The Predictive Retailer
Dynamic intelligence and the science of connected customer experiences
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The impact of the web on retailing is so profound, it’s hard to remember what life was like before online shopping existed. The global retail market will see steady growth over the next few years, and in 2018, worldwide retail sales will increase 5.5 percent to reach $28.3 trillion USD. Digital technologies power almost every step of the consumer path to purchase. Shopping is no longer just a weekend activity or an errand you run when it’s convenient, but rather a perpetual and cyclical journey that can happen 24 hours a day, 7 days a week.

The amount of customer data generated by this around-the-clock shopping activity is a retailer’s dream come true. The explosion of e-commerce, the advent of mobility, and efficiencies driven by programmatic marketing have created a wealth of opportunities for brands to capture signal-rich audience data.

However, the explosion of data goes both ways. Shoppers are bombarded by ads and offers from increasingly homogenous retail outlets. Retail has become so commoditized that customers are faced with the tyranny of choice—typing “red shoes” into the Google search bar returns 280 million Google Shopping hits. Physical retailers that don’t have a digital presence cannot compete, and digital retailers must have a way to stand out and get shoppers to take notice.

This saturation is a marketing challenge in which the traditional “funnel” and “spray and pray” advertising methods no longer prove successful amidst the ever-increasing abundance of messages competing for share of wallet and mind. But it’s also a tremendous challenge to provide a distinctive shopping experience. Retail customer service needs to be at a whole new level. Shoppers expect no less than instant gratification, real value, and exceptional experiences. Nordstrom is renowned for its above-and-beyond customer service.

1 “Retail sales worldwide will top $22 trillion this year,” eMarketer, December 23, 2014
service—hand-delivering the perfect pair of shoes or taking returns on products it doesn’t even carry. Today, that tier of service is the baseline, and retailers are constantly pushing the envelope with touches such as Zappos’ surprise upgrades to VIP services and Amazon’s same-day delivery.

“In a world where the assortment is endless, and price and convenience factors have been exhausted or are no longer a competitive advantage . . . consumers are going to want real interaction,” said Cal Bouchard, senior director of e-commerce at The North Face, a brand that is pioneering the use of advanced technology to create exceptional customer experiences. “So I think technology that can further interactions, help brands and retailers tell stories, and make consumers feel special will be the key.”²

That enormous volume of transactional data being generated by shoppers is the key to retailers creating distinctive, personalized shopping experiences for their customers. In the future, successful retailers will be those that can use this data (anonymously or pseudonymously, to protect privacy) to enable smarter investment decisions that capture mindshare and influence omnichannel purchase decisions. Retailers must use this data to create value for audiences throughout the entire path to purchase. However, the human mind alone can no longer process all the digitized transactional moments that are now generated in real time—let alone govern, analyze, and optimize these moments between the brand and consumer.

At the intersection of these advances in digital commerce, consumer connectivity, and big data, is the rise of machine learning and artificial intelligence (AI)—which enables marketers to not only more accurately predict the context in which a customer would be most receptive to a message to make a final purchase decision, but also empowers retailers to automate and transform customer service experiences altogether. Savvy retailers are already employing artificial intelligence to create distinctive and transformative shopping experiences. The Amazon Echo, a hands-free, voice-controlled digital assistant, lets you do everything from play your favorite music tracks to reorder toilet paper using Amazon Alexa AI technology. At The North Face, an IBM Watson-enabled search engine helps you find the perfect jacket by analyzing the weather, your activity level, your gender, and whether you’re in a remote or urban location, just from a few pieces of information you provide. Macy’s is developing Macy’s On Call, its own intelligent shopping service based on Watson technology.

IBM, Apple, Microsoft, and other major technology players are making their AI technology available to businesses, including retailers, via third-party application programming interfaces (APIs). Within a few years’ time, AI will be everywhere. But the real power of AI is not just in using it reactively to provide valuable information and great experiences based on customer input. Data management platforms must become decision management platforms. The most successful retailers are those that will be able to share

² “AI and virtual reality may propel future of retail,” Computerworld, February 4, 2016
AI modeling and machine learning intelligence across systems to be truly predictive and responsive in real time. They will discover and fulfill customer needs that are not always on the surface by putting millions of actions and data points into context. These predictive retailers will be the market leaders of the future.

As retailers become more skilled at harnessing big data to build predictive intelligence capabilities, they will learn to create more personalized customer experiences and drive operational efficiencies throughout their organization as a result. Predictive technologies can be useful across many different applications—powering product recommendation systems, providing product assortment and planogram analytics with the help of in-store spatial recognition systems, using information from shopper radio frequency identification (RFID) and beacons to customize digital and physical shopping experiences, and automating mundane retail tasks by combining advanced technologies in drone delivery services, mobile payments, checkout optimizers, and connected supply chain platforms.

As these technologies are streamlined to function seamlessly on a unified platform, retail marketers will capture unique attributes per device that will allow them to provide opportunities to message to individual devices more meaningfully and be more predictive about what customers want to do next.

The Internet of Things (IoT) is fueling the next wave of connected, technology-enabled disruption. IoT-driven developments offer retailers the chance to harness new levels of connectedness. The promise of increased real-time visibility and actionable intelligence available from the IoT is becoming a reality. Digital technologies are not only creating wholly new capabilities—automation, for example, enabled by embedded analytics—but are changing the role of employees, redefining how retailers operate their stores at scale.

Big ideas around connected customer platforms continue to pave the path to purchase in more interesting ways, fostering innovation in experience optimization as well as retail operations. For example, we are moving from a retail landscape where digital and physical retailers compete for market share to an era where physical and digital experiences converge to provide one holistic shopping experience. Apple has long been an example of a retailer that strives to blur the line between a physical and digital shopping experience. Luxury retailer Burberry is successfully merging the more practical aspects of digital shopping with the sensory physical shopping experience—so critical to luxury shopping—with online profiles, global purchase history, and in-store technology, fueling a more personalized, efficient, and fulfilling store visit. Meijer and other grocery chains are making shopping more convenient for customers with digital ordering, auto list creation, and pick-up and delivery services—a combination of services that lets shoppers spend as much or as little time in the store as they wish.

These smart retailers understand that while digital engagements can be convenient, so can dropping by the store on your way home. Shopping in the future doesn't mean the elimination of physical stores, but rather the convergence of digital and physical in the way that best suits the individual, to make shopping easier, more satisfying, and more relevant.
Predictive retailers make this new kind of shopping experience look easy: it isn’t. Sophisticated practitioners use a multitude of wireless and integrated systems to combine existing operations with digital touchpoints to focus on customer centricity, supply chain resilience, and in-store operational efficiency. Harnessing effective connected retail applications starts with the integration of data across disparate systems. This integration offers a wide array of applications that can sense, connect, correlate, and automate operational and logistical processes while gathering keen customer intelligence that can infer future purchase behaviors. Business leaders recognize the need to leverage customer data through connected platforms in ways that make their organizations smarter, more efficient, and poised for growth and profitability.

