EXECUTIVE SUMMARY

What is 'Big Data' in Retail and Why You Should Care

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KEY TAKEAWAYS

- Mobile devices have revolutionized purchasing behavior and generate new data for retailers.

- Retailers must use big data to support customer-centric strategies.

- Retailers see the importance of big data, but deriving value from it can be challenging.

- Big data is a key enabler of retailers' growth strategies.

- Some retailers are more advanced in planning for big data initiatives and attracting talent.

- Technology companies Hitachi Data Systems, Intel and SAP have helped retail companies leverage big data and generate meaningful business results

in partnership with

What is 'Big Data' in Retail and Why You Should Care

OVERVIEW

Thanks to mobile technology, consumers routinely engage in shopping behaviors online and outside of brick and mortar stores. To understand buyer behavior, predict demand, and optimize merchandise plans, retailers must analyze consumers' digital breadcrumbs with big data technologies. Research shows that most retailers see the importance of big data. However, many still find that deriving value from big data is challenging. Fortunately, technologies from Hitachi Data Systems, Intel and SAP make it easy for retailers of all sizes to leverage big data to generate meaningful business results.

CONTEXT

Brian Kilcourse discussed RSR and Penton research findings on big data in retail. Tim Hood reviewed how retailers are leveraging SAP technology and big data to generate measurable business results.

KEY TAKEAWAYS

Mobile devices have revolutionized purchasing behavior and generate new data for retailers.

The retail industry is at a "reset moment," triggered by consumer adoption of new technology. With smartphones, consumers now "carry the store" with them and engage in shopping behaviors outside of traditional retail operations. In the past, retailers discovered everything they needed to know for merchandising and product planning by analyzing the sales floor. Today the path to purchase has changed dramatically.

Consumers investigate relevant solutions in the digital domain. They select the right solution and pay for it online, take possession of a purchase in store or via home delivery, and then discuss the experience on Facebook, Twitter, Pinterest, and other sites. These conversations influence others.

The Customers' "Paths-To-Purchase" – Not What/Where/How Retailers Expected!

Since so much of the path to purchase occurs outside of a store, retailers must turn to consumers' digital "breadcrumbs" to understand buyer behavior. These breadcrumbs may be transactional or non-transactional in nature. They give retailers early indications about demand levels and where demand is coming from. This enables them to match supply and demand in new ways.

Digital breadcrumbs are an integral part of "big data" in retail. Big data in retail is defined as new transactional and non-transactional data typically gathered from consumers' digitally enabled paths-to-purchase that can be used to target messaging to consumers at the right moment to enhance the shopping experience. The same data can also be used to predict demand and optimize merchandise plans.

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Retailers must use big data to support customer-centric strategies.

In recent years, the retail industry has focused on operational excellence. Companies optimized the supply side by rationalizing assortments and price, and delivering products at the lowest price to distribution centers and stores. Retailers assumed that consumers would walk into the store, buy products, and walk out with them.

Around 2010, consumers revolted and demanded responsiveness and intimacy that retailers weren't prepared to deliver. The old model focused on commoditization, price, and convenience. Yet, consumers wanted personalization and relevance. This created a huge challenge.
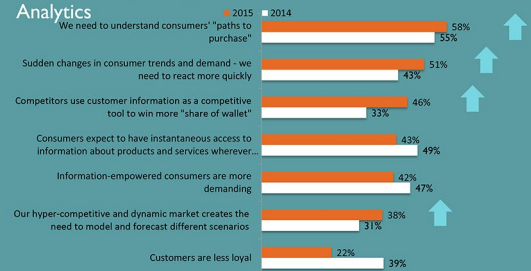
Historically, as companies pursued product-centric strategies, they organized data based on time, location, and product. The main proxy for demand was the transaction at the point of sale. Operational systems fed large fact tables that retailers analyzed to determine the best future product mix. Retailers created forecasts, built assortments, and allocated them to stores, with the assumption that if they built it, consumers would come.

Today, retail big data must be reorganized to reflect the change from product-centric to customer-centric strategies. In today's world, the store has to come to the customer. RSR research supports this:

- **The top business challenges driving retailers' interest in business intelligence (BI) and analytics relate to customer issues.** Retailers recognize the need to understand consumers' paths to purchase, changes in consumer trends and demand, and how competitors are using customer information to win business. Leveraging big data means that retailers can respond more rapidly to consumer demand.

