Microsoft

Retail Insights
Harnessing the Power of Data

Executive Summary

With global revenue of **$22 trillion** in 2014,[1] the retail industry contributes a significant portion to the GDP of many countries, employs tens of millions of people and touches nearly everyone.

Whether family-owned-and-operated shops, multinational chains, or e-commerce sites, retail businesses must compete aggressively for every consumer dollar—and not all retail organizations are succeeding. Headlines tout grim news of long-established brick-and-mortar stores closing: "Walgreens shutters 200 stores" (*CNN Money,* 4/9/2015); "J.C. Penney…to shut stores, lay off scores" (*USA Today,* 1/9/2015); "RadioShack files for bankruptcy, announces plan to sell stores" (*Los Angeles Times,* 2/8/2015).

In order to gain insight at a particularly volatile time for the industry, Microsoft recently conducted a survey with 100 retail executives to gain insight into their business challenges and learn about how they are currently using, or plan to use, analytics and the cloud to stay relevant with today's consumers.

Current business environment
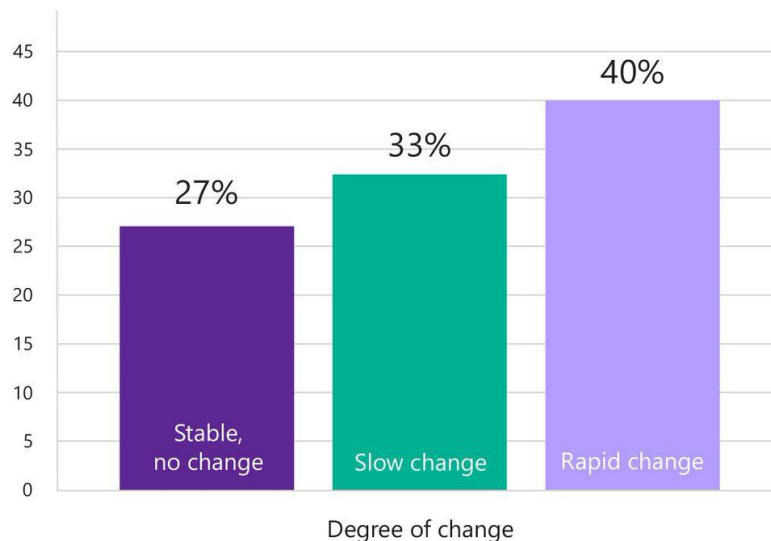
73% of executives surveyed said that the retail marketplace is changing, and 40% said that the change is rapid.

When asked about their organization's current business environment, 73% of those surveyed acknowledged that the retail marketplace is changing. For 33%, the business environment change is happening slowly; and 40% are seeing their businesses change rapidly.

Retailers who continue to do business as they always have without evolving their business practices may soon find themselves outpaced and outmatched in a ruthlessly competitive marketplace.

New technologies promise better customer shopping experiences, nimbler inventory management, and expanded access to diverse data that provide retailers with critical real-time insights into their business. To harness these innovations, management must take a proactive approach in close collaboration with diverse teams within their organization.

Microsoft created this white paper, which includes insights gleaned from our survey of retail business executives, to provide guidance on evolving retail data business practices and challenges. It discusses two of the most prevalent business opportunities—personalization and demand forecasting—and explains how current technology innovations in the retail marketplace, combined with cloud- and hybrid-cloud–based solutions, as well as advanced data analytics, can help retailers meet today's business needs and prepare to thrive in tomorrow's competitive environment.

Retail Trends

Today's retail executives are facing mounting pressure to evolve business models that make sense in a global marketplace characterized by disruptive technological innovations and fierce competition for consumer dollars.

What once worked to entice consumers, such as loyalty programs, no longer guarantees a sale. Not only do they have endless choices at their fingertips, they have a voice. They can post a review—and one in five consumers do. This means there's data out there that can help you build, monitor and improve your brand. Microsoft Social Engagement enables you to "listen" to what your customers are saying, learn from it and take action.

Yet another challenge lies with our globally connected, 24/7 mobile economy. How can today's retail executives successfully compete in this dynamic marketplace? By **differentiating** the shopping experience through the meaningful use of technology, **personalizing** promotions and experiences for customers, and effectively **predicting** and **prescribing** what will sell, when, where, and to whom.

Retailers who use their own vast array of sales, inventory, and customer data to help shape their retail strategy are seeing gains in their KPIs, including increases in:

- Year-over-year sales per square foot
- Store profitability
- Overall revenue

In addition, they're seeing decreases in the percent of inventory markdowns and inventory churn that take a bite out of overall profit.