In short, there are three significant macro-trends in retailing that will completely disrupt the industry, by using amplified connections to push the boundaries of what’s possible in business efficiency and customer service and adding tremendous value to the retail industry and the shopping experience:

- Predictive marketing and trend forecasting through machine learning and artificial intelligence
- Agile operations: Leveraging dynamic intelligence to become a predictive enterprise
- Functional integration: Converging digital and physical consumer experiences

The fundamental shift in shopper science technologies is propelled by self-learning systems that get better at tasks over time. Imagine a recommendation engine that knows not only which clothing styles you like, but which ones will fit you best and which colors work on you, and recommends clothing knowing that you’ve gone up or down in size—just like the best and most trusted salesperson or personal shopper you know. Automation workflows that enable these kinds of breakthroughs are being elevated by technologies powered by machine learning and artificial intelligence. AI is already disrupting countless industries by eliminating menial tasks, enabling more accurate personalization standards that drive brand value, and creating more resonant experiences that can both amplify and optimize the entire customer journey.

Intelligent and connected customer experiences are all centered around a framework in which AI in the future will separate the signal from the noise; determine what will make a message more resonant; identify what products are important to specific audiences at both individual and household levels; know exactly where to place a product on the shelf in a specific aisle; and figure out how to make delivery processes so seamless that anything beyond the touch of a single button will seem like overexertion. It will change not just retail, but all customer-facing industries, and lead to implications around how we connect with brands and each other.
Predictive marketing and trend forecasting through machine learning and artificial intelligence

Digital transformation in retail and beyond

With the widespread adoption of the web comes a combinatorial explosion of big data—an unprecedented volume and intersection of attributes with which we can drive business growth and uncover insights and connections that previously remained in the dark. How do you harness, govern, and derive meaning from this explosion of data?

“Machine learning is the automation of discovery—computers learning by themselves by generalizing from data instead of having to be programmed by us,” AI expert Pedro Domingos said in a 2015 interview. “It’s like the scientific method on steroids: formulate hypotheses, test them against the data, refine them—except computers can do it millions of times faster than humans.”

Machine learning and AI are already beginning to power the next generation of innovations, including autonomous cars, personal assistants, simulation sciences, fuel and microbe production, and medical diagnostics. Countless bits of data captured from digital interactions and web connectivity are flowing through modern technology platforms at a lightning-fast rate.

What does technology transformation mean to retailers? How can they use it to thrive, not just survive? More data and more channels mean being able to predict and inform future outcomes. There are more digital and physical paths to purchase. However, data fragmentation makes identifying and understanding these paths a huge challenge. Retailers must evaluate every customer interaction at the level of the touchpoint or impression, understanding all there is to know about the moment in which a message can be made relevant and resonant for a customer. The age of programmatic media buying has created an environment rich with these types of stage-gate signals, which now enable understanding the intersection of physical and digital experiences. The state of data collection for decision-making enhances experiences because customer interaction today is a conversation. It’s no longer about preparing to respond. It’s about listening, asking, answering—it’s a two-way interaction that creates deeper connections between the brand and client.

1 A Q&A with Pedro Domingos: Author of “The Master Algorithm,” UW Today, September 17, 2015
Programmatic marketing delivers an explosion of data

What is programmatic marketing, and what part does it play in predictive retail? At the start of the millennium, we had digital advertising networks. These networks evolved into ad exchanges, in which display impressions could be funneled through a central inventory system. Demand-side platforms could connect and bid on each individual opportunity to show someone an ad prior to that person’s browser loading. Along with this evolution, an influx of data captured from programmatic campaigns ignited a series of shifts at the intersection of digital marketing, e-commerce, and customer experience, which created the opportunity for programmatic marketing.

With programmatic technology, retailers and consumer brands can capture audience intelligence through integrated moments. We can already measure some transactional moments—a single interaction on a website or instances of “showrooming” (that is, browsing for a product at a physical store and then purchasing the product online from a competitor). But the transactional data available to retailers is becoming more sophisticated with new technology: in-store behavior monitored by a connected device, digital signage displays that influence purchase patterns, automatic checkout via RFID or mobile wallet solutions, and autonomous customer service representatives that can match you with the right size or offer style suggestions. Unlike most point of sale (POS) data reporting, digital data is both unique to the individual and longitudinal, making it possible to understand and target the exact person, over time, across locations. Consumer segmentation models that once drove all marketing efforts now serve as a first filter, augmented with digital knowledge and applied to the unique engagement.

All of these moments, in aggregate, inform retailers as they devise ways to automate processes, shorten purchase cycles, predict trends, and personalize customer experiences. Programmatic technology can enable businesses to not only automate the process of collecting and modeling customer engagement data, but also automate decision-making and the sharing of intelligence with other systems—all in real time. With self-learning algorithms, these automated real-time decisions become more accurate with each iteration. Upwards of trillions of daily customer interactions means that programmatic technology today is an extremely comprehensive capability that leverages the increasing connectivity of digital technologies to drive actions and improve results, provides an infrastructure for operational agility that creates unparalleled efficiencies, and reveals predictive insights with intelligence that flows bidirectionally across systems.

Paving the path to purchase starts with the collection and integration of data, combining a broad variety of attributes from media and marketing observations to track demand, sentiment, and brand affinity, while combining these elements with product-specific tags and logistical proxies.
The critical piece here is integration. There’s vast potential for new connections, and the ensuing data that companies can harness for performance and insight is what will drive innovation. The rich data sets that will result from these connections make possible a new level of predictive intelligence and agility in business. However, growth and innovation in the digital sphere also stimulate new complexity.

**The maze of shopping journeys**

To illustrate the new complexity of this digital transformation, consider how the shopping journey has evolved over time. Cisco conducted research in which it evaluated the variety of shopping journeys, from the brick-and-mortar days through the age of Amazon and other e-commerce platforms, and looking forward into the IoT era. With each shift came a combinatorial explosion of complexity.

According to Cisco: “Shopper interactions in the past added up to a total of three linear shopping-journey options: in-store, through a catalog, or prompted by print or broadcast-media advertising. The advent of e-commerce expanded this number to approximately 40. Now, IoT promises more than 800 unique variations of possible shopping journeys.”

Managing this complexity has become increasingly difficult, even impossible, for retailers using legacy marketing approaches, broad audience segmentation, and dated targeting strategies. And the number and complexity of shopping journeys is not about to slow down, but will continue to multiply.

As customers are increasingly becoming the masters of their own digital universe, with the ability and growing expectation to personalize these journeys in new ways—thanks to emerging technologies such as wearables and augmented reality—these complexities will prove challenging. More journeys, many of which are more personalized, don’t lend themselves well to the old way of marketing.

