The Future of Retail & E-Commerce: How IOT shapes shopping, today and tomorrow
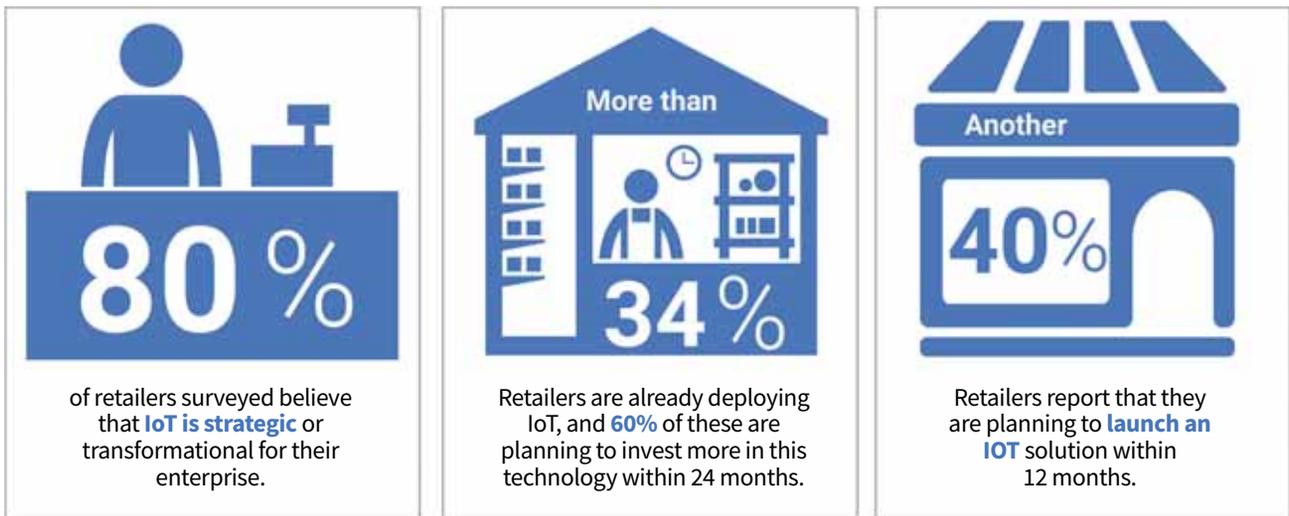
– By **Mike Ghasemi,** Research Director, APAC, Retail Insights & Head of WW Hospitality and Travel, IDC Asia Pacific

You've likely heard of the Internet of Things (IoT), but may not be sure what it means for retailers. For many in the industry, it's disruptive technology that is already impacting the customer experience, and the bottom line for retailers. Discover what IoT is, and what it may mean to you in this special IRF report.

THE IMPACT OF IOT ON E-COMMERCE IS UNDENIABLE

E-commerce is growing every year and shows no signs of slowing down. E-commerce growth has regularly outpaced the total retail market over the past six years, and currently, e-commerce makes up 6 to 8 percent of the total retail market.

Today, digitally-connected shoppers expect a true omni-channel experience at every touch point. They want to find the right information at the right time at the right location. Location-based technology in a retail environment identifies the path that customers take to reach specific areas of a retail floor, and helps enhance the shopping experience. This is why the Internet of Things (IoT) is starting to take e-commerce to the next level, and will likely disrupt the traditional retail process in the coming years in a major way. Consider the following facts from IDC.

80% of retailers surveyed believe that **IoT is strategic** or transformational for their enterprise.

More than **34%** Retailers are already deploying IoT, and **60%** of these are planning to invest more in this technology within 24 months.

Another **40%** Retailers report that they are planning to **launch an IOT** solution within 12 months.

From these and other statistics, it's clear that IoT is rapidly advancing into the retail industry, although it's adoption is progressing unevenly across the subsectors. In India, retailers have been slow to adopt IoT. Part of the reason for this is likely some apprehension, or perhaps a lack of knowledge, and a general distrust of new technologies, especially those with the potential to change things so radically.