Macy's, for example, increased profits through an omni-channel strategy that improved efficiencies in inventory management and increased sales when customers went to stores to pick up their online orders. According to *Stores*, the National Retail Federation magazine, "Macy's fourth-quarter sales increased to $9.4 billion, up 1.8 percent from the prior year," even though the sales didn't come from their highest-profit departments.
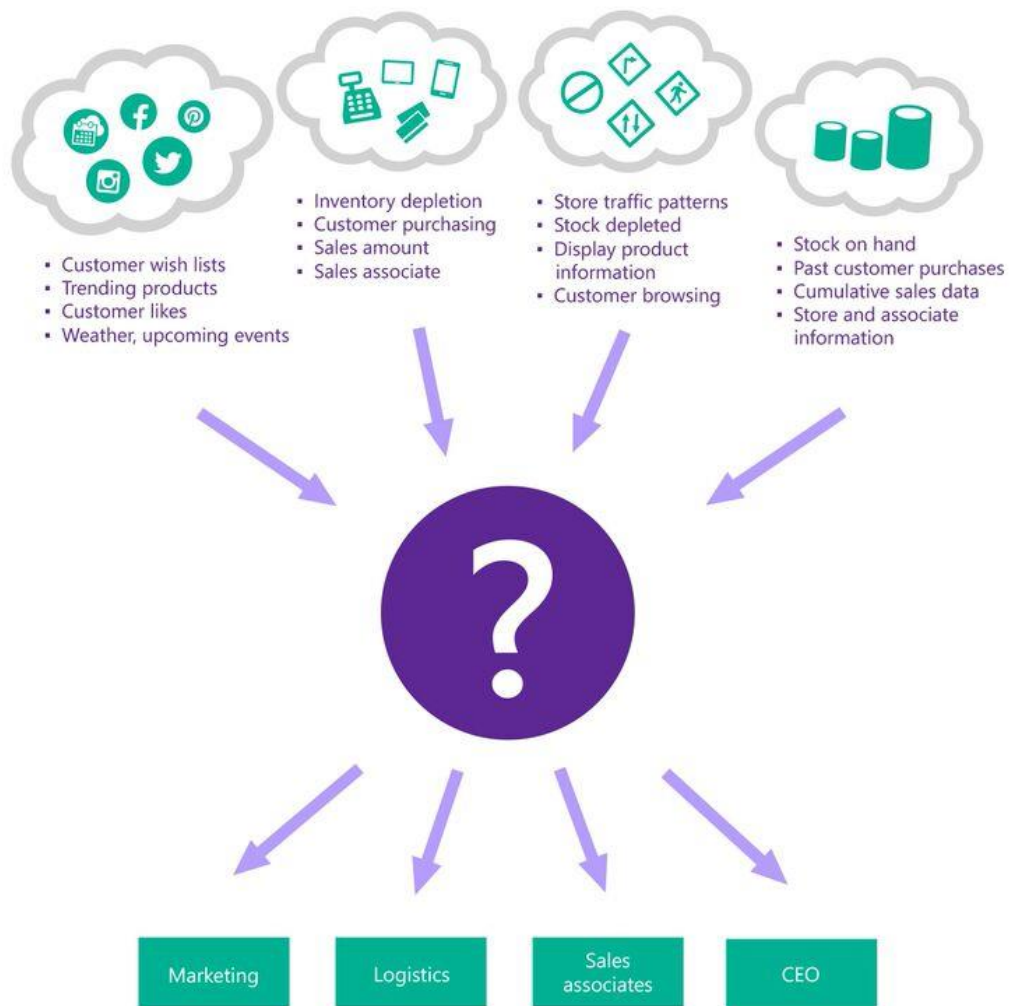
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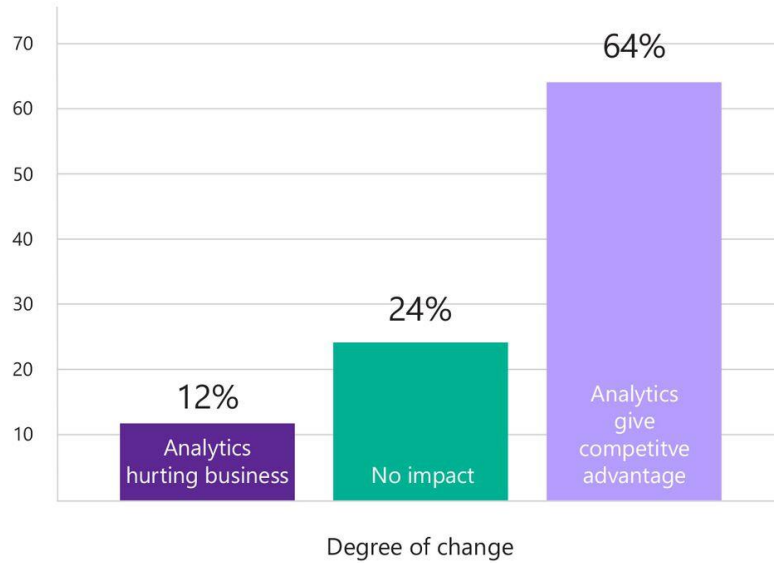
When asked what role big data or advanced analytics plays in their competitiveness, 64% of executives surveyed said that analytical capabilities give them a competitive advantage.

According to a recent IDC report, by 2017, retail companies that take advantage of their data can potentially realize an additional **$94 billion in revenue** over companies that don't. Key opportunity areas include employee productivity **($41B)**, operational improvement **($29B)**, product innovation **($15B)**, and customer-facing experiences **($9B)**.[2]

Retailers who don't keep up with innovations in commerce, technology and business practices will find it increasingly difficult to attract and retain customers. With industry competitors expanding sales by devising new ways to market and bundle merchandise, retailers can also find that suppliers are making exclusive deals with competitors who are able to predict inventory needs with greater efficiency and accuracy.