Companies need a new way to gain an understanding of these more nonlinear, unconventional shopper journeys and what influences audiences to make a purchase.

If retailers want to synthesize this complex array of shopper marketing channels, they need to make a pragmatic shift from traditional segmentation approaches to refined predictive solutions. The first step is to understand the range of paths to purchase and the most common avenues to the destination. However, being predictive also means understanding every individual touchpoint along each of those paths.

Every one of those individual moments contains vital contextual data that can inform how to influence that shopper’s behavior within that unique instance. The result is that the retailer can make a decision that suits the precise context of a shopper—where she is, her goals, and even factors like inventory or the weather at the time. The key is to be able to serve the right message as the single opportunity becomes available. Programmatic infrastructure enables this. Brands can dynamically deliver on specific needs, or even predict needs that the customer doesn’t realize she has.

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4 “Winning the new digital consumer with hyper-relevance: In retail insight currency and context is king,” Cisco, 2015
The variety of journeys available to shoppers is growing exponentially

Source: Cisco Consulting Services, 2015
Predictive marketing: From personalization to moment maximization

In today’s world, there are two major value drivers for any business solution: performance and insights that drive more performance. In retail, optimal performance results from offering value at a shopper’s critical moment of need and resonating with the customer in a way that impacts their decision. Immediate action requires more than real-time reflexes—true immediacy requires companies to think predictively.

As more impression opportunities became available, more data attributes and variants could be utilized in real time to make a targeting decision. But this approach still uses programmatic marketing from a segment view of the world rather than an outcome-based view. As programmatic continues to transform the digital advertising industry, and marketers focus more on business outcomes than on targeting tactics, artificial intelligence allows automated optimizations to occur. Marketers no longer need to manually throttle inventory or shift media budgets to the highest performing tactics. The science of prediction emerged when individual impressions were valued against respective outcomes—and consequently, each moment could then be evaluated based on its likelihood to deliver a specific result. This works very well, as AI predictive models inherently apply contextual and behavioral attributes along with millions of other features to expose the most relevant message to a consumer.

The most successful companies will be those that can predict relevance and resonance within a specific moment in time to present someone with the optimal message. Companies can then deliver meaningful and personalized experiences by anticipating ways to drive efficiencies, offer savings, and deepen brand engagement with a customer throughout the shopping lifecycle.
Relevance and resonance—beyond personalization

A common error marketers commit is mistaking personalization for relevance and resonance. We’ve all gotten a personalized email, where a retailer addresses us by name. That’s not enough to impress today’s savvy shoppers. But even an email suggesting clothing related to lifestyle or special events may not catch the attention of a person who is, at that moment, in a home improvement store shopping for a yard project. That customer is a very specific shopper around whom there is a whole other opportunity to engage on a personal level—in a way that fulfills immediate needs and leverages what is top of mind for that person.

Relevance and resonance arise when a retailer knows what you need—sometimes before you know it yourself—and enables you to accomplish what you want to do at that moment—whether that is maximizing loyalty points, getting through a checkout line quickly to catch a flight, or obtaining help from a qualified customer service rep.

Geo-location in a city or even in a store, the browsing history of a smartphone, or interaction data from a Bluetooth beacon can all help a retailer make the right decision on what message to provide that customer—without using any personal data about the individual holding the device. Whereas personalization is explicit, retailers’ efforts to create relevance and resonance may be virtually imperceptible to the customer. Yet it’s enough to enable the retailer to create an experience that is more efficient, cost-effective, and satisfying—that resonates and creates a connection.

By applying analytics, a retailer could see that a particular shopper in a store buys many automotive products and could infer an enthusiasm or aptitude toward cars. That is interesting information, and a coupon for Castrol Oil may or may not be useful. But imagine that a shopper is in a store and sensors determine that his shopping cart is traveling 20 percent faster than average. That customer is in a hurry. He doesn’t need a coupon. He needs to find the fastest way through the store. In the real-time context of that moment, automatic processes that help the shopper check out and get out quickly are more relevant and resonant.

Personalization can be a significant factor in deepening brand engagement. However, the deeper context of relevance in the moment and a more memorable, resonant experience are what build customer loyalty and relationships. Creating the opportunities to achieve this level of precision starts with predictive intelligence through data and analytics.

Data will soon connect the store and the home, through which personal preferences and convenience will continue to be optimized. Relevance and resonance will exist wherever shopper experiences can be accessed and specific customer demand can be met.

The building blocks of dynamic customer intelligence

Many retailers already engage in data-driven marketing—how does that become predictive customer intelligence? Twenty years ago, every retailer planned around a static shopper persona, using planograms, assortment, price, and promotions—all very broad action options that were often based on outdated information. With predictive intelligence, retailers can
look at customers in a more dynamic way. According to Rama Ramakrishnan, chief data officer for Demandware, “The key value stems from the way predictive models look at both product affinities and customers with similar preferences. This allows retailers to present individual customers with new products or promotions they normally wouldn’t have considered or been aware of—but which data science predicts they will actually enjoy. The result: vastly enhanced new opportunities for personalized product discovery.”

Traditionally, business intelligence (BI) and customer intelligence (CI) relied on data delayed by days or weeks that was not tied to any individual. In the 1980s and 1990s, insight that informed product development, location investments, and other similar initiatives took months to gather, requiring manual market research, focus groups, and other time-intensive activities.

Future success lies in dynamic intelligence: real-time, individual-level, in-the-moment data that allows for direct action. Immediate digital data that is properly collected and managed lets you spot signals in a much faster, more complete, more actionable way. Dynamic intelligence has several key features.

Creating an audience data architecture

An audience data architecture, or customer taxonomy, refers to how you organize your data in a centralized system. In the case of predictive marketing, the system is most likely a marketing stack—a combination of a customer resource management (CRM) system, business intelligence tools, a data management platform, a marketing automation platform, and campaign management systems. When trying to unlock and understand a customer journey that is nonlinear and complex, broad audience targeting segmentation won’t get the job done. However, creating data architecture is a good start, because customer segmentation forces you to think about what is similar and what is different about the composition of your customers. The key is to always improve these audience characteristics over time. This is why an agile and iterative analytics cadence results in better insights and more optimal performance. The segmentation in an audience data architecture is based on sophisticated modeling of real-time moments.

Redefining segmentation

Predictive marketers of the future will still use some core segmentation strategies to organize audience data. But more advanced use cases will continue to drive efficiencies in performance and insight.

For instance, AI-powered systems can syndicate segments back and forth, improving audience definitions, refining clusters at an attribute level, and in turn making them richer, based on more fundamental features.