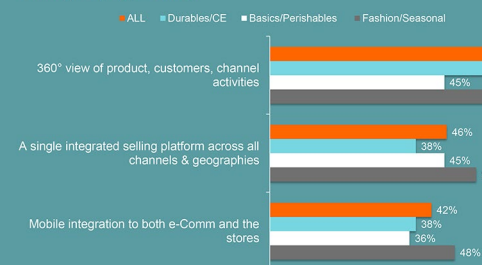### RSR: Next-Gen Analytics Is Focused On The Consumer

Top Three Business Challenges Driving Interest in Expanding the use of BI and Analytics

■ 2015 ■ 2014

	2015	2014
We need to understand consumers' "paths to purchase"	58%	55%
Sudden changes in consumer trends and demand - we need to react more quickly	51%	43%
Competitors use customer information as a competitive tool to win more "share of wallet"	46%	33%
Consumers expect to have instantaneous access to information about products and services wherever...	43%	49%
Information-empowered consumers are more demanding	42%	47%
Our hyper-competitive and dynamic market creates the need to model and forecast different scenarios	38%	31%
Customers are less loyal	22%	39%

- **Retailers see "omni-channel" capabilities as key to future growth.** Retailers are striving to obtain a 360-degree view of product, customers, and channel activities. They see value in a single integrated selling platform and mobile integration to e-commerce and stores.

Why? It's All About Growth

Rate The Value Of The Following "Omni-channel" Capabilities In Enabling Your Company's Growth Strategies (High Value)

■ ALL ■ Durables/CE ■ Basics/Perishables ■ Fashion/Seasonal

	ALL	Durables/CE	Basics/Perishables	Fashion/Seasonal
360° view of product, customers, channel activities	59%	62%	45%	61%
A single integrated selling platform across all channels & geographies	46%	38%	45%	54%
Mobile integration to both e-Comm and the stores	42%	38%	36%	48%

Retailers see the importance of big data, but deriving value from it can be challenging.

In 2015 Penton, in partnership with Hitachi Data Systems, Intel, and SAP, surveyed Penton's retail/restaurant market. Penton received 1,508 survey responses, 415 of which indicated involvement in big data. In addition, Penton conducted social media

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research to see what retailers were saying about big data on Twitter, Facebook, blogs, news, and forums. Observations based on this research include:

- **About half of businesses conduct most business in person.** However, around one quarter of businesses have an even split between in-person and online transactions, and around 12% conduct most business online.

Business Composition: Online vs. In-Person

How much of your business is conducted online vs. in-person?
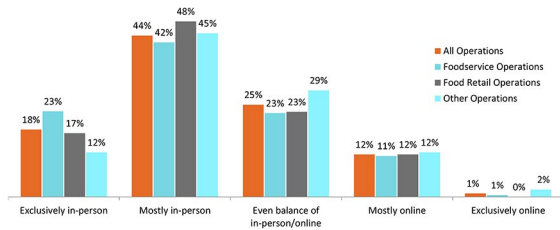

- **For most companies, big data is very important to success.** Most retailers see the importance of big data. However, this does not mean they understand what to do with big data. Regardless of operation type, 63% of survey respondents believe the use of big data is either "very important" or "critical" to the success of their business, and an additional third believe it is "moderately important."

Importance of Big Data to Business Success

How important is the use of big data to the success of your business?

Regardless of operation type, the majority of survey respondents believe the use of big data is either "very important" or "critical" to the success of their businesses (63%). An additional third believe it is "moderately important".
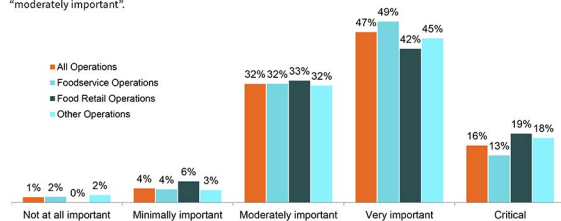

- **Companies believe big data could yield transformational insights.** Over half (60%) want to track guest and customer purchasing, close to half (49%) want to profile guests and customers and evaluate staff effectiveness, and 41% would like to track capacity.

- **The primary benefits of leveraging big data relate to efficiency, performance, and the customer experience.** Around two thirds (65%) of the respondents leveraging big data felt that increased operational efficiency was the primary benefit. Other top benefits included improved performance (63%) and enhanced customer experience/service (62%). As retailers struggle to respond to consumers' omni-channel behaviors, they are doing it inefficiently. They want to know where to position their products to best satisfy consumer needs.