To help retailers in India better understand the significant advantages, and more readily embrace a future with IoT, we've prepared this report.

The goal is to answer these four overarching questions:
- What is the Internet of Things?
- What is the IoT ecosystem, and what are the business opportunities?
- What are the IoT trends, growth forecasts, and other predictions?
- How is IoT used in action – devices, applications, and real-world examples?
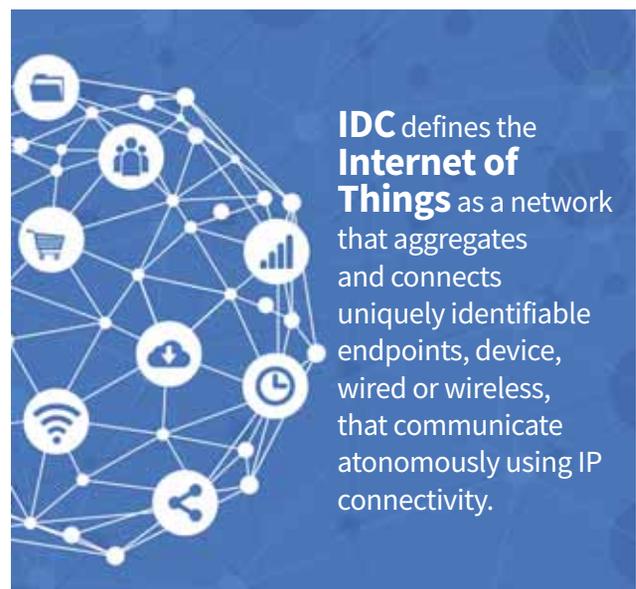
WHAT IS THE INTERNET OF THINGS?

There is more confusion and uncertainty about the Internet of Things than about most other technologies. This is, in part, due to the fact that IoT is not just a single technology, but a catch-all umbrella phrase used to describe what is really a broad set of technologies.

IDC defines the Internet of Things as a network (or network of networks) that aggregates and connects uniquely identifiable endpoints, devices (or "things"), wired or wireless, that communicate autonomously using IP connectivity. According to the IDC Asia Pacific Retail Trend Analysis 2017, about half of the retail organizations across APAC are aware of the benefits of IoT. Out of these retail organizations, only about half are currently using IoT in their businesses, while the other half are still investigating applicability and evaluating technology vendors.

Smart wearables that operate autonomously are included in this definition, since autonomy of operation is a key component of IoT that would exclude many other wearables. IDC excludes smartphones, tablets, and PCs from the definition of IoT devices and private, closed-loop networking-based connected devices.

Critical to the understanding of IoT is that it is a network, or series of interconnected networks, providing connectivity between devices or endpoints that communicate and operate autonomously using IP connectivity.

From a retail perspective, IoT takes on greater importance with the prospect of sensors that can enable their enterprises to take advantage of every possible piece of shopper data available to them. The growth of IoT technologies, opportunities, and use cases now available have made this even more compelling to retailers.

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WHAT IOT IS NOT

There are some misconceptions about IoT worth addressing. For example, automatic monitoring, sensing, and alerting can be a considerable productivity enhancement, but this is not IoT in the technical sense. Bottom line, providing IP connectivity to an endpoint does not make it IoT.

Again, according to the IDC definition, smart payments are not IoT enabled. How to effectively manage the risk of two autonomous devices initiating payment without human instigation is still an issue for payment systems. While there are parts of the transaction where machine-to-machine technology manages the transmission of payment information, there are few analysts in the retail business that think the payments process will be autonomous before 2020.

Perhaps the first step for retailers is to get a clear picture of what IoT is and isn't. But, as important as that foundational knowledge is, what's most important is determining the IT investment needed, the opportunities it presents, and whether a new technology represents a good value proposition.