Leveraging propensity models

Predictive marketing moves away from broad segmentation and toward using probabilities to make more informed messaging decisions that amplify the customer journey. Propensity models (also called likelihood models) are core tenets of predictive intelligence and analytics. These models make educated estimations.

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5 “Predictive Intelligence—The Next Stage in Retail Personalization,” Multichannel Merchant, April 20, 2016

6 Levin, Dominique, “The definitive guide to predictive analytics for retail marketers,” 2015
about a customer’s future behavior—this is because a customer’s previous interactions, such as browsing behavior, previous purchases, and interests, as well as metadata about their devices and thousands of other variants, in aggregate paint a holistic picture of the entire customer journey. Propensity models can be used not only to maximize moments of influence, but also to provide a snapshot of a business’s most valuable customers.

**Trend forecasting: Advanced recommendation systems**

Future use cases for recommendation systems are abundant. The key is in the data pass back and syndication capabilities of retail information systems once they are connected through APIs. These are the foundational connections that will power the Internet of Things in retail. These connections are the pipes through which signal-rich data can inform how to engage and influence customers; enable marketers to deliver specific information, convenience, and resonant experiences; and find early triggers for wise investments or logistic decisions.

In the future, achieving granular purchase-based insights will be as simple as presenting the system with the data inputs and desired outputs or business objectives. In one instance, the system can recommend the top three creative assets for a site to display that will increase conversion rates for specific lifetime-value customers. In another example, the system could recommend how to bundle products to achieve maximum margins. And in another scenario, the system could use predictive modeling to help executives decide whether or not to open a retail store in an up and coming part of town. City planning and urbanization data can be integrated with census data to deepen reporting and understand how that store can achieve steady profitable growth.

This type of forecasting most certainly applies to making decisions on what future products retailers will put on their shelves both physically and virtually. Being able to combine data sets from pertinent sources will enable innovative retailers to forecast future trends as they begin to emerge in product categories, so they can make more accurate investments at wholesale prices, saving millions of dollars before markets catch on and drive up prices. This will be critical, because this inherent data will not only give retailers insights on what they should stock up on in the short term but also what types of products to start investing in before those products saturate the market—providing strong ROI potential. As a result, retailers that implement this competitive advantage will not only be perceived as bleeding-edge innovators in the latest and greatest products, but will also be more agile operationally. They will have critical insights to steer their businesses in the right direction.

**Gearing up for connected and predictive customer platforms**

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Common audience clusters in retail

- **Conversion-based audiences** are perhaps the most critical audience clusters. By analyzing at scale the conversions that took place over time against the impression opportunities and ad exposures leading up to incremental purchasers, retailers can not only optimize to the business outcomes they wish to achieve, but also learn about what variants are most influential across the customer journey—which leads to a discussion that moves beyond broad segmentation and into predictive modeling.

- **Life-stage, psychographic audiences and interactions** group audiences based on interactive triggers, or how shoppers behave while shopping. Do they use the website or the call center? Are they thrifty shoppers or big spenders? How frequently do they buy? How much do they spend? These smaller triggers, in aggregate, may present information about the life stage and mindset of a customer.

- **Category-based audiences** group customers based on what types of products they tend to buy. People in one customer segment may tend to buy only shoes, whereas those in another customer segment may buy different types of active wear products, or kids’ clothes, or jewelry.

- **Brand-based audiences** tell you what brands people are most likely to buy. This can be relevant when marketing within a brand, but can also offer broader insights into related brands that may resonate. These clusters begin to reveal what brand loyalty looks like in the form of share of requirements or share of wallet. Similar customers are often segmented based on heavy, medium, or light buyers. These groupings can inform more sophisticated targeting strategies that provide insights about audience affinity.

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Levin, 2015
Predictive marketing through analytics and modeling has huge potential for retailers, but to be effective, it must be intrinsically mapped to business and marketing objectives. According to Dominique Levin, it’s imperative to directly integrate the predictive analytics platform with marketing execution systems such as marketing automation platforms, websites, call centers, apps, POS systems, and advanced business intelligence tools. Taking this a step further means complete integration with data management systems and programmatic platforms. The key is to start with one integrated and actionable model that can drive effective results while generating recommendations, rather than experimenting with all explored models without an actionable plan.

The newest predictive intelligence technologies allow retailers to scale insights and improve the relevancy of recommendations that come out of individual models, even for those consumers who have had relatively little interaction with the brand. Armed with predictive intelligence, retailers can now look at each customer as an individual and as a unique engagement opportunity.

What’s more, core insights from data clusters can help the retailers design an agile companywide framework that can improve operational efficiencies, drive more impactful ROI, and continue to deepen customer experiences in meaningful and measurable ways.

Predictive intelligence through digital innovation is not only transforming the way brands engage with audiences to drive purchases. It is also disrupting the way retailers do business. One of the biggest ways intelligent decision-making platforms can inform how businesses strategize and take action is by drastically improving operational agility, both in terms of customer service and internal processes.

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*Levin, 2015*
To achieve peak operational agility, businesses need systems that enable retailers to execute seamless data integration, granular audience insight, and real-time activation. From a user experience perspective, the right solution architecture creates a business intelligence platform that can help maximize customer moments based on resonance and relevance. On the back end, this same solution architecture can also help sustain long-term innovation and steady, profitable growth for retailers.

With this system in place, retailers can realize a number of efficiencies—for example, in customer service. According to the Cisco study, customers value efficiency, savings, and engagement. Retailers have addressed digital demand by creating more channels, but an influx of channels doesn’t necessarily equate to more value or a more cohesive, seamless path to purchase. To achieve a more long-term effect that gives customers the things they value most, retailers need to be more innovative and deliberate in their approach—and operational efficiency is critical to making that shift.

Certainly, digital shopping platforms can significantly offset operational costs and create efficiencies. But digital innovations can help achieve efficiencies in brick-and-mortar stores as well. Across the board, processes can be improved and automated, eliminating manual tasks, operations, and legacy systems that cannot keep up with the influx of brand channels, shortening attention spans, and increasing information. Retailers can respond with nimbler solutions that leverage business intelligence and customer data in broader ways.

However, one of the more significant improvements that comes with digital efficiency and operational agility lies in innovation. An intelligent digital platform enables businesses to test, learn, and tweak, giving them the freedom to build initial proof of concept solutions and improve them through rapid iteration. In other words, retailers gain permission to try new concepts—and fail—without significant consequence. With this environment of constant, recursive iteration, retailers can quickly optimize value for audiences and achieve significant returns when experiences or services gain traction in market. Each of these promising solutions can bring significant returns to retailers. And each one starts with solid information through which behavioral proxies can be mapped to the individual user level.
Leveraging untapped data to serve customers more efficiently

With retailers, as with most businesses, having "enough" data is not the issue. Most organizations have mountains of valuable data—much more than they ever use. They simply lack the ability to exploit it. This “dark data” could potentially lead to insight, but it instead lies untapped. To derive insights from all data, dark and otherwise, you first need the means to capture it.

