

# How Big Data is Transforming Retail—and Retail Tax Functions

*Tools and Tactics that Help Retailers Achieve Tax Readiness in the Era of Analytics*

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## **Summary**

Big data analytics are transforming the retail industry by giving companies a chance to translate deeper knowledge of their customers into deeper value throughout the customer lifecycle. Leveraging this opportunity requires a strong customer-focused data management capability. The need for more robust tax-focused data management is also rising, as retailers strive to remain compliant with increasingly complex tax rules and a growing demand for tax transparency. This paper examines these interrelated trends and identifies four tax automation capabilities residing in retail tax functions that provide more value to their organizations throughout the tax lifecycle.

*“[R]etailers of all shapes and sizes are now using big data analytics to better understand customer behavior and uncover insight that will help them drive sales and increase satisfaction.”*

— Mario D’Cruz, Director, Strategy & Business Development, Hewlett Packard Enterprise<sup>1</sup>

Big data and the analytical engines that harvest valuable insights from vast supplies of raw information have become a precious resource in the retail industry.

The rising strategic importance of big data analytics in retail is inspiring lofty analogies. A recent Deloitte report on the evolution of analytics describes big data as “the air we breathe ... influencing business strategy and commanding substantial investment every day.”<sup>2</sup> Speaking to an audience of retail executives in January 2017, Intel CEO Brian Krzanich described data as the “new oil.”<sup>3</sup> The rush to transform data into insights that deliver a wide range of customer, supply chain and operational benefits is driven by recent and emerging technological breakthroughs. These advancements include low-cost processing power as well as cloud technology. Cloud vendors offer cost efficient data storage and analytics capabilities to companies of all sizes.

Reaping the benefits promised by big data analytics, however, hinges on retailers’ abilities to navigate some daunting challenges. These challenges include the tall task of managing an ever-expanding supply of data while contending with increasingly complex tax compliance requirements, and growing demands for greater tax transparency from governments. Delivering an unparalleled customer experience in the omnichannel era requires retailers to accurately and consistently calculate sales and use tax across all channels, which are fed and nurtured by multiple technology systems. This tax data management challenge exists throughout the tax lifecycle: planning, provision/accounting, compliance and audit.

Successfully addressing both sets of challenges requires a data management capability that delivers the access, accuracy, quality and granularity necessary to deliver positive customer experiences as well as ongoing tax compliance.

## **Big Data Equals Big Benefits for Retailers of All Sizes**

In his keynote presentation at the National Retail Foundation’s annual Big Show this year, Intel’s Krzanich discussed how retailers use big data analytics to “deliver amazing customer experiences” by developing a deeper understanding of their customers. These and other benefits, Krzanich explained, hinge on two factors: 1) a company’s ability to give customers more control; and 2) the ability to access, store, protect and analyze more data. “We believe that retailers are on the cusp of transformation,” he concluded, “and it’s never been more exciting to be in retail.”<sup>4</sup>

Much of this excitement stems from the numerous ways retailers are currently benefitting from big data analytics, including:

- Identifying which customers and customer segments are likely to spend more with the right enticements;
- Reducing customer churn by identifying which segments are most likely to defect;
- Strengthening customer loyalty (as measured by share of wallet and lifetime value);
- Optimizing pricing and implementing dynamic pricing models;
- Sharpening the accuracy of demand forecasts;
- Predicting future purchasing trends;
- Delivering seamless customer experiences (buy/pick up/return anywhere);
- Improving supply chain visibility and efficiency; and
- Achieving more operationally-focused improvements, such as those related to fraud detection, recruiting and retention, in-store experiences and workplace safety.

Data usage expert Bernard Marr notes that more retailers are embracing a “data-first strategy” by drawing insights from “the ever-increasing amount of structured and unstructured information available about their customers’ behavior.”

*“Big Data analytics is now being applied at every stage of the retail process – working out what the popular products will be by predicting trends, forecasting where the demand will be for those products, optimizing pricing for a competitive edge, identifying the customers likely to be interested in them and working out the best way to approach them, taking their money, and finally, working out what to sell them next.”<sup>5</sup>*

This data-driven work is paying dividends. Last year, retail sales achieved their best growth rate in more than a decade. “Technology contributed mightily to that retail success, at every stage and angle of the shopping journey, both in brick-and-mortar stores and online,” reports CIO writer Sharon Goldman. “That won’t change in 2017...”<sup>6</sup>

Indeed, mounting evidence suggest that the industry’s use of big data analytics will deepen. The drivers behind big data analytics capabilities show every sign of sustaining. Technological advancements continue to strengthen software analytical engines that can process a growing volume of structured and unstructured data from an increasing number of sources. Cloud technology advancements and information technology (IT) security improvements, in particular, help democratize access to this growing computational power and to low-cost data storage. Cloud security capabilities have increased significantly in recent years. Two-thirds of IT managers and executives indicate that their companies are comfortable processing and storing sensitive data in the cloud.<sup>7</sup>

Company size and budgetary constraints are also less of an obstacle to analytics investments than they were in the past.<sup>8</sup> The growth of big data analytics as a service infrastructure “allows smaller businesses and independent operators to take advantage of many of the same data-driven approaches to sales and marketing, without the need for implementing expensive hardware solutions and hiring in \$100k-plus per year data scientists,” Marr reports. “Targeted advertising platforms of the type pushed by Google and Facebook offer businesses of all sizes the chance to benefit from Big Data-driven segmented marketing strategies.”