SETTING THE STAGE: IOT ECOSYSTEM & BUSINESS OPPORTUNITIES
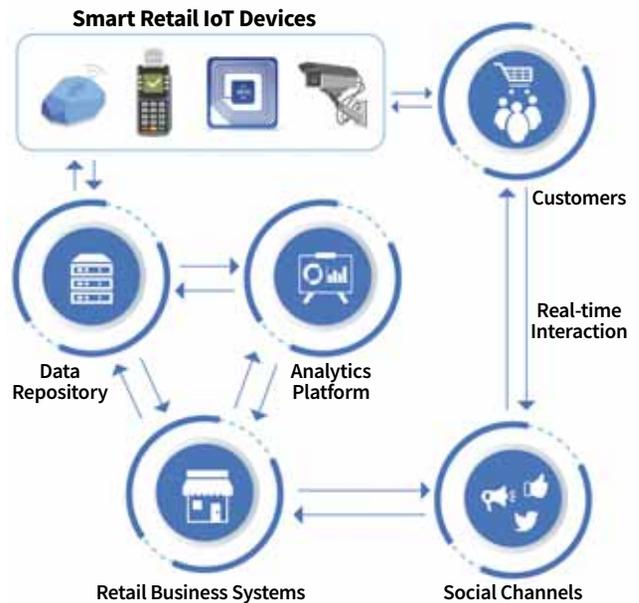
THE IOT ECOSYSTEM

For retailers, creating an IoT ecosystem within their enterprise can be a complex and daunting task. IoT is a market with multiple technology layers and players – device vendors, communications services providers, IoT platform players, software vendors, and IT service providers. Fortunately, there are some simple solutions out there (more on this later), but for now, let's look at exactly what is involved, at a high level, with the typical IoT ecosystem.

The IoT ecosystem starts, of course, with the customer. Shoppers will be walking into stores with a smartphone, tablet, or other connected device. This is a part of the IoT ecosystem that is controlled and owned by the shopper. They may be accessing their device to look up pricing, find an item in the store, request support, looks for sales, or any number of activities.

For the retailer, the first layer of an ecosystem is comprised of smart retail IoT devices that include beacons placed strategically throughout the store, POS technology, and RFID technology. All are connected to your network, and send data back and forth between customer devices.

The IoT devices transmit date back and forth to your data repository, which in turn interface with your analytics platform and your retail business systems. The data exchanged between these elements is dynamic and fluid, creating opportunities to gain insight and interact with the customer to improve their shopping experience. Social channels are leveraged to create real-time interaction between your enterprise and your customers.

Of course, for the retail enterprise, there are several IT investment implications when creating a safe, secure and

Smart Retail IoT Devices · Customers · Real-time Interaction · Data Repository · Analytics Platform · Retail Business Systems · Social Channels

effective IoT ecosystem. Areas like device authentication and authorization, network performance and wireless communications, device and traffic administration, and data analytics and storage are just some of the big ones.

BUSINESS OPPORTUNITIES

Location-based marketing enables retailers to better leverage their wireless networks to engage with always–connected customers. It also offers tremendous growth potential as it meets three concurrent objectives:

Enhance engagement with shoppers and **drive foot traffic** · Boost **basket size** and grow scales · Increase ROI on IT investment in the **wireless network**

At the heart of IoT is location-based services (LBS) that use various wireless connectivity options to pinpoint customer location, collect data, and respond with direct-to-customer communications that improve their shopping journey, along with retention rates. This already has manifested itself in tangible outcomes, such as being able to measure the number of visits of a shopper to a specific department or area of the store.

Another example is shoppers that spend a lot of time in a certain area, so they can receive a promotional push notification on their smartphone, enabled by LBS. Or LBS can offer aisle directions in a very large shopping area, or execute other context-based communications and services. The benefits are two-fold. First, shopper push notifications deliver short-term opportunities to enhance the customer

Fully **46%** of consumers use retail **mobile apps** on a weekly basis to download coupons, look for competitive pricing, find product specs, warranty information and other product details, and even pay for their purchases.

experience. Second, the analytics generated can be used by the retailers for planning a long-term customer strategy, or improving customer relationship management (CRM) efforts.