Although retail executives understand that data flowing through their companies daily represents an asset they can use to solve pressing business problems, making sense of how to use it can be a challenge. Add to that emerging technologies such as beacons and sensors, as well as exponentially increasing web traffic on social media sites, the promise of real-time data analysis is a tantalizing proposition.

- Customer wish lists
- Trending products
- Customer likes
- Weather, upcoming events

- Inventory depletion
- Customer purchasing
- Sales amount
- Sales associate

- Store traffic patterns
- Stock depleted
- Display product information
- Customer browsing

- Stock on hand
- Past customer purchases
- Cumulative sales data
- Store and associate information

Marketing | Logistics | Sales associates | CEO

New data sources lead to better solutions to challenging business questions.

Areas of opportunity

Forward-thinking retailers are focusing on four key areas of opportunity:

- Commerce "anywhere, anytime"
- Personalized promotions and experiences
- Situational awareness
- Diverse Data + New Analytics + Expanded information access

Commerce "anywhere, anytime" means customers are making their purchases online, in traditional brick-and-mortar stores, from "pop-up" stores and other sources. These can range from stores within a store, like Olivia Kim's curated collection of changing "pop-in" stores for Nordstrom, to co-branded shopping experiences like *Wired Magazine*'s holiday pop-up store in New York City. Customers might shop downtown with friends on Saturday; online at midnight on Wednesday; or while working out, using a mobile device to purchase an item they just saw on TV. Cable companies are even placing "Shop Now" buttons within some television shows, enabling viewers to make an immediate purchase.

Personalized promotions and experiences provide customers with tailored purchasing opportunities based on an analysis of their real-time and historical purchasing data. For example, when customers sign in to JJ Food Service, a large food and beverage provider in the U.K., they get predictive shopping lists for their restaurants or businesses based on both current order information and historical customer data, such as previous orders and calendar data.[3]

Marston's, a 200-year-old UK pub, uses Microsoft Dynamics to get a single view of a customer's activity across digital signage, social, websites and email. This enables them to deliver the kind of neighborhood pub experience customers love. For example, they've got a digital message board where customers can post that a friend of the group is running late for his birthday party, then when he walks through the door the system alerts a server who hands him his favorite drink as his favorite song plays on the jukebox. With the rate of British pub closures accelerating to 31 per week, Marston's is combining data analytics and CRM to reinvent the pub business.[4]

Other personalized shopping experiences include dynamic discounts and options to purchase online and pick-up in-store or purchase in-store and ship anywhere. Brick-and-mortar stores are also using analytics to offer real-time "recommended for you" suggestions in-store, duplicating the familiar online recommendation experience. Sales associates are armed with customer and product information at their fingertips, enabling them to interact with customers in much the same way "live chat" and call center operators interact with customers online. Some online-only retailers are opening retail storefronts, curating exclusive collections of items from their websites and enabling customers to "touch, feel, and try" the products before they buy.

Situational awareness provides retailers with real-time information through the use of QR codes, RFID tags, NFC (e.g., Apple Pay, iPay, "Tap to Pay"), beacons, and other sensors that gather other helpful data, enabling them to deliver real-time coupons, product information, and even games and promotions to customers. For example, using the Wi-Fi signals on a customer's smartphone, it's possible to track them through the store and send them personalized coupons and product information as they shop. QR codes and RFID tags enable customers to scan items or displays and get more information or see similar items the retailer might have available in the warehouse. Situational awareness also provides retailers with information about the flow of customers through a store, including where and in what order they browse. This information can provide insights into how to better organize merchandise to drive purchases—for example, by grouping items that customers typically look for during the same store visit.

Diverse Data + New Analytics + Expanded information access = More revenue by enabling executives to make decisions about promotions, pricing, inventory, and bundling that are predictive and prescriptive instead of reactive and disconnected.

Sales associates can access real-time information about products and customers to help drive sales. TREK Bicycles, for example, uses Microsoft Office 365, Azure on CRM OL + Yammer and SharePoint to better manage customer service requests.[5] With the ability to store customer, inventory and sales data inexpensively, everyone from executives to individual employees in retail locations can review historical data, as well as use real-time sales figures and inventory to make fast, well-informed decisions that can enable them to do their jobs better and increase sales.

The Cloud: Delivering Competitive Advantage

Cloud-based technology is used by a wide range of retailers for an enormous array of functions. From small businesses that utilize cloud-based infrastructure services to multinational companies that use cloud services to enable powerful omni-channel solutions, the business applications are as broad as the retail field itself.

Research in IT trends by Microsoft and other organizations confirms the importance of cloud-based solutions for businesses. According to Microsoft CEO Satya Nadella, 80% of the Fortune 500 companies are on the Microsoft Cloud[6,7], and according to *Business Insider*, IDC predicts businesses will spend $118 billion on cloud technologies in 2015.[8]

More than 70% of the retail executives recently surveyed identified themselves as technically savvy and capable of discussing the use of the cloud in their organizations. However, 44% of those surveyed are using the cloud only for low-risk business needs. Another 13% have adopted a "wait and see" approach to cloud solutions.