Marketing functions in all industries, especially retail, also appear eager to increase their investments in data management and analytics-related capabilities. Data

spending in direct mail, display advertising and email increased 4.1 percent from 2015 to 2016, according to MKTGinsight; this year, data spending growth is projected to nearly double to 8.1 percent.<sup>9</sup>

While the enticing benefits of big data analytics appear likely to sustain, reaping these rewards requires retailers to address a formidable set of challenges.

## **Consistency, Quality and Compliance Required**

The primary challenge relates to managing ever-increasing volumes of data. This requires tools and processes that provide speedy access to accurate, high-quality data that can be put through its algorithmic paces to produce insights. Even as retailers address this customer-focused data management hurdle, tax data management obstacles lurk.

### **A Deluge of Data**

Mobile commerce, ecommerce, in-aisle checkout, Internet of Things sensors throughout the supply chain, social media shopping, chatbots, virtual and augmented reality, personalized retargeting following shopping cart abandonment... The lengthy list of retailer-customer touchpoints goes on and on. Each new customer touchpoint contains crucial data that retailers can use to generate insights, decisions and processes to increase sales. All of this data must be stored and accessed in a secure manner; it also must be analyzed quickly.

In 2016, the global rate of online shopping cart abandonment reached a record 75 percent. To counter these pre-sale bailouts, retailers have invested heavily in approaches that dash off personalized emails or texts to consumers to tempt them to follow through with purchases of the products they abandoned. The success of these retargeting efforts—as well as many other related customer experience management processes—hinge on a retailer’s ability to perform lightning-fast analysis of customer data.

### **Data Quality, Precision and Consistency**

Analytics speed can also be threatened by data quality shortcomings. The increasing amounts of data used by retailers in managing customer relationships, and the growing number of sources containing this data, create

data quality challenges. Retailers must verify that all the data they use is accurate.

Ensuring the precision of data is also important. From a customer-data perspective, it likely is insufficient to know that a customer lives in a specific state or city. Zip codes, zones and even specific neighborhoods have key attributes associated with them that can help retailers forecast demand with more precision, and enable them to target small, highly valuable customer segments with specific offers.

A similar level of precision is required when managing tax-related data. A customer's \$800 receipt from a purchase at a warehouse club retailer may include new tires that are subject to an environmental fee (which may be taxable), in addition to all relevant state, county, city and other local taxes. The more products the customer buys, the greater the need for precision. In addition to accuracy and precision, the data must be consistent. A company's primary data repository is now fed by dozens, or hundreds, of different systems that support different sales channels. For many companies, these sales channels contain transactions in different currencies. As raw information moves from mobile applications, ecommerce systems, point-of-sale (POS) systems and more, it needs to be unified and/or enriched to enable consistent, apples-to-apples comparisons.

### **Tax Complexity and Transparency**

Increasing tax complexity and demands for greater tax transparency represent a major concern among retail and consumer products CEOs. When asked which potential business challenges and disruptions concerned them most, respondents to PwC's 2016 Global CEO Survey placed tax burdens at the top of the list, slightly above exchange rate volatility, overregulation and shifts in consumer spending and behavior.<sup>10</sup> These concerns likely stem from the growing complexity of information systems within organizations, as well as the increasingly complex nature of tax rules with which they must comply. Many retailers manage numerous information systems, including multiple POS systems, ecommerce systems, enterprise resource planning (ERP) systems and much more. Tax data flows through many of these systems and applications, and onto a growing number of mobile devices and related technology (such as radio frequency

identification, 3D printing and even biometrics). These systems and devices increasingly interact with each other, creating a dynamic that can provide substantial benefits (e.g., more sales), but significant tax risks as well.

Retailers also must comply with fast-changing state, local, national and, in some cases, global tax regulations. On the domestic front, retailers face the long-standing challenge of managing the taxability of multichannel transactions, exposure to the frequent audits that high volume transaction businesses are subject to, coverage for unique compliance requirements associated with jurisdictional special tax rates and rules, and other ongoing and frequently changing compliance requirements.

New global tax regulations, such as the Organization for Economic Cooperation and Development's (OECD) Action Plan on Base Erosion and Profit Sharing (BEPS) represents one of the most sweeping global tax changes in recent history, and it will have major direct tax implications for retailers who operate in multiple countries.

BEPS epitomizes a widespread move toward greater tax transparency through which more jurisdictions want companies to furnish more, and more detailed, tax and transactional data.

### **Tools for Tax-Ready Retailers**

Additional tax complexity and transparency creates new data management challenges. Fortunately, some instructive parallels exist between the data management capabilities deployed to leverage big data analytics opportunities and the data management processes and tools needed to comply with a growing tax burden.