Retailers can use this technology to create zones, transmit offers, in-store deals, and product event announcements that can be sent to shoppers' smartphones as they enter each zone. And, as shoppers roam the store, retailers can track movement and gain valuable analytics from the journey. All this offers retailers the opportunity to gain some very valuable insights into their customers' shopping behavior, and can even help make smart decisions about how customers are greeted at the store front, as well as a number of other factors that can impact the in-store experience.

Best of all, retail marketers can have the ability to leverage real-time data to better target consumers based on actionable data. Marketers can effectively measure how digital ads drive traffic into stores, and even connect the dots from ads to shopper to purchase.

PRODUCTIVITY AND IOT

From a business productivity and efficiency standpoint, IoT has many benefits for retailers too. A key part of a digital transformation is the capability to leverage data from across the enterprise to make decision processes more autonomic, enabling smarter and faster business adaptation with a stream of more relevant and engaging products and services.

Autonomic processes will enable employees to execute at a higher level across the enterprise, to introduce new products and services faster, to respond in real time (or near real time) to changing market conditions, and to deliver a richer, more personalized customer experience. This is more than just data, but a leveraging of actionable data that retailers can use to drive relevant business intelligence across their enterprise.

TODAY AND THE FUTURE: IOT TRENDS, GROWTH & PREDICTIONS

IDC has analyzed and assessed the current IoT landscape in retail. As part of their Worldwide Retail 2017 Predictions report, they forecast that by 2019:

Even for retailers that adopt later, the opportunity for gains in improvement are significant, and should not be overlooked. Greater visibility into how their products sell-through, how customers shop, and ways that their employees can respond quickly in real time, or even anticipate shopper needs and wants, will offer even late adopters plenty of benefits and competitive advantages.

Robotics and IoT technologies will increase productivity by a factor of 1.5 for early adopter retailers	Retailers that adopt this technology later will experience these increases threefold	IoT tools will help retailers to understand their customers and business more comprehensively, enabling them to react quickly.

LOOKING FURTHER INTO THE IOT FUTURE

For most retailers, it's obvious that the retail landscape will continue to evolve toward IoT technologies into the next decade and beyond as consumers become more connected to technology. This makes having a long-term IoT strategy a necessity. The digital consumer of the future will likely expect, even demand, that their shopping be an engaging and personalized journey enabled through their devices.

In a sense, the IoT-enabled store is everywhere the customer is, or wants to be. It includes intuitive and seamless interactions with products and interconnected technologies, happening everywhere at every time. Consumers will enjoy easy self-service options, and richer, more intelligent, and authentic interactions. Shopping by speaking to a device will be commonplace, and the ability to visualize products in 3D, customize them, or even try a virtual fitting room with social sharing options will likely become a reality in just a few years.

The future of shopping will include these and other new scenarios. Consumer engagement as part of digital transformation will continue to drive greater personalization and contextualization of experiences.

But, for all these predications, in reality, this future is already here. Consumers are well-connected, and becoming more so every day. So, the obstacle for retailers to overcome is creating an effective IoT ecosystem that aligns and keeps up with today's consumers. For retailers that embrace IoT by leveraging digital, mobile, sensor-enabled, and social engagement strategies powered by an IoT ecosystem, the future is today.

PRACTICAL APPLICATIONS: IOT DEVICES, APPLICATIONS & EXAMPLES

For retailers, the practical implications of IoT technology can be divided up into a number of use cases in two focus categories – customers and operations. These can be further divided into retail subsectors, each with their own practical applications.

Retail use cases cover near-term priorities like in-store contextual marketing to customers, real-time product tracking and inventory, connected vending machines, and intelligent fulfilment. More longer-term priorities could be virtual reality, mobile payments, automated self-checkout, digital fitting rooms, and loss prevention.