Next-generation technologies such as wearable computing devices, augmented reality, and connected home technology are reaching a tipping point and stand to become significant for the retail industry. Consumers are increasingly ready to adopt these technologies—including a more converged digital environment that leverages both in-store and anytime shopping—to make shopping experiences more meaningful and efficient. Again, these opportunities create a foundation for being a more data-driven enterprise, but this capability needs to be harnessed intelligently.

The contextually aware retailer can set and automate dynamic processes, while deploying resources accordingly to heighten consumer emotions at pivotal moments of decision or at other critical points along the shopping journey. For example, a store associate can receive an automatic prompt to lower a price for a customer who tends to shop sales, or a platform can serve up a particularly compelling ad that is more likely to grab an individual customer based on purchase history. Retailers can seamlessly integrate people, processes, data, and experiences—to the benefit of the retailer and the shopper.

What a retailer should not expect is a perfectly linear process through the traditional marketing funnel. With customer journeys, one size does not fit all. Retailers must employ a holistic perspective that takes into account that most customer journeys are nonlinear, with channels, options, and means to reach audiences that are exponential. Once devices are connected—including the Internet of Things (e.g., shelves, shopping carts, displays)—processes can become dynamic, automated, and capable of driving competitive advantage. But this kind of performance starts with building a central integrated business intelligence and audience hub where retail stores can harness, govern, and analyze data, and syndicate decisions to increase business agility and begin to predict customer needs. This hub serves as the foundation for the retail store of the future.

This future store may be an amplified showroom that helps audiences become smarter shoppers—a responsive environment that enables micro-personalization at scale. These stores will become emotional destinations that drive deeper interactions, where every store associate is a shopper advocate. Technology will drive value and remove roadblocks to meeting customer needs. This highly personalized sensory environment will be powered with tools that connect business processes with right-sized customer experiences.
Connected retail, big opportunity

According to the Cisco (2015) study, retailers believe it’s possible to fully automate up to 50 percent of their existing manual operational processes. However, many operational processes are embedded in business applications such as enterprise resource planning (ERP) systems. As a result, retailers lack true visibility into their operational environments.

In retail organizations, future value will come from real-time analysis and activation of data from connected sources—many of which were previously unconnected. POS systems, tracking devices using barcodes or RFID tags, and GPS-enabled fleet logistics will talk to a new generation of data sources, such as shelf-edge labels, equipment and device sensors, smart digital signage, and beacons. And all of these will communicate bidirectionally with the enterprise-at-large.

Forward-thinking retailers understand the need for having predictive and programmatic systems that can automate decisions in real time. Analytics are too often constrained by a nightly batch-processing model for store data. For instance, with a traditional data warehouse model, it might take days or weeks to transmit all the data back to a central repository, sort out what is relevant, and extract insights that improve operations or customer interactions. By that time, of course, the customer has left the store, and the opportunity to add value is gone. Digital platforms propelled by machine learning and artificial intelligence automate purchase paths and operational processes that can be too complex for humans to execute at the speed and scale required to achieve optimal results. This is why real-time data pass back and syndicated decisions are critical for success.

In another example, online retailers gain key insights from the rich data created by the “clickstream” as consumers browse, research, and purchase products online, registering their likes, dislikes, and interests. Online retailers then use this data to gain a better understanding of each shopper’s journey. Retailers can now, in effect, bring this clickstream into the physical world and gain real-time insight into constantly evolving micro-segments within their customer base.

Incremental lift models can then be created to drive penetration and purchase frequency. These models, based on third-party attribution reports, inform brands and retailers how to tactically buy impressions via programmatic exchanges. Ideally, campaigns should use product-specific attributes (PSAs) and ad campaign impressions, creating test and control groups within a sampling engine. Using the attribution reports, advertisers can develop an uplift curve and incremental purchase projections, which can then be mapped to incremental offline sales. The goal for evolution would ultimately be to assess offline sales and all the attributes and variant combinations that drive lift.
Customer insight informs the store of the future

Customer data is a powerful asset for today’s retailer, made even more powerful by device and channel connectivity. With the advent of data collection and analysis, we’ve been able to measure what types of brand messages influence lift in purchases. But now data, in communication with other systems including the IoT, can tell us in real time and with increasing accuracy how to develop an optimal store configuration, where to place products on shelves, and what future store locations and investments will achieve the greatest returns for the company.

But the considerable worth of data doesn’t lie only in customer service—it’s also a precious commodity in business operations. In-store data can influence staff optimization, planogram compliance, and loss prevention, among other operational concerns. How many employees will a location need on Black Friday if the weather is clear, as opposed to if it’s snowing? What’s going to be the hottest product this year? What are the most logical product bundles to help move merchandise more quickly? What’s the optimal store traffic flow to prevent long lines and altercations? How do you more effectively prevent theft with heightened crowds and chaos? Customer data, store performance data, and even external data such as weather and construction reports can help retailers predict the answers to these questions more accurately than ever.

One large office supply company deployed sensors and cameras throughout the store to examine interactions between associates and customers, category-level conversion, dwell times, customer traffic heat maps, and paths to purchase. This information, combined with existing transactional and other data, is allowing management to answer questions that go far beyond store operations alone—things like conversion by product category. These insights will help management shape the complete customer journey, not just in stores but online as well.

As online and in-store experiences converge, all data taken in aggregate, from the one-click purchase to in-store browsing patterns, can help trigger the right real-time decisions to help increase value and performance across all channels. Decisions and data in physical locations should inform data and decisions in digital e-commerce platforms, and vice versa. The power lies in combining this intelligence to create a unified view of the customer.

Behind the scenes: Implementing the connected supply chain

Connected devices and products provide retailers with the opportunity to help optimize operations in the face of a more complex supply chain, increasingly important digital channels, and a more demanding customer. RFID technologies can improve the precision of inventory tracking. Data visualization technologies make it easier for employees to gauge inventory performance across the supply chain. Data visualization also applies to customers, allowing them to track any order through the production and distribution process.
Optimizing supply chains offers significant potential to generate greater value in retail, whether through leveraging scale in negotiating with suppliers, improving efficiency and productivity in warehouses, reducing the need for stock checks, automating resupply, or improving collaboration and communication with suppliers. For example, when one large retailer overhauled warehouse operations, improving efficiency and safety was a high priority. In the previous warehouse layout, the poor timing of key deliveries and lack of communication among staff created major bottlenecks—and a high risk of workplace accidents.

