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Executive summary

We live in a consumer-driven world, focused more on the needs of the connected shopper than the retailer. Merchants are under increasing pressure to analyze consumer data, implement strategies to attract and retain customers, and craft a unique brand personality that will allow their business to stand out from the competition. This white paper analyzes current consumer trends and preferences, provides tools for merchants to optimize their businesses for the modern shopper, and be prepared for the fully connected future of commerce.

Emerging trends in consumer behavior are driven by the growing population of millennials and generation Z, and collectively they now make up the largest group of global consumers. These two groups differ marginally in preferences; millennials are more price sensitive and value-driven than gen Z, whereas gen Z are more focused on a brand’s social responsibility, but less tolerant of connectivity issues and inferior service. Millennials prefer ecommerce while gen Z are increasingly omnichannel shoppers, placing more value on bricks and clicks, and holistic brand experiences than their older millennial peers.

For retailers crafting their strategies between now and 2020, it is important to note that the collective similarities and expectations of these two groups will have more impact on the overall retail landscape initially, than their differences. Both groups are increasingly cashless, and prefer next generation digital wallets and P2P payments to credit card payments. They value instant gratification, digital and virtual interaction. The future of retail will feature more conversational commerce, chatbots, and intelligent algorithms for supreme personalization, as a result.
Executive summary

Both sets of global consumers were born or raised with constant connectivity, and are efficient cross-border online shoppers, pushing merchants to offer reasonably priced, efficient international delivery. Most importantly, they value exciting shopping experiences and supreme service. The majority of their purchases are emotionally driven, the result of a positive experience with a brand; pre-purchase queries, point of purchase ease, and clean returns management, if necessary.

In Asia, millennials have a stronger preference for virtual and augmented reality, and digital commerce, whereas young European and North American consumers also value face-to-face interaction. Businesses with an Asian focus, therefore, should invest in artificial intelligence (AI), conversational commerce and chatbots, whereas merchants with expansion plans in North America or Europe should focus more on omnichannel strategies such as click and collect, as well as digital channels.

Today’s consumers are technologically advanced, they have fully connected lifestyles through multiple Internet of Things devices, allowing for a constant digital footprint. These traceable paths provide multiple data collection points, and retailers can optimize their offerings by tapping these data sources, and converting them into intelligible insights. Machine learning and artificial intelligence optimizes this glut of information, and powerful software can easily cross-reference consumer preferences with product offerings, and provide one-to-one personalization. AI bridges the gap between data and consumer experience.

As gen Z gradually outpaces their millennial counterparts, there will be an even greater shift towards multichannel retail, but with a technologically advanced twist. The value of the high street store will return to provide a click and mortar environment.

The future, thanks to this youngest consumer generation, will encompass all the convenience of online shopping, with the added personal touch of human interaction, forcing retailers to provide supreme, 360 degree sensory experiences, and only the smoothest payment methods, to keep up with the needs of this fast-paced generation.
Today’s consumers are technologically advanced, they have fully connected lifestyles through multiple devices, creating a constant digital footprint.
Future trends in consumer behavior

Millennials and generation Z will drive consumer behavior in 2020

MILLENIALS

Millennials are the first global generation of digital natives, and now make up the largest age group within the workforce. Reaching adulthood around the year 2000, their high expectations have shaped the way consumerism has evolved.

Approximately 58 percent of global millennials live in Asia, slightly over the region’s 56 percent of the total global population. In contrast, Europe has a rapidly aging population, and is underweight in millennial representation: 8 percent of global millennials are European, versus 10 percent of the total global population.1

Millennials in Africa are just over a fifth of the global total, but thanks to improvement in public health, lower infant mortality and longer life expectancy, the population of the continent is set to double by 2050, according to the UN. Of the 2.37 billion increase in population expected worldwide by 2050, Africa alone will contribute 54 percent. This sharp acceleration will have a significant impact on the future landscape of commerce, from a continent where mobile payment services like M-PESA and mobile banking is incredibly popular.
The availability of such a reliable mobile-payments platform, facilitating cross-border money transfers in Africa, has generated a host of other FinTech start-ups, building upon M-PESA’s foundations. While mobile-money schemes in other countries have been held up by opposition from banks and regulators, the growing influence of African youth on the global trends could push up adoption levels across the world.