Cloud strategy

| Strategy	Percentage
Embracing	40%
Low-risk only	44%
Wait and see	13%
Won't use	3%
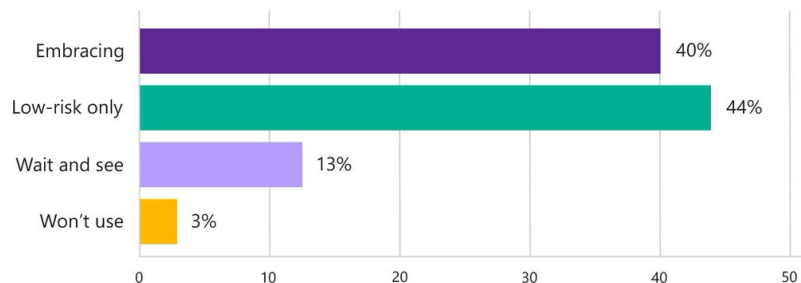
Retail executives in the Microsoft survey were asked about their companies' cloud strategy; 84% indicated their companies are already using cloud-based solutions to address business needs.

The retail industry is evolving fast as new technologies are introduced, new competitors enter the marketplace, and consumer demand for goods and services evolves.

One way retailers are differentiating themselves in a crowded marketplace is through the use of cloud-based solutions. Of those surveyed, 84% report that cloud-based solutions provide better data integration; 81% see cost savings; 72% say cloud-based solutions lead to faster deployment of new business applications; and 53% identify better security as another benefit of the cloud. Clearly, these executives see a competitive advantage in adopting the cloud.

	Percentage
Better data integration	84%
Fast applications	72%
Reduced cost	81%
Improved security	53%
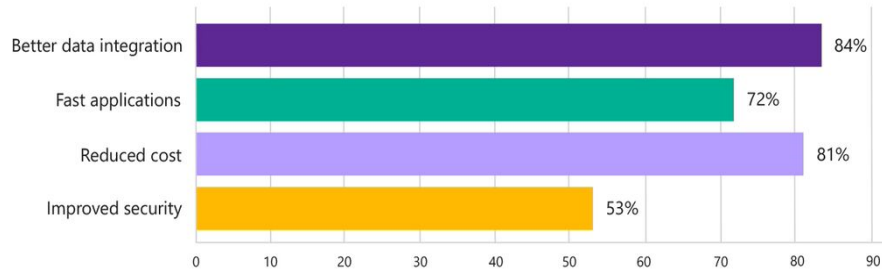
When retail executives were asked how the cloud is creating a competitive advantage for their business environment, over 80% said better data integration and reduced cost.

Even with these benefits, 16% of retail businesses are still not taking advantage of the benefits of the cloud and another 44% are using the cloud for only low-risk solutions. What's holding back those 60% of executives from fully embracing the cloud?

Dispelling the myths

Unfortunately, there are still many myths about cloud technology that might make organizations hesitant about embracing the cloud as part of their data solution. Survey respondents who aren't currently embracing the cloud identified security concerns, lack of control, and expense as barriers to cloud adoption for their organizations.

	Percentage
Too expensive	30%
Lack of control	48%
Security concerns	80%
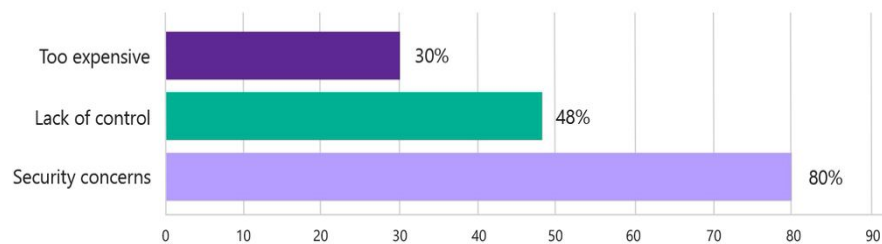
Even though 80% of non-cloud adopters identify security concerns as a major barrier, cloud security fears are often baseless.

One persistent myth deserves mention: that of data being less secure in the cloud.

A [recent article on cio.com](#) discussed the realities of cloud security with experts in the field and found security fears are often baseless. Tim McKellips, manager of technical services for SoftChoice stated in the article that he believes cloud providers like Microsoft are "taking Herculean efforts to secure their environments in a way the average client could never do."[9]

Although the news of data breaches in retail businesses is an almost daily occurrence, the Verizon 2015 Data Breach Investigations Report[10] identifies the top causes of those breaches:

- **Point of Sale (POS) Intrusions.** For example, payment card skimmers, intrusion through secondary systems (Target's recent data breach is a prime example of this) or, in the case of smaller businesses, sometimes even repetitive guessing of passwords until the right one is discovered.
- **Miscellaneous errors.** For example, sending documents or email to the wrong person.
- **Insider misuse.** For example, stolen equipment or employees with a grudge.
- **Non-compliance with the Payment Card Industry Data Security Standard (PCI-DSS).** Non-compliance to PCI-DSS regulations are a problem. Retailers who are slow to comply with upgrading POS terminals to the new chip-and-pin technology (mandatory from October 2015 in the U.S.) will remain vulnerable.