Just as customer-related data resides in dozens of different systems and sources, so, too, does tax data. This tax data exists in systems and applications that support processes within finance and accounting, sales, distribution, procurement and supply chain, payroll, legal and other areas. Larger companies as well as mid-sized retailers with global footprints may operate up to hundreds of different information systems scattered throughout various business units, functions and regions. Many of these systems operate in different languages and process different currencies while adhering to unique accounting standards.

Managing this large and diverse collection of data requires automation; most retailers understand this need. Retailers have deployed sophisticated customer relationship management (CRM) and marketing automation applications. These systems automate the collection, unification, validation, enrichment and analysis of customer data.

Similar approaches and tools are present within leading tax functions of all sizes. Although tax technology solutions vary in their reach and quality, the most effective forms of tax data management technology share a core set of enabling components, including:

- 1. Unification:** This process harmonizes data from disparate sources for tax purposes. All relevant data are brought together in one place, at the appropriately granular level of detail. This funneling activity imports key information from ERP, other finance and accounting, sales and marketing applications, and payroll and legal systems, among others, into a single, unified platform.
- 2. Validation:** Once all the data has been gathered, it needs to be evaluated to determine how it fits into tax processes and whether any data needs to be reconciled in light of recent business changes before this information is used for subsequent tax processing. This activity includes real-time validation that the data reflects the most up-to-date financial results, which is of particular concern at quarter-end and year-end financial closing periods.
- 3. Enrichment:** At this point, the data is converted from financial reporting into tax-ready formats, enriched by global tax content and consolidated by the prevailing accounting standards and currency. This process of readying the financial data for tax processing is typically automated, although it may in some cases require expert input. These activities create a central source of tax-ready data that can be leveraged across all tax functions and processes of the tax lifecycle.

- 4. Access:** Once the tax calculations have concluded, the data is retained to satisfy all global data retention requirements and to provide an audit trail when necessary. This approach reduces audit exposure and related risks, while keeping the enriched data accessible for a wide range of analyses.

When deploying tax automation with those four core capabilities, tax functions can collect, harmonize, transform and access the massive amounts of data required to satisfy compliance requirements. Doing so helps free up tax professionals to do what they do best: focus their expertise on reducing the risks of financial misstatements, fines and penalties, and increase the time they devote to partnering with the business, strategic planning and other higher valued activities.

Retailers of all shapes and sizes are using big data analytics to fortify their understanding of customer behavior while increasing satisfaction and sales. These same retailers should be deploying tax data management tools to strengthen their tax compliance capabilities while increasing the tax functions ability to deliver greater value to the organization.

## Endnotes

- <sup>1</sup> D’Cruz, Mario. *Big Data Analytics and the Future of Retail*, HPC Wire, June 13, 2016: <https://www.hpcwire.com/solution-content/hpe/media-entertainment/big-data-analytics-future-retail/>.
- <sup>2</sup> *Analytic Trends 2016: The Next Evolution*. Deloitte ©2016: <https://www2.deloitte.com/us/en/pages/deloitte-analytics/articles/analytics-trends.html>.
- <sup>3</sup> *Driving ‘Amazing’ Customer Experiences through Data*, National Retail Federation, January 17, 2017: <https://nrf.com/news/driving-amazing-customer-experiences-through-data>.
- <sup>4</sup> Ibid.
- <sup>5</sup> Marr, Bernard. *Big Data: A Game-Changer in the Retail Sector*, Forbes, November 11, 2015: <http://www.forbes.com/sites/bernardmarr/2015/11/10/big-data-a-game-changer-in-the-retail-sector/#6f4a7ae2678a>.
- <sup>6</sup> Goldman, Sharon. *8 Retail Technology Predictions for 2017*, CIO, January 9, 2017: [http://www.cio.com/article/3155507/retail/8-retail-technology-predictions-for-2017.html#tk.drr\\_mlt](http://www.cio.com/article/3155507/retail/8-retail-technology-predictions-for-2017.html#tk.drr_mlt).
- <sup>7</sup> *Managing the Crown Jewels and Other Critical Data: Protiviti 2017 IT Security and Privacy Survey*, Protiviti © 2017: <https://www.protiviti.com/US-en/insights/it-security-survey> bid.
- <sup>8</sup> Marr, Bernard. *Big Data: A Game-Changer in the Retail Sector*, Forbes, November 11, 2015: <http://www.forbes.com/sites/bernardmarr/2015/11/10/big-data-a-game-changer-in-the-retail-sector/#6f4a7ae2678a>.
- <sup>9</sup> Conlon, Ginger. *How Will Marketers’ Media Spending Change in 2017?* MKTGinsight, February 17, 2017: <http://www.mktginsight.com/winterberry2017> bid.
- <sup>10</sup> *2016 Retail and Consumer Products Trends*, PwC © 2016: <http://www.strategyand.pwc.com/trends/2016-retail-and-consumer-products-trends>.

## About Vertex

Founded in 1978, [Vertex Inc.](#) is the leading provider of corporate tax software and services to automate, integrate, streamline or outsource tax processes for companies of all sizes, from small to medium-sized businesses to global multinationals. Vertex provides solutions for all tax types with industry-specific solutions for retail, communications, hospitality and leasing industries.

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