All millennials and gen Z across the globe enjoy the variety, value and convenience of international shopping. In response, 50 percent of leading retailers now offer international delivery. The Internet Retailing Top500 retailers are particularly successful in today’s commerce environment, because they are putting the shopper at the heart of their business strategies. They develop market-leading services, give personalized experiences, easy-to-use interfaces and responsive pricing according to conditions or location.
THE FIRST DIGITAL NATIVES

Millennials are considered over-educated but under-employed, and heavily in debt. As the first natural online shoppers, growing up in a landscape of Amazon, Alibaba and eBay, their shopping habits pushed ecommerce from early adoption to mainstream, often looking for better value for money.

In the Western world, price point is absolutely key to millennials. Studies have shown that this group in Europe and the US care more about expense over any other factor when it comes to online purchases. According to a 2015 Census study, earnings for young American adults who work full time are about USD 2,000 less than earnings for young adults in 1980. The analysis also found that millennials are more likely to have a college degree than previous generations, yet there are also higher numbers of millennials living in poverty vs. their counterparts in 1980.3

In Asia, however, millennials are eating out more often, and are more interested in traveling abroad than their Western counterparts. In emerging markets such as China and India, millennials are seeing their average wage increase, and their buying power will boom in the coming years.

Millennials have the global purchasing power of more than USD 200 billion annually from 2017, about a third of the global total, and USD 10 trillion in their lifetimes.4
Young people in China spend significantly more time in the virtual world, than their counterparts in other nations.
Millennials are more in tune to online advertising than their younger peers, and marginally more tolerant to slow service or connectivity issues than the youngest gen Z consumers, who have an inherent zero tolerance policy to slow connection and bad service.

GLOBAL CONSUMERS – MILLENNIAL PREFERENCES ACROSS THE WORLD

Millennials are considered our first global generation, but they are entering the workplace and the ecommerce landscape from very different geographical backgrounds and social mindsets. Despite this, the lowering of the world’s borders over the past years suggests that millennials across the different regions are more alike than similar; seeking value for money, preference for online communication, ecommerce and a love of connected devices and mobile phones.

More virtual reality (VR) and disposable income in Asia

A study showed that young people in China spend significantly more time in the virtual world, for both work and play, than their counterparts in other nations. The research also found that millennials in India and China were the most likely to consider access to state-of-the-art technology a vital factor in their consumer and workplace decisions.5

Moreover, Asian millennials are more likely to live with their parents than the global average of 49 percent. Living at home means their spending power will be higher than North American and European counterparts, who battle with the cultural norm of moving out, despite soaring housing costs.

Millennial travelers from Asia are expected to spend USD 340 billion on international trips by 2020.6 They are also the consumers most likely to

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5 - Accenture
6 - Brand Karma
shop cross-border for high tech goods that are unavailable domestically.

**Northern Europeans value work life balance**

Compared to Asian millennials, Western millennials have a more negative outlook on the financial prospects for themselves and the next generation. This is most evident in Europe, where there is a rapidly aging region and continued economic challenges.

When asked whether they thought children in their country would be better off financially than their parents once they grow up, only 38 percent of young British, 37 percent of young Germans and 15 percent of young French were optimistic.7

Millennials in The US and Northern Europe crave a well-balanced work and recreation life, allowing more time for personal pursuits and leisure, compared to Southern European and Asian consumers. Another study showed that, regardless of nationality, millennials across the globe want meaningful jobs, flexible working conditions, a strong connection with their supervisors and teams, recognition and appreciation.

**Cross-border opportunities for Latin Americans**

Being globally minded, many millennials also are more interested than other generations in getting overseas work assignments, especially young employees hired in such emerging markets as Brazil, Mexico and India.8

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7 - Pew Research, 2016
8 - PwC
Moreover, there was a difference in the types of business environments that would most engage them, professionally.

- North and South American millennials value a collaborative environment
- Europeans value communicative environment
- Chinese, Indian and Japanese millennials value innovative and creative environments

**MILLENNIALS LOVE ECOMMERCE**

Socially connected and technologically savvy, millennials prefer to interact with businesses, retailers, and each other via casual channels such as social networks and messaging apps rather than vocally, or face-to-face. This isn’t purely for convenience, it’s an acceptable social norm, much to older generations’ distaste. Born into the online shopping era, these consumers are the most likely to make purchases via an online channel, than in-store.

**These preferences also vary regionally:**

1. **Asian millennials prefer artificial interaction to North Americans or Europeans**
   
   There is even less emphasis on face-to-face communication among Asian millennials than those in North America and Europe. Asian consumers most value online interaction with retailers, and engage the most in VR scenarios. These millennial consumers are more likely to be connected through social media with people and brands they don’t have personal contact with in their non-digital lives.
Any online business with a focus on Asia should have a sharp eye on AI customer care, chatbots and virtual shopping experiences, whereas in Europe and North America millennials still value face-to-face and/or real human interaction over AI or virtual worlds.9

Thanks to millennials, the consumer packaged goods (CPG) market, including groceries and fast moving consumer goods (FMCG), home delivery is receiving a resurgence, for the first time since the days of daily milkman deliveries.