Hybrid cloud: A first step

For retailers who are hesitant or simply not ready to move to a full cloud solution, a hybrid cloud solution provides a best first step in migrating and extending current systems. The hybrid cloud offers the benefits of both the control and flexibility of on-premises solutions and the elasticity and redundancy of the cloud. Data that has low sensitivity is stored in the cloud to take advantage of improved integration and the lower cost structure. Data that's considered too sensitive for the cloud is stored on-premises and managed by the retailer's IT department.

The hybrid cloud also creates a wealth of cloud computing and advanced analytics opportunities. Using the cloud offers some cost savings and control of sensitive data, but analytics must be done on-premises and can't take advantage of the power of cloud-based services.

The hybrid cloud strategy is a logical entry point for retailers interested in evaluating emerging technologies. Although it can be the fastest path to a more powerful, full-cloud foundation, a hybrid cloud solution is only a transitional strategy and won't be sufficient in the long term for retailers who want to stay ahead of their

competitors. Furthermore, it might not afford the same level of security possible in an all-cloud of their competitors.

Big Data Retail

n the past, data flowed into corporate servers in a structured format from limited sources. Today a flood of data pours in from many sources and can be structured, semi-structured, or unstructured. In addition to handling these different types of data, retailers must manage data that can reside in multiple places, including on-premises, in the cloud, and on mobile devices. They must also be able to access both historical data and real-time data. The efficient capture and processing of data is the first step in transforming information into business insight.

It's not enough to just capture the data; it's also important to understand what business questions the data will be used to answer. Machine learning (learning and making predictive analyses from data) provides the engine behind advanced analytics, which can help companies answer business questions and assist in combining and visualizing data for further analysis.

Analytics investment timing
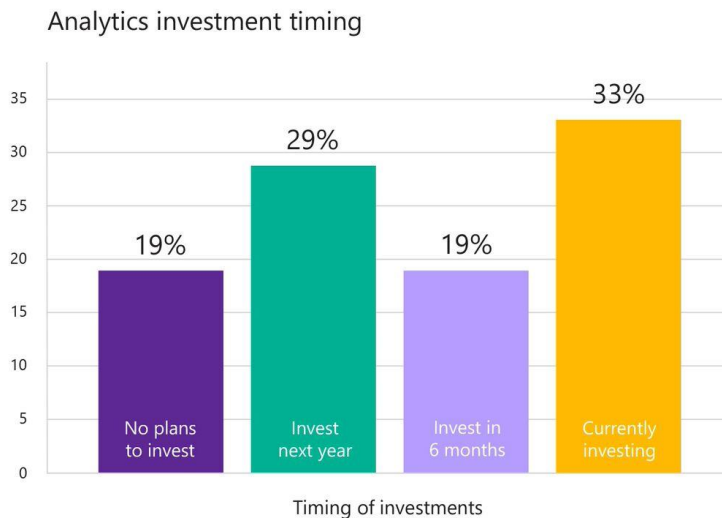
The majority of retailers surveyed said that they're currently investing in analytics capabilities or will be in the next year.
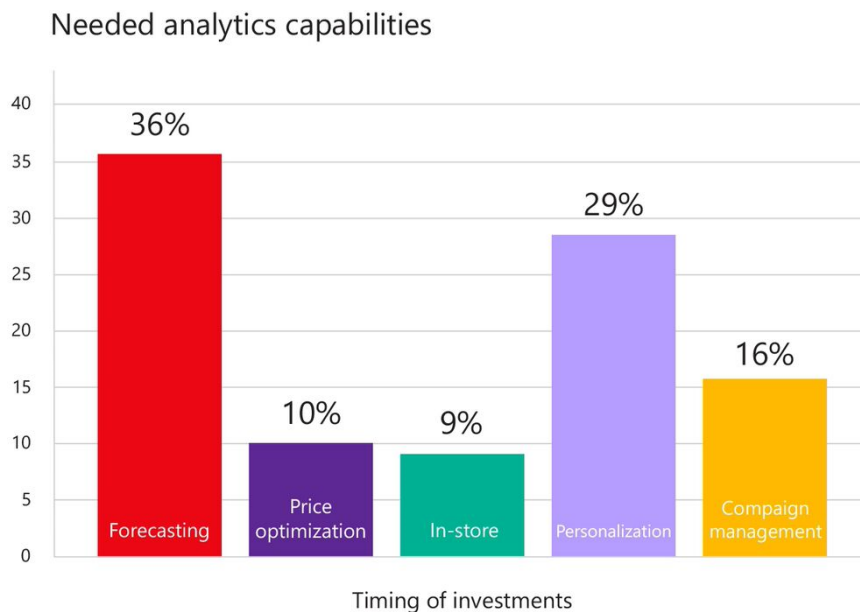
Useful at all levels

After data models have been built, tested and deployed, transformative retail business insights can be made available to anyone in the organization.