Benefits of Leveraging Big Data

Overall, the primary benefits of leveraging big data include increased operational efficiency (65%), improved performance (63%) and enhancing customer experience/service (62%). Slight variation emerges with regard to benefits by operation type.

What do you consider the primary benefits of leveraging big data?
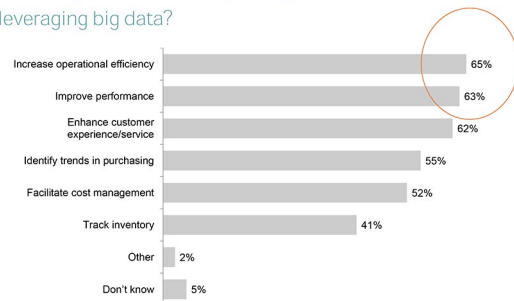
- **Retailers are using big data for predictive modeling.** Based on case studies, social conversations, and industry reports, Penton found that retailers want to predict future actions based on pre-transactional information from the social space. These predictions are used for different purposes, such as restocking stores based on customer behaviors, cross-selling products through coupon marketing, and providing customer support pre- and post-sale.
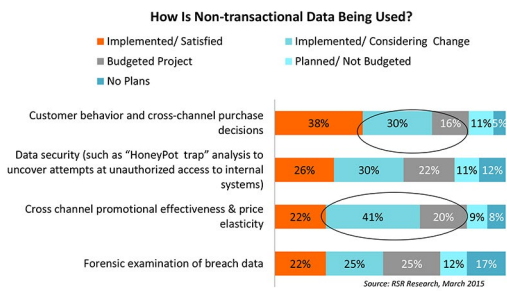
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Online retailers are also using predictive search on their websites by analyzing previous search history and click-through data.

RSR's recent studies support these findings. Non-transactional data is used heavily by retailers to evaluate customer behavior and cross-channel purchase decisions, as well as cross-channel promotional effectiveness and price elasticity. In addition, retailers want to use non-transactional data for product sourcing and assortment curation decisions.
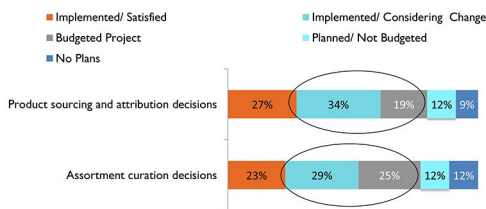
RSR's Recent Studies Back That Up
The Use-cases for Non-Transactional Data are Changing Fast!

How Is Non-transactional Data Being Used?

- Implemented/ Satisfied
- Implemented/ Considering Change
- Budgeted Project
- Planned/ Not Budgeted
- No Plans

	Implemented/ Satisfied	Implemented/ Considering Change	Budgeted Project	Planned/ Not Budgeted	No Plans
Customer behavior and cross-channel purchase decisions	38%	30%	16%	11%	5%
Data security (such as "HoneyPot trap" analysis to uncover attempts at unauthorized access to internal systems)	26%	30%	22%	11%	12%
Cross channel promotional effectiveness & price elasticity	22%	41%	20%	9%	8%
Forensic examination of breach data	22%	25%	25%	12%	17%

Source: RSR Research, March 2015

Cross-channel analysis of any sort was virtually absent until the mid-2000's - yet almost half are contemplating a refresh.

To What Purpose?

To what extent is your company using non-transactional data gleaned from customer-facing digital channels for the following analyses?

- Implemented/ Satisfied
- Implemented/ Considering Change
- Budgeted Project
- Planned/ Not Budgeted
- No Plans

	Implemented/ Satisfied	Implemented/ Considering Change	Budgeted Project	Planned/ Not Budgeted	No Plans
Product sourcing and attribution decisions	27%	34%	19%	12%	9%
Assortment curation decisions	23%	29%	25%	12%	12%

Retailers want to use non-transactional data to assortment plans right and make better decisions about how to source products based on where and how consumers shop

- **While big data offers many opportunities, it is a concern.** Penton's social media study found that retailers worry about anonymous data, data integration, and data security. Recognizing cust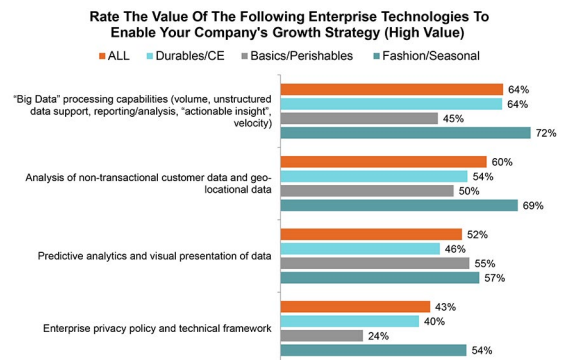omers as they switch between online research and in-store browsing, for example, is a challenge that requires adoption of the same data system for each channel.