Preference for ordering online for home delivery (now or in the future)

2. Preference for in-store retail in Europe, over Asia
According to a study on online retail shopping by Nielsen, millennials have pushed up the levels of home delivery across the globe, but in Europe and North America they are more likely to continue to shop in a physical
In Europe and North America consumers are more likely to shop in a physical supermarket than in Asia or Latin America.
supermarket and other department stores in addition to online, more so than in Asia or Latin America.
Retailers, therefore, should focus more on omnichannel strategies in North America and Europe, than Asia or Latam, where online shopping is eclipsing the physical store for many consumers. This set of consumers have an unprecedented enthusiasm for and comfort with technology, and online shopping is a deeply ingrained behavior.
Moreover, shoppers in all regions are growing accustomed to the benefits of digital in other retail settings and are beginning to expect them in PCG and FMCG retail. Savvy retailers are winning by leveraging technology to enhance the in-store shopping experience and meet consumers’ evolving desires.

### Preference for ordering online for home delivery

- **Millennials**: 30%
- **Gen Z**: 28%
- **Gen X**: 22%
- **Baby Boomers**: 17%
- **Silent Generation**: 9%
Overall, 30 percent of millennials prefer to shop online only, compared to 28 percent of Gen Z, and only 9 percent of the silent generation (65+) respondents.10

**TOP MARKETS IN EEA**
According to the Internet Retailing Top500, the most competitive markets within the EEA for retail are Austria, The Netherlands and Germany. Retailers in these markets have highest average performance.

**GEN Z ARE THE POST-MILLENNIALS, A NEW GENERATION OF CONSUMERS**
Unlike millennials who grew up through global recession and an era of slow dial up Internet, gen Z were born after 1995, and have matured in exciting
world exploding with smart technology and uninterrupted connectivity. Gen Z are the true digital natives.

Entrepreneurial and aspirational, gen Z are now a 2 – 2.5 billion strong group, and are coming of age. This cohort are making even more shifts in consumer patterns and expectations than their millennial predecessors. Shaped by social media – 92 percent hold a full digital footprint and on-demand technology, they value social responsibility and making a positive impact on the world.

Today we have about 10 billion smart, connected devices. By 2020 it’s predicted we will have between 50 and 100 billion interconnected devices. Which means the post-millennial generation, gen Z, could live in a world with 1 trillion connected, smart devices. The future of commerce is connected, multi-platform, and omnichannel.

Gen Z are interested in the core values of a business they work for, or purchase from. They care less about price point than millennials, who felt the pinch of global recession at the moment they were establishing themselves in the workforce.

Most significantly on the retail industry, while being an incredibly mobile-first set, gen Z has high omnichannel expectations. Despite living with digital devices at their fingertips since childhood, the vast majority of gen Z still prefer make purchases in store, but with seamlessness from one channel to the other.
**GEN Z THINK IN-STORE IS AS IMPORTANT AS ONLINE**

Unlike millennials, who defined the online shopping generation, 67 percent of gen Z prefer to shop in a physical store most of the time, and another 31 percent preferring to shop in-store sometimes.

Mobile devices are used less by gen Z for commerce than millennials.

**What are your most frequently used devices?**

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile/Smartphone</td>
<td>75%</td>
</tr>
<tr>
<td>Laptop</td>
<td>45%</td>
</tr>
<tr>
<td>Desktop</td>
<td>30%</td>
</tr>
<tr>
<td>Tablet</td>
<td>10%</td>
</tr>
<tr>
<td>Xbox/Games console</td>
<td>8%</td>
</tr>
<tr>
<td>Interactive/Smart TV</td>
<td>3%</td>
</tr>
<tr>
<td>Wearables</td>
<td>1%</td>
</tr>
</tbody>
</table>

A quarter of respondents to an IBM survey reported spending more than five hours on their mobile devices every day, but shopping online is not their primary activity. 73 percent of Gen Z cited social activities such as texting and chatting as their primary undertakings. 

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**Society: Millennials and Generation Z drive consumer behavior**

12 - IBM - Uniquely Generation Z, What brands should know about today's youngest consumers, 2017
While millennials prefer virtual interaction, 53% of gen Z prefer in-person communication over instant messaging or email.
“This renewed interest on in-the-store shopper is something that retailers must take note of now. Gen Zers demand highly personalized interactions, value quality over price and want to be engaged with the brand across all channels. What will these gen Zers be expecting when they walk through the doors? Are retailers ready to respond when they begin to walk the aisles? That’s what should be top of mind for these businesses today.”