- Sales associates can use customized apps on mobile devices in stores to assist customers with product information and personalized recommendations.
- Logistics managers can arrange the movement of stock from warehouse to stores to customers, and can predict inventory needs through visualization apps.
- Finance officers can generate reports and projections on sales and salaries. The marketing team can create customized marketing campaigns by using a combination of real-time apps and reports to model campaigns and predict resulting sales.
- And managers all the way up the chain can glean insights about sales, employees and inventory—anywhere and anytime.

The power of data: retail scenarios

Given the enormous amount of data available, the almost endless variety of retail goods for sale, and the myriad business problems retail executives are trying to solve, there are many potential scenarios for illustrating an effective data + analytics solution.

Needed analytics capabilities

	Forecasting	Price optimization	In-store	Personalization	Compaign management
%	36%	10%	9%	29%	16%

Timing of investments

Demand and sales forecasting plus customer insights and personalization were the biggest concerns of the retailers surveyed.

Two scenarios, personalized promotions and experiences and demand forecasting, show the power and versatility of using advanced analytics in retail businesses particularly when combined with existing CRM solutions.

Scenario 1: Personalized engagement

A multitude of online studies explore the shopping habits of different generations, with much of the current research effort focusing on "millennial shopping trends." Across the research, one trend emerges repeatedly from those surveyed: Consumers want more personalized offers and experiences when shopping either in-store or online.[11]

What's surprising is that only 12% of retail executives in the Microsoft survey said their companies are extremely effective at using analytics to personalize promotions for specific customers.

Personalization effectiveness
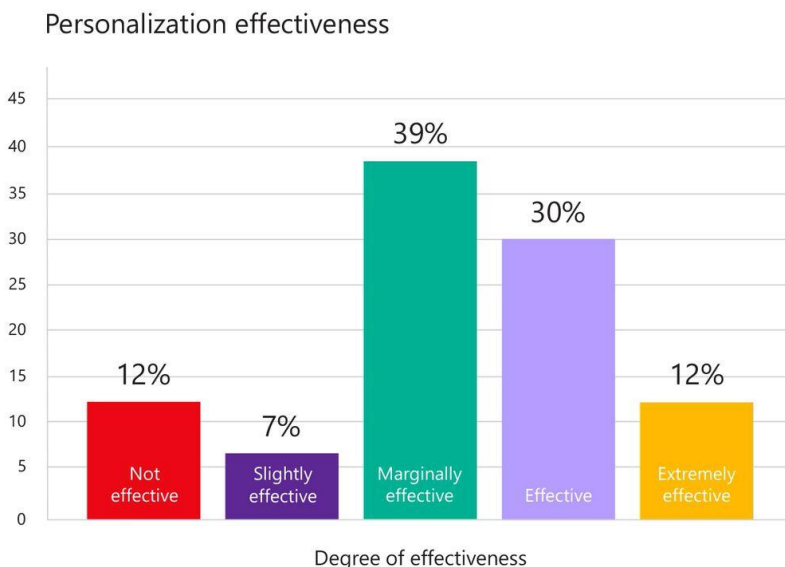
With less than half of the executives surveyed using analytics effectively for personalization scenarios, there's huge potential being missed.

This gap in effectiveness represents an opportunity to improve the use of analytics in response to customer desire for more personalized shopping experiences. It also provides an opportunity for showcasing the benefits of advanced analytics to solve a current business challenge.

Customer shopping behavior is often a moving target. In 2012, retailers were challenged by customers using brick-and-mortar stores to "showroom"—or try out items in the store and then compare prices with online offers—often with the undesirable (at least from the brick and mortar store's point of view) outcome of buying the item online—sometimes while standing right in front of the item in the store.

In 2015, "webrooming"—the opposite of "showrooming"—is becoming more prevalent, and several recent studies have shown that consumers are now doing research online before eventually going to a brick and mortar store to make their purchase. According to an article in the *Washington Post,* based on a survey by Nielsen, "...while 51 percent of respondents said they browse products in stores before ultimately buying them on the web, an even larger number said they do the opposite."[12]

Shrewd retail executives see opportunity in their customers' browsing behaviors through omni-channel integration for their business. An omni-channel approach takes advantage of consumers' tendency to browse—whether online, in-store, on mobile devices, or through social media—to provide the "best" possible shopping experience for them.

Pier 1 Imports is one example of a company embracing an omni-channel strategy. In an analyst call in September 2014, CEO Alex Smith said, "Our omni-channel strategy is being embraced by our customers. We're giving them multiple ways to shop, and they love it.… Like other omni-channel retailers, our stores are becoming sales and customer experience centers."[13]

Technology innovations such as QR codes, NFC tags, RFID tags, beacons (e.g., Bluetooth Smart) can also help deliver "customized" retail experiences by offering real-time promotions in the store as customers browse product shelves. For example, when customers use a store's mobile device app, approaching a display can trigger a coupon for items on display to be sent directly to the device. Customers can also obtain product information, find out about the availability of other colors, styles, sizes, and so on.

To present these customized promotions, retailers must be able to analyze sales data in real time so they can quickly offer coupons that can motivate customers to buy something they weren't planning on. It also requires that they have up-to-the-minute information about stock availability and location to ensure that customers can purchase and receive items in a timely way. Failing to deliver can drive customers to other retail sources and lead to lost sales of that item and potentially other items as well.

