BigInsights™** provides an integrated solution for analyzing hundreds of terabytes, petabytes or more of raw data derived from an ever-growing variety of sources.
- **IBM InfoSphere Streams** provides a state-of-the-art computing platform that can help companies turn burgeoning, fast-moving volumes and varieties of data into actionable information and business insights.

- **IBM InfoSphere Data Explorer** provides federated discovery, search and navigation over a broad range of data sources to help organizations get started quickly with big data initiatives and gain more value from their information.
- **Robust IBM data warehouse software and integrated systems** help simplify and accelerate the delivery of insights derived from your data.
- **IBM PureData® System for Analytics** is a high-performance, scalable, massively parallel system that enables clients to gain deep insight from their data and perform analytics on enormous data volumes.
- **IBM PureData System for Operational Analytics**—part of the IBM PureSystems® family—is an expert integrated data system designed and optimized specifically for the demands of an operational analytics workload.

For more information

To learn more about how IBM solutions can help your organization capitalize on big data, contact your IBM representative or IBM Business Partner, or visit:

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¹ "Analytics: The real-world use of big data in consumer products." IBM Institute of Business Value and the Saïd Business School at the University of Oxford. June 2013. ibm.co/188Rc1G



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