Harriet Green, IBM’s General Manager for Watson Internet of Things, Commerce and Education

FACE TO FACE INTERACTION

While millennials prefer virtual interaction, 53 percent of gen Z prefer in-person communication over instant messaging or email. Gen Z may even overcompensate on interpersonal skills, noticing millennials struggling in this area. It has been noted that, interestingly, that gen Z’s flawless use of technology means they will be more skilled at face-to-face communication than millennials.

Gen Z prefer to make purchases

![Chart showing the preference of Gen Z for making purchases](chart)

- **Shopping in store**: 90% Most of the time, 10% Some of the time
- **Using a web browser**: 80% Most of the time, 20% Some of the time
- **Using an app**: 50% Most of the time, 50% Some of the time
- **Calling by phone**: 20% Most of the time, 80% Some of the time
OMNICHANNEL RETAIL IS ABOUT EXPERIENCES
The digital landscape is evolving, by responding to the emerging trends of modern consumers, the online and in-store channels are converging to generate omnichannel retail experiences.

Experience is the operative word to the modern consumer. Seventy percent of purchases are based on an emotional connection with a brand, and how the consumer believes they are being treated. Consumers are not simply purchasing, but investing in a holistic experience, so businesses must work to serve up a positive encounter for their shoppers by building a brand personality and having a responsible, positive impact on society.

CLICK AND COLLECT WINS OVER ETAIL
Physical retailers, in the shadow of ecommerce giants such as Amazon and Alibaba, are facing complexity in offering heightened brand experiences, but their omnichannel capabilities are underestimated.

Click and collect, a relatively simple but largely overlooked model, is still one of the most efficient means for a retailer to marry their online and offline channels. Physical presence gives the merchant an opportunity to build a memorable face-to-face service, gives consumers an added layer of collection and returns convenience, and facilitates 360 degrees brand experience.
Research indicates that the click and mortar concept, and clean returns management, has big advantages to the merchant, not just the consumer:

- 95% will repurchase from a retailer with a positive return or exchange experience
- 40% will make an additional purchase when they visit a store for a click and collect order
- 46% will purchase more from retailers who enhance and personalize the buying experience

A focus on direct customer communication is also important in a click and collect model, to keep the customer updated on their purchase. Digital interaction is most effective for today’s consumers.

- Returns can range from 5-50% depending on the product category, adding unwanted inventory to handle
- 25% of click and collect purchases are never collected, requiring feedback and interaction with the customer to avoid storage and returns issues.

**NON-TRADITIONAL PAYMENTS PREFERENCE FOR MILLENNIALS AND GEN Z**

Digital payment preference is on the rise, where society is becoming increasingly cashless. It has been reported that 32 percent of millennials use their mobile phones for peer2peer (P2P) payments, compared to an 18 percent average across other demographics.14

14 - Acanture, Money2020 report
Many millennials never visit a bank branch to take care of their financial needs, or ever write a physical check. Most importantly for retailers and financial institutions; only 37 percent of adult millennials own a credit card, compared to 65 percent of all consumers over 30, preferring to debit from their accounts directly.15

Millennials and gen Z store their tickets, passes and reward cards, as well as financial tools like debit cards, credit card details and payment systems on their mobiles in the form of mobile wallets. By accepting mobile or other contactless payments, retailers give younger consumers the power to choose how they want to pay, and eliminate the risk of losing the business of the many millennials who do not often carry cash.
Consumer data dictates development

Technological developments, across all industries, serve to make consumers’ lives smoother, more convenient and better connected. In the FinTech industry, the principal driver is to eliminate payments friction, give consumers more time to focus on their lives, or to provide innovative ways to shop. Early adopters trial these innovations, and the most popular trends become mainstream.

Consumer payments preferences have shifted continuously over the decades. We’ve moved from cash to credit cards. From in store, to online, and now to omnichannel. From the signature strip to EMV, to contactless and to wearables.

“In 2017, we are in an era of perpetual connectivity, with the Internet in the palm of everyone’s hands. We now see next generation payments, commerce and retail trends responding to the consumer, rather than vice versa. This shift has been achieved through connectivity, data, and intelligence.”

Gijs op de Weegh, Chief Operating Officer at Payvision and Acapture
ALL ABOUT DATA
There is an abundance of FinTech innovation coming to fruition between now and 2020, all of which is positively effecting consumer convenience, personalization and security. But at the heart of these trends is big data: how it is collected, interpreted and manipulated.