Yet another approach is to offer customers "personalized" shopping experiences based on their desires, previous shopping habits and/or propensity to spend in a given category or price range. This could be an app experience or part of a loyalty scheme in which the power of

advanced analytics has been combined with CRM to create an intelligent customer engagement program. Given that the average loyalty customer spends 20% more than traditional shoppers, such a program could also be more profitable for retail organizations.

Analyzing both real-time data (for example, what's currently in a customer's online shopping cart) and historical data (such as that customer's past purchase patterns) also provides a way to personalize the customer experience. JJ Food Services, the U.K.-based food delivery service mentioned earlier, used machine learning to develop a predictive shopping list for its online orders that recommends other items based not only on what's in the customer's shopping cart, but also on their previous purchasing patterns. If a customer orders greens once a week, flour every couple of weeks, and cooking oil once a month, the predictive shopping list recommends purchases based on that data as well. The JJ Food Services solution improved their cross-selling capabilities, enhanced their new customers' experience, and sped up ordering for their existing customer base.[14]

Some promotions can include dynamic pricing targeted for regular customers whose purchases are tracked by the retailer. For example, Safeway created the "Just for U" program for their customers a few years ago. Registered customers log in to their personalized "Just for U" account either online or via a mobile device app to view and add personalized offers and create their weekly shopping list. The app also enables customers to organize their shopping list by aisle for the store where they're planning to shop.

By using the "Just for U" app, customers provide Safeway with copious data about their buying habits. Safeway can then use this data to better tailor promotions just for the customer. This creates a positive feedback loop that benefits customers, who receive more personalized offers for grocery coupons; given that the average grocery store stocks 50 to 60 thousand items and the average consumer's purchases are limited to around 300, this is a tremendous convenience for the consumer. It also benefits Safeway by potentially drawing customers into the store when they might not have otherwise been planning to shop.[15]

Technology innovations also deliver real-time information that can be processed immediately or logged and analyzed later for patterns. For example, the Chili's restaurant chain uses Ziosk tablets powered by Microsoft Azure—which offers cloud-based, real-time information and ordering capabilities—to provide diners with menu information and the option to pay their bill directly through the device. As part of the bill payment process, diners are also asked to fill out a survey about their dining experience.

With over 70% of their customers opting to fill out the survey when they pay, Chili's has almost immediate access to information about individual restaurants—the quality of the food, the cleanliness of the restaurant, the attentiveness of the server, and so on. With the ability

to analyze this data rapidly, Chili's can quickly discover and solve problems to improve the dining experience.[16]

What these types of innovations mean in real terms is terabytes of additional data streaming into businesses in real time, often 24/7, 365 days a year. Mining the data for insights requires close collaboration between IT and business decision-makers to be sure the right nuggets of information are being found.

Success in implementing data analytics solutions for personalized promotions and experiences can be measured through retail KPIs, such as sales per square foot, retail price, net sales, margin percentage, and maintained markup. Retailers can get rapid feedback about the effectiveness and overall value of their personalized promotions. If one thing is clear, the process of engaging customers can't be one-size-fits-all. It needs to be adaptive across all touch points and within the context of the customer. Retailers can use data analytics to personalize customer experiences and create end-to-end, outcome-focused journeys that engage the consumer at the right time and place, AND on their terms.

Scenario 2: Demand forecasting

Numerous market forces put stress on retail executives when it comes to inventory management. With the supply chain embracing "just-in-time" manufacturing, demand sometimes outstrips supply and can lead to longer waiting times until merchandise is delivered. Because of their sheer dollar purchasing power, big retailers can often jump to the head of the line, making it harder for smaller retailers to compete effectively.

Another inventory management nightmare can occur when external events, such as weather patterns, disasters, or especially the viral nature of social media, affect demand. And retailers who sell products nationally, or even globally, can all relate stories of items that sold big in Kalamazoo and not at all in Kamchatka, leaving groaning warehouses and deep markdowns taking a big bite out of profits.

The goal of demand forecasting is to ensure that the right items are stocked in the right quantities at the right time in the right location to avoid overstocks and stock-outs. Accurately predicting demand makes it possible for retailers to optimize inventory and use the supply chain effectively. They can track the success of using analytics for demand forecasting through KPIs such as average inventory, ending inventory, inventory turnover, stock turnover in days, and total turnover.

With more consumers expecting a fully integrated shopping experience—from e-commerce to bricks and mortar and across

devices—developing omni-channel strategies has become a business imperative for retailers. To deliver a better omni-channel customer experience, it's important that brick and mortar stores are stocked with enough inventory to successfully use them as mini-distribution centers. Conversely, when customers are in the store and decide to have an item shipped directly to them, it's important to ensure that it's possible to deliver the items in a timely way. Omni-channel strategies require real-time demand forecasting and analysis to realize enhanced revenue.

Inventory management

Real-time analysis of data sources from event schedules to weather, combined with historical data such as store sales and order history, makes it possible to increase revenue by proactively moving inventory.