In order to begin to embrace IoT, retailers first need to prioritize this technology based on overall IT budgets. Second, they need to identify the use cases for their specific retail subsector and company. For example, apparel and accessory stores can leverage IoT for digital and VR fitting rooms. Whereas general merchandise and department stores will likely implement IoT first in the areas of shopper tracking and location-based marketing. The main takeaway is the retailers need to base their IoT investment on a path that makes the most sense for them in the near-term, and for the quickest ROI.

IBEACON DEVICES AND QSENSE

The IoT iBeacon technology is one popular proximity-based innovation that is already enjoying widespread usage across industry verticals, including retail. For example, in 2015, Macy's ran their yearly black Friday sale across their 700 stores in the U.S. using push notifications and Bluetooth-enabled smart beacons. And Walmart launched an iBeacon trial with beacon-equipped GE light bulbs in stores.

Among one of the most intriguing solutions for retailers looking to deploy IoT in their enterprise is the Quinnox iBeacon technology platform, known as "QSense." This innovative technology offers location-based capabilities, enabling retailers to gain insights about a customer's

shopping behavior. QSense enables retailers to interact and engage consumers in real time, in their physical and digital spaces. The iBeacon technology of QSense can be read directly from any standard tablet or smartphone, eliminating the need for handheld readers.

HERE'S HOW IT WORKS.

- Once shoppers are in a store, retailers can use QSense to draw those potential customers to specific merchandise on the shelves by leveraging the beacon technology.
- Merchandise and promotion information is displayed on the customer's mobile app.
- A key feature is Popular Path, which identifies the path that customers are taking to reach specific sections within the retail store for valuable insights on shopping behavior.
- Insights can help retailers cross-sell and upsell merchandise based on customer interest, and strategically display and place merchandise within the store.
- Retailers can also send targeted, timely, and personalized offers directly to consumers' smartphones.

Besides the process and some of the advantages outlined above, QSense can also be used for queue busting and eliminating long lines, increasing customer engagement, improving customer services, deploying loyalty programs, and increasing staff productivity.

CONCLUSION:

THE INDIA RETAIL MARKET & QUESTIONS TO ASK

In the India retail market, according to Nasscom, the potential impact of IoT on retailers is very high, yet current adoption is very low. Consider the following facts, based on Nasscom's Indian E-Commerce in 2020 research:

| A large, younger consumer base is coming online, and smartphones are becoming more affordable. | This new consumer base is spread across tier two-thirds cities, and semi-urban India where traditional retailers don't have much a presence. | Cash still rules, but growing use of e-wallets, online payments and other electronic methods is growing |

According to IDC India Retail Barometer 2017, the smartphone penetration is 30%, internet penetration 34.8%, and over 462 million internet subscribers. The simple fact is technology has shifted the control to the connected consumer, and IoT presents an opportunity to take advantage of this evolution in retail in India.

So, given all that's at stake, how does a retailer join the IoT and digital business transformation parade? As I wrote in the beginning of this report, it starts by asking the right questions. ●●●

How can I leverage the convergence of new technologies?
Today is all about mobile, social, cloud, and IoT. Building an IoT foundation covers those bases, and turnkey solutions, such as QSense, can help make leveraging multiple technologies even easier

What is my IT readiness?
Assess your connectivity and network infrastructure for IoT deployments. Make sure you have a security strategy in place, and address exactly how IoT data will integrate with other data sources and systems.

How can I make the most out of shopping data?
IoT can help retailers to exploit big data and analytics to gain valuable customer and shopping behavior insights. Critical data management and analytics are essential to maximizing any IoT-enabled solutions.
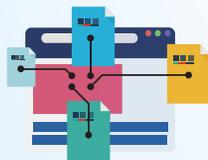
Can I use IoT to transform my retail operations?
When approached as a transformative technology instead of just a patch-in capability, IoT can offer you significant business value by improving processes and operations in many key areas of your retail business. your retail business.

What is my best business case for IoT?
The answer is simple – it will improve the customer experience. If you're looking to gain funding for IoT in your retail enterprise, you're more likely to succeed by focusing on how it will directly impact and improve customer satisfaction.

After all, it's all about the Customer.