First, management used Wi-Fi data to track handheld scanners and forklift trucks in the warehouse, which enabled managers to see exactly where and when the bottlenecks and safety hazards occurred. Then the company optimized traffic routes through the warehouse, specifying exactly where drivers should go—and in which direction—as they picked items for an order. Workers no longer had to spend time making decisions on where to go, and in what sequence, to fulfill a given order. After implementing this system, the company saw a substantial increase in the number of orders filled per shift and a reduction in the risk of collisions on the warehouse floor.

In another example, Italian pasta producer Barilla needed to improve visibility across its entire production chain, from field to finished product. This higher visibility would not only improve food safety, but would increase transparency with customers, who increasingly want to know where their food comes from. Barilla piloted track-and-trace technology on a limited number of its pastas and sauces. By scanning a QR code on the package for these products, consumers can now see information on everything from where the ingredients for that particular batch were grown to a detailed view of the item’s journey through the production process. The new tracking process provided significant marketing value and added increased compliance and quality control capabilities, because the ability to trace foods through the whole chain of production is critical to meeting increasingly strict international standards on food safety, quality, and origin.

According to Accenture, the “Industrial Internet” describes how companies are leveraging cloud, mobile, big data, and other technologies to improve operational efficiencies, foster innovation, and more tightly integrate the digital and physical aspects of their businesses. The combination of the Industrial Internet and IoT devices could add more than $14 trillion USD to the global economy by 2030.

These technologies hold much future promise. Retailers could potentially use web-enabled smart tags to raise or lower pricing in real time, depending on product supply and demand. Kroger is now testing smart-shelf technology in its grocery stores, where shelves display dynamic digital price tags and, soon, sync with a shopper’s mobile application to help them find items on shelves or remind customers about add-on purchases, such as baby wipes when

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10 Accenture, 2015
buying diapers. Digital tags already help store employees more efficiently tag and price items, freeing them up to spend more time interacting with customers.

Other IoT devices can be integrated within the supply chain to further improve store operations and help reduce cost. IoT-enabled sensors can monitor lighting and temperature controls and adjust settings to improve customer comfort and support more cost-effective energy usage.

**Agile, predictive, and personalized marketing**

The interactions that flow across the retailer ecosystem are owned data for the enterprise, and the number of these interactions keeps growing. Insights come from the patterns that emerge from these first-party touchpoints, which increasingly help retailers blend physical and digital experiences to deepen engagement while driving efficiencies.

Retailers that can optimize their physical footprint while boosting sales effectiveness can also optimize operating costs, drive commercial performance improvement, and deliver higher quality service. As patterns emerge from data that help personalize experiences at the user level, retailers will also begin to differentiate shop formats and new discrete service models, moving away from a one-size-fits-all approach for marketing. Data streams that move across devices and channels will enable right-sizing of customers while providing better information on products than ever before, increasing satisfaction and reducing the number of returned purchases. Territorial coverage evolution will enhance digital channels, enable intelligent remote advice, and migrate transactional activity to the channels that will maximize purchases. As a result, products become more widely available to customers in those respective channels. This next wave of platforms will also support alternative means for payment and transactions, increasing convenience.

Retailers will be able to assess customers across all channels to define very targeted moments in which customers will be responsive. As this capability accelerates, retailers will be able to forecast demand more accurately with advanced analytics, creating niche experiences for micro-segments with as many messages as there are individual personas. Brands that can offer a modular, features-driven, just-for-me customer product, while at the same time practicing minimum viable distribution methodologies that reflect agile product development processes, will lead the market, winning the hearts, minds, and wallets of a new group of cherished loyalists.
As the IoT drives exponential change—and opportunity—customers and retailers will see the shopping journey shift dramatically. For the predictive retailer and the customer, the line will blur between online and in-store shopping, culminating in one seamless, data-driven shopping experience. “Soon, words like ‘omnichannel’ and ‘experiential’ will be as quaint as saying something is ‘fresh’ or ‘on fleek,’” said John Bricker, creative director at Gensler, the global design and architecture firm that has designed stores for Room & Board, The North Face, Uniqlo, and other forward-thinking retailers. “These words will be inevitably replaced by the simpler, and more inclusive, ‘shopping.’”

Online retailers are beginning to test the waters of a more converged business model. Warby Parker, Frank + Oak, and the Tie Bar opened brick-and-mortar showrooms in high-rent locales. Even Amazon is opening physical stores, where you can buy books, Kindle readers, and accessories, and scan the barcodes of products with your Amazon app or in a special kiosk to get pricing, product information, and reviews. But whether these early-stage experiments will result in truly convergent experiences for the customer remains to be seen.

To achieve this next retail frontier, customer data needs to be captured efficiently to drive insights. A test, learn, and tweak model with predictive analytics helps stores understand what types of products would be most profitable and for what audiences, which will naturally carry over into brand messaging and omnichannel strategies. But aside from the functional requirements, how does a traditional, or even traditionally online, retail company get from now to the future of the industry?

11 “Stores must learn to think like Facebook,” Business of Fashion, July 10, 2016

12 “Does Warby Parker need actual stores?”, Slate, November 16, 2015

13 A trip to Amazon’s brick-and-mortar store,” Paste, March 16, 2016
Personalized journeys and optimized moments: Touchpoints that connect consumer paths

Today, audiences can construct individualized shopping journeys, including product research, purchase, delivery, and product support, using a variety of channels—from interactive pages and chat boxes to traditional call centers and in-store resource kiosks. Customers already know how to use technology to optimize each step along the way. The de facto hub for these interactions is the ubiquitous smartphone. The adoption of smartphones continues to increase, and Cisco estimates that by 2019, 40 percent of all consumer transactions will occur via smartphone.¹⁴

Customers are embracing smartphones, but traditional retailers are slowly evolving away from a love-hate relationship with mobile devices. Most notably, brick-and-mortar retailers are wary of smartphone-toting shoppers who showroom and then purchase online—often from digital competitors that connect with them in new, effective ways that exploit data-driven insight. However, the reverse, "webrooming"—where shoppers browse online and purchase in-store for immediate gratification—is gaining popularity. Traditional retailers are leveraging both of these practices, capturing data to inform in-store experiences and, in a critical step, combining it with data from their online presence for a powerful, holistic customer view.

¹⁴Cisco VNI Global Mobile Data Forecast, 2014–2019
already uses heat sensors in stores to track customer movements, enabling them to place premium products in high-traffic areas.

Functional integration requires retailers not only to be cognizant of the many paths to purchase within the overarching journey, but also to have an awareness and discipline to account for brand experiences at very granular levels. The following are approaches and strategies for achieving holistic shopping within the retail enterprise.

Integrate online and offline

Smart retailers are leveraging the increased power of functional integration and data and are revolutionizing the way consumers shop for goods and services. Big data is everywhere and connected to action via decisions. It is helping e-commerce companies bring the best parts of the offline shopping experience to the online space, and vice versa, with seamless integration.