Enabling customers to purchase online and return in-store also generates increased revenue as customers come into the store to make a return and end up browsing for (and buying) new items. *Fortune* magazine reports that Nordstrom realized benefits from this strategy when it enabled customers to return items purchased at nordstromrack.com and HauteLook at its Rack stores.[17]

Demand forecasting provides another retail opportunity for moving inventory—product bundling. Bundling can take the form of grouping like items together for specific times of year—for example, back to school, Cinco de Mayo, or 4th of July—and offering items at a discount. Or it can mean putting products together as a package, such as a television and a Blu-Ray player, and selling them as a unit instead of individually. It's important in

these scenarios that all items are in stock; if not, the entire bundle might not sell.

With real-time data available for analysis, it's also possible to predict upticks in inventory demand—for example, driven by weather predictions or a celebrity tweeting love of a certain product.

Combining this information with historical data, such as which stores sell more products on hot days or what geographic location has more affluent trend-following customers, makes it possible to proactively move inventory around and ensure the right quantities are available in the right places at the right time to maximize the number of units sold.

Conversely, using the same data sources and predictive analytics makes it possible to forecast a reduction in demand for inventory, giving retailers the opportunity to create promotions and cross-sell to increase sales even when the trend is toward a slow-down. Analysis can identify slow-moving inventory and help retailers create promotions targeted at specific customers based on their purchasing patterns, and sales associates can get real-time updates on which products to up-sell or cross-sell from day to day.

Conclusion

Making sense of how to process, predict and visualize the data that streams into a retail business 24/7, 365 days a year helps differentiate companies in a crowded marketplace. With the ever-increasing pace of technological innovation and customers who want more personalized shopping experiences across devices, both online and in-store, retail business executives need the right data platform analytics solution to help them:

- Provide a rich, personalized, seamless shopping experience across multiple channels
- Tailor customer experiences and recommendations
- Forecast demand to manage inventory more effectively across multiple retail channels
- Improve efficiency throughout their organization
- Maximize profitability of the goods they sell

With a complete advanced analytics solution that securely spans on-premises computers and servers, cloud-based storage and tools, mobile device applications and customer engagement, retail businesses can solve the business problems of today as they anticipate and prepare for the innovations of tomorrow.

Microsoft cloud-based solutions

Creating a cloud-based advanced analytics solution using Microsoft products such as Cortana Analytics offers many benefits for retail businesses of any size, including:

- **Scalability.** Quickly scale up or down on demand, and pay only for what you use, gaining processing power to fuel advanced data analytics capabilities.
- **Cost.** With a payment model of paying only for the services you use, Cortana Analytics is an economical way for even the smallest retailer to benefit from cloud solutions.
- **Familiarity.** The tools provided for building a cloud-based data processing and analytics solution with Cortana Analytics are the same ones that millions of businesses trust today. And Microsoft solutions integrate with a broad range of devices to help make Bring Your Own Device (BYOD) a reality.
- **Security.** Microsoft delivers cloud services with enhanced security, management, and threat-mitigation practices to many of the world's leading enterprises and government agencies. Every day, Microsoft delivers services that achieve

higher levels of security, privacy, and compliance than most users can achieve on their own.

Cloud-based solutions offer many benefits, but there may be reasons that a retail business might not be ready to move to a full cloud solution. For these retailers, Microsoft offers the hybrid cloud, which enables businesses to move part of their data and computing needs to the cloud while maintaining on-premises data as well. The hybrid cloud provides the benefits of cloud computing: scalability, elasticity, cost benefits, familiar tools and apps, and enhanced security.

With the wealth of data available to mine for business insights, it's also important for retailers to have tools available to make it easy for the right users to get access to the right data at the right time. Microsoft provides business intelligence (BI) solutions for predicting and visualizing information, making the power of advanced analytics available throughout an organization. Microsoft BI solutions also integrate with existing tools and apps to make it easier for companies to deploy new apps and services based on insights gleaned through advanced analytics.

Retail business executives who take the opportunity now to evolve their business practices by bringing the power of the cloud and advanced analytics to their companies will find themselves uniquely situated for a competitive advantage in an ever-tightening retail marketplace.

Notes

[1] *eMarketer* Retail Sales Worldwide Will Top $22 Trillion This Year.

[2] IDC and Microsoft Corporation, The Data Dividend.

[3] Microsoft.com, Machine learning helps food service supplier predict what customers want before they order.

[4] Microsoft.com, Marston's Delivers Personalized Service in Real-Time with Dynamics

[5] Microsoft.com, Integrated CRM Solution Helps TREK Support Local Sales Reps

[6] Eugene Kim, *Business Insider,* Microsoft CEO Satya Nadella Shows Why Azure Is A Serious Threat To Amazon And Google.

[7] Microsoft.com, Microsoft by the Numbers, the Enterprise Cloud.

[8] Julie Bort, *Business Insider,* 14 Tech Trends That Will Make Someone Billions Of Dollars Next Year.

[9] David Spark, cio.com, 20 of the Greatest Myths of Cloud Security.

[10] *Verizon,* 2015 Data Investigations Breach Report.

[11] Fiona Soltes, *Stores Magazine,* Downright Personal.

[12] Sarah Halzak*, The Washington Post,* One way online shopping is actually helping brick-and-mortar retailers.

[13] Larry Dignan, zdnet.com, Pier 1 Imports aims to transform via e-commerce, IT.

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