- **Retail IT teams face challenges related to big data.** Retail CIOs are struggling to adopt the same data system across departments and channels. In addition, CIOs need solutions that protect both private and anonymous customer data as well as simplifying data management. From a data science perspective, retailers worry that staff will rely too heavily on predictive algorithms, rather than using common sense to interpret data.

Big data is a key enabler of retailers' growth strategies.

RSR's research found that several enterprise technologies were important to retailers as they pursue growth strategies. Big data processing capabilities topped the list and were most important to the fashion and seasonal segment. Analysis of non-transactional customer data and geolocation data, as well as predictive analytics and visual presentation of data, ranked highly among retailers, and especially among fashion and seasonal companies.
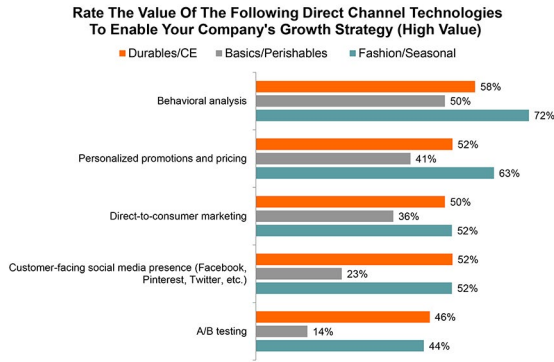
RSR: How Retail Verticals See the Value Of Supporting Techs

Rate The Value Of The Following Enterprise Technologies To Enable Your Company's Growth Strategy (High Value)

- ALL
- Durables/CE
- Basics/Perishables
- Fashion/Seasonal

	ALL	Durables/CE	Basics/Perishables	Fashion/Seasonal
"Big Data" processing capabilities (volume, unstructured, data support, reporting/analysis, "actionable insight", velocity)	64%	64%	45%	72%
Analysis of non-transactional customer data and geo-locational data	60%	54%	50%	69%
Predictive analytics and visual presentation of data	52%	46%	55%	57%
Enterprise privacy policy and technical framework	43%	40%	24%	54%

Retailers are using these technologies to facilitate behavioral analysis, personalized promotions and pricing, direct-to-consumer marketing, customer-facing social media activities, and A/B testing.
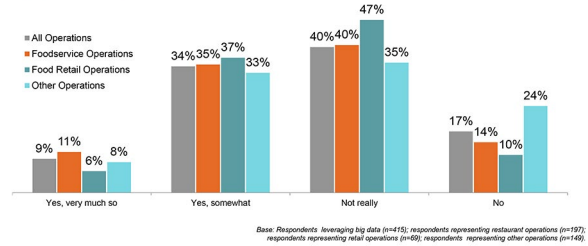
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To Do What?

Rate The Value Of The Following Direct Channel Technologies To Enable Your Company's Growth Strategy (High Value)

Legend: ■ Durables/CE ■ Basics/Perishables ■ Fashion/Seasonal

- Behavioral analysis: 58%, 50%, 72%
- Personalized promotions and pricing: 52%, 41%, 63%
- Direct-to-consumer marketing: 50%, 36%, 52%
- Customer-facing social media presence (Facebook, Pinterest, Twitter, etc.): 52%, 23%, 52%
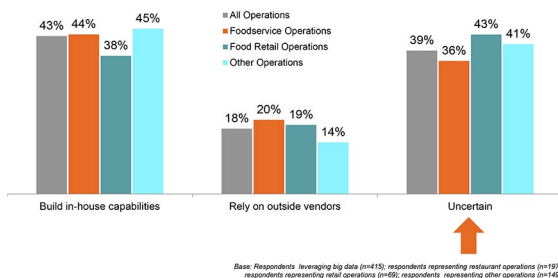- A/B testing: 46%, 14%, 44%

Some retailers are more advanced in planning for big data initiatives and attracting talent.

When asked about their companies' long-term plans for executing big data initiatives, more than one third (39%) of respondents indicated they were uncertain. This underscores the newness of big data for retailers. However, 43% said they were building in-house capabilities and 18% are relying on outside vendors. Despite fairly high levels of uncertainty about how to execute big data initiatives, about half of survey respondents weren't concerned about attracting big data talent.

Long-Term Plan for Executing Big Data Initiatives

What is your company's long-term plan for executing its big data initiatives?