Disruptive innovators (Groupon, LivingSocial, Gilt) have successfully targeted consumer savings, which exacerbates margin compression for many companies, not just within retail but across all verticals. Retailers are responding by attempting to boost engagement, ideally bringing customers into the store to try to cross-sell and up-sell bundled and higher value goods. This is also the strategy behind loss-leaders that bring customers through the door seeking those specific products that are always cheaper than the closest competitor.

Build new business models

To create dynamic experiences, retailers need new business models. In the future, every retail company will, by default, be a technology company, with digital platforms through which customer data can be captured to drive insights. If retailers are to meet the demands of the new digital consumer, innovation and optimization will need to be nearly constant.

In recent history, we’ve seen many market leaders that suffered the dire consequences of failing to foresee the shift to at least a partially digital business model. Notably, in 2014, an alarming number of retailers closed underperforming stores, filed for bankruptcy, or simply went out of business. Still more retailers, while recognizing that technology was changing the industry, made heavy investments in the wrong things that ultimately did not pay off.

While many organizations have digital business transformation initiatives planned or underway, Gartner predicts that only 30 percent of these efforts will be successful.¹⁵ You cannot transform your business model with a piecemeal or siloed approach—you need to break down silos, change culture, and possibly develop new skill sets. From the CEO on down, the organization must fully support a move to become a digitized organization and must embrace a digitally connected world. Otherwise, investments will most likely be futile.

In addition to traditional digital and human organizational shifts, the IoT will be a game-changer and should not be overlooked. IoT-optimized organizations have the

ability to efficiently allocate and reallocate resources, dynamically move insights to the point of greatest impact, securely break through physical and virtual boundaries, and move across markets. With the right business models, a robust ecosystem, and the right executive-level support, retail organizations can change and innovate to create competitive and resonant experiences and maximize revenue.

**Apply advanced cognitive technologies**

We often associate machine learning and AI with personal assistant technology, à la Apple’s Siri. However, organizations are now disrupting a much wider space beyond the digital assistant, with limitless possibilities. E-commerce has been radically transformed by AI. Predictive marketing and analytics can be a mysterious realm for many retail marketers, and understandably so. It’s one thing to harness a huge volume of customer data; it’s another to figure out the most effective way to govern, analyze, and make decisions with that data to measurably improve business outcomes.

**AI is the future of e-commerce**

Artificial intelligence will continue to drive innovation across all industries. Specifically in retail, here are the areas most impacted by AI-powered solutions.

**Product recommendation engines**

Recommendation engines are nothing new, but they are getting smarter and faster, recommending products to customers with seemingly sharp intuition. They also significantly impact the bottom line—at Snapdeal, one of India’s largest online retailers, predictive algorithms drive 35 to 40 percent of sales.16

Recommendation algorithms vary in method and sophistication. Amazon recommends products based on user site activity and past purchases. Netflix recommends DVDs by preferred category based on viewing history, as well as ratings, likes, and other satisfaction or engagement triggers. eBay, however, takes a more advanced approach, collecting extensive user data to recommend products to users who have exhibited similar behaviors. With a wider breadth and depth of data available and AI engines communicating to one another, recommendations will only grow more sophisticated and accurate with time.

**Intelligent agents**

Automated intelligent agent negotiation systems are becoming increasingly common and useful in e-commerce with the development of artificial intelligence and speech recognition capabilities. Intelligent agents perform three main functions in retail:

- Match buyers and sellers in online marketplaces (determination of product offerings, search of buyers for sellers and vice versa, price discovery)
- Facilitate transactions (logistics, settlement, trust)
- Provide institutional infrastructure (legal, regulatory)

16 “How algorithms will drive the growth of e-commerce in the future,” The Economic Times, January 8, 2015
As fully automated systems, these agents control their actions and internal state, interacting via an agent communication language. They not only act in response to their environment but can take outward initiatives, generating their own targets and acting to achieve them.

**Assortment intelligence tools**

Increasingly, consumers demand that multichannel retailers competitively match lowest prices. But assortment also relates to the broader breadth and depth of the offering, so brands, colors, sizes, flavors, and a variety of other criteria could be automatically generated to suggest the most relevant products to the customer. To meet this demand in real time, companies need to maintain dynamic intelligence strategies. Assortment intelligence tools give retailers the unprecedented ability to gain around-the-clock visibility and insight into competitors’ product assortments. Companies can monitor competitors’ product-mix segmented by product and brand, combined with the percentage of overlap, which gives them the ability to immediately adjust their own product-mix and pricing with high accuracy.

**Visual search and image recognition**

The promise of intelligent image recognition is finally being fulfilled in the retail world. By simply dropping a picture of a preferred product style or color onto the search bar of an e-commerce platform, a customer receives a list of matches, ranked in order of likely customer preference.

**Voice-powered search**

We've already seen intelligent, voice-powered speech in action via smartphone personal assistant technology. But voice recognition is stepping up to the next level.

How far has voice technology advanced since the early, garbled days of speech recognition software? Deep Speech 2, created by the research arm of Asian search giant Baidu, relies exclusively on machine learning for translation. It can process millions of examples of transcribed speech in a moment, transcribing snippets of Mandarin faster and more accurately than a person. This is especially revolutionary in Asia, because of how time-consuming it is to input text into a mobile device). As Andrew Ng, Baidu’s chief scientist and an associate professor at Stanford University, said, “I hope to someday have grandchildren who are mystified at how, back in 2016, if you were to say ‘Hi’ to your microwave oven, it would rudely sit there and ignore you.”

Deep Speech 2 and similar technologies have the potential to enable shoppers to engage in real-time, seamless voice conversation with a virtual shopping assistant, in a busy store, in a noisy concourse, or virtually anywhere via mobile device. There’s a scene in the movie, “The Minority Report,” where a digital display, using retinal recognition, greets a customer by name and asks about recent purchases. We may not be too far from that reality.

17 “Baidu’s deep-learning system rivals people at speech recognition,” MIT Technology Review, December 16, 2015
18 “10 breakthrough technologies 2016,” MIT Technology Review
Building a predictive retail enterprise and data-driven ecosystem

When we imagine the future of predictive retailing, we talk a lot about front-end customer experiences. But back-end technology needs to be equally sophisticated and symbiotic to the front end in terms of leveraging data to inform messaging opportunities. Notably, this means aligning more closely than ever with consumer packaged goods (CPG) partners to share data more effectively. Sales signal data from retailers can drive a more effective CPG supply chain, improving optimization triggers for offline sales impact.