Legend: ■ All Operations ■ Foodservice Operations ■ Food Retail Operations ■ Other Operations

- Build in-house capabilities: 43%, 44%, 38%, 45%
- Rely on outside vendors: 18%, 20%, 19%, 14%
- Uncertain: 39%, 36%, 43%, 41%

Base: Respondents leveraging big data (n=415); respondents representing restaurant operations (n=197); respondents representing retail operations (n=69); respondents representing other operations (n=149).

Concerns about Attracting Big Data Talent

Are you concerned about your company's ability to attract the necessary talent to your business to optimize the big data opportunity?

Legend: ■ All Operations ■ Foodservice Operations ■ Food Retail Operations ■ Other Operations

- Yes, very much so: 9%, 11%, 6%, 8%
- Yes, somewhat: 34%, 35%, 37%, 33%
- Not really: 40%, 40%, 47%, 35%
- No: 17%, 14%, 10%, 24%

Base: Respondents leveraging big data (n=415); respondents representing restaurant operations (n=197); respondents representing retail operations (n=69); respondents representing other operations (n=149).

> Despite the great big data use cases and technologies that are available, it's still very early days for retailers as they address these new opportunities.
>
> *Brian Kilcourse*

Technology companies Hitachi Data Systems, Intel and SAP have helped retail companies leverage big data and generate meaningful business results.

Numerous retailers have adopted the technology from these companies in order to analyze big data and generate actionable insights. This information enables retail companies to drive top-line revenue, increase customer satisfaction, and improve operational efficiencies. Tim Hood discussed four case studies:

1. **Red Bull.** Red Bull sells energy drinks and is known for its affiliation with sports events. The company wanted a customer-centric view of the world, so it created a central database that gathers consumer profile information across multiple channels. By using specific technology, Red Bull has created a single consumer profile, based on information from

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14 different web presences. This information enables the company to make optimum recommendations, based on consumer preferences. The recommendation might be a coupon or a t-shirt for the consumer's favorite football team. This initiative has increased Red Bull's direct-to-consumer revenue.

> With technology and big data, retailers can make the right offer at the right time. This isn't about soft increased customer satisfaction which drives revenue in the long run. This is about concrete, measurable results with revenue.
>
> *Tim Hood*

2. **Bigpoint Games.** This German company has many market-leading games and generates revenue through in-game sales of better tools and weapons. Bigpoint Games loads about 5,000 events per second into its technology instance and conducts real-time predictive analytics. It only has microseconds to make the right offer to customers, based on event information related to gaming behavior and past purchase history. By making the right offer at the right moment, Bigpoint Games has demonstrated a 10% increase in revenue.

3. **A major Mexican department store.** This retailer has around two million SKUs and wanted to understand how individual SKUs were moving. Prior to implementing technologies, it took 36 hours to run a report. As a result, reports weren't generated very often. By implementing the right technology and platform, reports could be run at the sub-unit level on a regular basis and even intra-day. This enables the company to analyze its total capital invested in inventory and make decisions about inventory investments.

4. **Home Shopping Europe 24 (HSE 24).** This German company is similar to QVC or Home Shopping Network. HSE 24 has around six million customers and sells about one million products. The business is based on real-time interactions with consumers, as well as quantity-limited inventory levels that must be updated in real time. By analyzing big data, the company can make relevant real-time offers. This generated a material return on investment and increased revenues and basket sizes.

ADDITIONAL INFORMATION

- **Small businesses and big data.** Big data analytics engines are available that even small companies can utilize. Cloud solutions enable companies of any size to leverage big data.

- **Data Management and Protection - It is key to understand how to manage and protect this data.** Hitachi Data Systems, Intel and SAP have helped many retailers simplify the management of their data.

BIOGRAPHIES

Brian Kilcourse
Managing Partner, RSR Research LLC

Bill Kleyman is an enthusiastic technologist with experience in data center design, management, and deployment. His architecture work includes large virtualization and cloud deployments as well as business network design and implementation. As the VP of Strategy and Innovation at MTM Technologies, he interacts with enterprise organizations and helps align IT strategies with direct business goals. He also publishes freelance whitepapers, articles, podcasts, and blogs around data center, cloud, security, and infrastructure management topics.

Tim Hood
Global VP, Strategy & Technology, SAP

Tim Hood is an experienced retail technology executive with creative problem solving and communication skills. He has deep experience in all facets of the retail technology industry which range from market analysis and product definition through enterprise and application architecture to the management of the development and release process.