**Selling in the age of post-demographic consumerism**

Inherent predictive data is the future of marketing and will overrule traditional, static segment-based approaches for targeting consumers. We are entering a period known as “post-demographic consumerism,” in which consumption patterns are no longer defined by traditional demographic segments such as age, gender, location, income, and family status. New rules about targeting present a significant challenge to retailers already grappling with growing complexity in their operations. It is still commonplace to attach certain technology-related shopping behaviors and expectations to, for example, luxury buyers. However, this demographic looks less and less like it did 10 years ago, with younger, more connected buyers increasingly driving global growth and selective luxury—people willing to pay a premium for some items and experiences while cutting corners on others—becoming the norm. This is why retailers must move away from a segment-based approach for targeting audiences.
We’ve talked extensively about the computational power, agility, and types of data you can leverage to create a connected customer experience. How do you put it all together to enable bidirectional engagement with shoppers and meet the right customer needs at the right time?

The customer journey isn’t a single path to purchase across set channels, but myriad touchpoints that tell a larger story when attributes can be evaluated across the digital media ecosystem. Some of those touchpoints reach consumers at home, others online, and some in the store. If a marketer can track everything from soft triggers like browsing behavior, geo-location, logistical proxies, impressions served, creative tactics, and device exposure information, AI-powered systems can not only reveal the elements that drove results, but also automate real-time impact when it matters most.

The key to a connected, relevant experience is the customer’s mobile device, where retailers can integrate both on- and offline data at the user level. A customer’s smartphone or tablet is what links purchase paths in the home to that of physical stores, providing a wealth of variants that can be analyzed to optimize what would make that experience more meaningful based on triggers that signal intent—whether that intent is to seek advice, buy an item quickly, pick up or deliver, or find a different or complementary solution. As data flowing through these touchpoints connects store, home, and customer more seamlessly, meeting personal preferences and enabling convenience will become more seamless as well. Relevance and resonance will exist wherever shopper experiences can be accessed and specific customer demand can be met.
The connected consumer experience

IN-HOME ENGAGEMENTS
- Media exposure
- Brand engagement
- Media/content habits
- Connected household devices

IN-RETAIL ENGAGEMENTS
- Transactions
- Product engagement
- Customer service interactions
- Brand/product affinity

OFFLINE CONNECTIONS
- Transactions
- Location information
- Consumer behavior

MOBILE INTERACTIONS
- Media exposure
- Location
- Media/content habits
- Transactions
- Device synchronization

TV media exposure
- User engages with brand site

Product purchase
- Location verification

Retail purchase & loyalty confirmation
- Retail app usage
- User suppression
The predictive retailer audience hub

**Predictive:** Score the potential of every moment to influence customers

**Integrates all enterprise data**

**Activates media across all partners**

**Predictive analytics**

**Agile and connected:** Engagement tracking and measurement

Building an audience hub through which data can flow into a single repository—from the home, the physical store, unique user devices, and other enterprise systems—is the key to creating optimal connected experiences. This consists of a marketing technology stack that can curate data from fragmented sources, activate that data in real time, and dynamically evaluate impression opportunities while improving the organization of data sets over time. The more data that can be captured, the more patterns can be recognized by cognitive systems that can learn in a perpetual manner. These insights can be made actionable—driving results and creating deeper and resonant brand connections for emerging loyalists.
Conclusions

The path to connecting customer journeys is evolutionary. Many retailers have made great strides with their investments in omnichannel capabilities, and they are beginning to make important investments in IoT capabilities as well. But there’s still a long way to go. According to Accenture, “The Internet of Things presents an opportunity for retailers to develop a vastly improved ecosystem that connects physical and digital worlds, allowing bidirectional, real-time interaction with consumers both inside and outside the store.”

For retailers of the future to deliver relevance and resonance and to build a dynamic infrastructure and processes—in essence, for them to survive—they must excel at these three core competencies.

**Predictive.** By overlaying artificial intelligence and analytics on top of e-commerce technologies, retailers can gain real-time anticipatory insight, giving them the ability to predict what customers will do next with unprecedented accuracy. The right product bundle for the right person can be in place before the customer even walks into the store. Staff can be placed optimally for the best possible service and efficiency based on how quickly the parking lot fills each day of the week.

**Agile.** Nimble infrastructures and organizational models are critical to truly dynamic customer and back-end experiences. When business processes can change iteratively, human, technology, and product resources can be brought to bear in real time with tremendous efficiency, in a way that appears prescient and seamless to the end customer.

**Connected.** By implementing and automating IoT technologies such as sensors, beacons, and RFID tags, and by employing machine learning technology, retailers can capture value from all of the intelligence and speed that is now available to them, to bring both dark data and previously uncaptured data to life and gain true visibility into an individual’s actual shopping experience as it happens.

Only then will retailers be able to see how the customer experience spans across digital and physical environments. And only then will retailers have the situational awareness to be able to provide exceptional customer experiences that are efficient, contextual, relevant to immediate needs, and effortless for the participant. To provide ultimate value to the consumer throughout the shopping journey, retailers must provide a combination of efficiency, savings, and engagement. Implementing dynamic processes in the retail organization through agile frameworks will drive critical differentiation as retailers become empowered to offer the kinds of relevant and resonant experiences that customers now demand.

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19 “The Internet of Things: Revolutionizing the retail industry,” Accenture, 2015
Five strategic imperatives for predictive retail

Moments not segments
Traditional marketing segments are rooted in historical data. Predictive businesses build models that include transactional moments for real-time accuracy and the power to anticipate and exceed customer expectations.

Journey not funnel
Predictive businesses know that a sale or conversion isn’t the final transaction. The customer’s journey never ends, and the path to conversion is often nonlinear. Businesses that can anticipate future actions are the ones that will succeed.

Owned not rented
First-party data is a predictive organization’s biggest asset. The best decisions and innovations come when truly leveraging this proprietary data.

Decisions not data
For the past decade, data management platforms have been hubs for data centralization, normalization, syndication, and analysis. Today, data management platforms must evolve into decision management platforms and exchanging models, with syndicated intelligence replacing syndicated data. In other words, one system’s AI talking to another system’s AI.

People not devices
Predictive organizations are customer-centric, not product- or device-centric. All transactions and devices tie back to a universal ID of a single person or household.
About Sizmek

Sizmek is the largest independent buy-side advertising platform that creates impressions that inspire. In the digital world, creating impressions that inspire is vital to building meaningful, long-lasting relationships with your customers. Sizmek provides powerful, integrated solutions that enable data, creative, and media to work together for optimal campaign performance across the entire customer journey. Our AI-driven decisioning engine can identify robust insights within data across the five key dimensions of predictive marketing—campaigns, consumers, context, creative, and cost. We bring all the elements of our clients’ media plans together in one place to gain better understanding for more meaningful relationships, make every moment of interaction matter, and drive more value across the entire plan. Sizmek operates its platform in more than 70 countries, with local offices in many countries providing award-winning service throughout the Americas, EMEA, and APAC, and connecting more than 20,000 advertisers and 3,600 agencies to audiences around the world.