Big data can allow savvy retailers to anticipate demand, ensure stock availability, create dynamic pricing and offer promotions to the right customers and the right time.

Use cases of data in commerce:

1. Personalization
Ecommerce giant Amazon, through the use of cookies, tracks and analyzes each individual click, to provide more personalization and tailored marketing efforts. Amazon uses this browsing data to predict hot trends, then competes on value rather than price, and improves their overall customer experience.

2. Optimization
A food delivery business in the US matched user data to local weather conditions, so they were able to offer special delivery coupons to customers unable to cook due to storm power outages. The mobile/location-based program yielded a 20 percent response rate.
3. **Social insight**

The rise of social media generates more data sources to work with for path-to-purchase insight. Such data offers clues on consumers’ location, profession, and interests. This information is even more powerful when combined with data like credit and shopping history. The use of natural language processing (NLP) to extract information from social media gives an enterprise an edge over the competition.

Data is clearly still the hottest industry buzzword. Retailers and other enterprises feel increasing pressure to sift through the endless supply of information, and to generate business improving insights, such as the above examples.

SMEs, with more limited resources that the retail giants, are often unsure how to tap their data sources. There may be plenty of data available, but there’s a shortage of time and knowledge to make good use of it.

For many retailers, the appropriate solution is to allocate more resources and budget to sophisticated AI software that can pull intelligent, actionable insights from this data, rather than attempt manual, time consuming data cross-referencing.

> “2017 will be the year the big data floodgates open, driven by a voracious appetite for deeper contextual insights that drive customer engagement via mobile, wearables, and IoT”

Dane Anderson, vice president, research director and region manager for Asia Pacific, Forrester.
The big data market reached USD 23.8 billion in 2016 and will reach USD 43.3 billion in 2017.\(^\text{16}\)

This new level of insight has meant that consumers, consciously or otherwise, are mapping out their trends, preferences and behaviors in every movement they make. The availability of this data has created the opportunity to utilize past trends and performances for growth, allowing companies to improve customer satisfaction through better products and services. Business are utilizing data as their core means for innovation, production, and growth.

To date, recommendation engines still the most popular usages of big data, with use of customization and personalization. Online retailers can differentiate online content using data insights, both on page and through deliverables. A more personalized shopping experience encourages brand loyalty and promotion.

Physical retailers use data for predictive analytics to forecast future trends, probabilities, and buying habits to allow for targeted marketing and also fraud detection. One-third of companies in the B2C space will change their business structure to get closer to the customer and effectively compete on the basis of experiences.\(^\text{17}\)
"The consequences of a customer-led, digital-centric market are becoming clearer, and will spur many organizations into action in 2017. Empowered customers are forcing the hand of virtually every industry, and business leaders must respond to these changes head-on."

Dane Anderson, Vice President, Research Director and Region Manager, Forrester.
DATA AND POLITICAL AFFAIRS
Data, and the means of accurately reading it, has not been without controversy. Data science was utilized in the political sphere in 2016, whereby pools of information gleaned from the media and social platforms were used to forecast political campaigns such as Brexit or President Trump’s election campaign.

On both occasions, the insights provided through language processing, trending topics and digital interactions were inaccurate, causing a series of global shockwaves as the results were announced. The data, consequentially, indicated the opinions presented to the public, but due to social conditioning and external influences, the data did not represent true public opinion behind closed doors.

The political surprise of both President Trump’s election and UK’s Brexit referendum confirmed data and machine learning cannot yet be relied upon solely. Artificial intelligence should be combined with human intelligence to read social patterns and subtleties, and to optimize final results.

IOT, AN INCREASINGLY CONNECTED WORLD
The Internet of Things (IoT) is the result of multiple converging developments in new tech: networking, cloud-based intelligence, environment detection technology, data science and machine learning.

Consumer products, durable goods, automobiles, industrial equipment, utilities, sensors, and other everyday devices are combined with Internet connectivity and powerful analytics capabilities that will transform the way
we live, work, and play. Microelectromechanical systems, or MEMS, are miniature, almost invisible sensors that can be embedded into virtually any device, can detect output and transmit information to a central machine. MEMS are combined with actuators, mechanisms that act on the environment, such as smart thermostats or movement detection, and process additional data information: actions, timings, temperature changes, and other variables. This eventually gives the ultimate tailored customer experience. Consumers are expecting more and more from their shopping experiences, as a result.

Our connected IoT world is continuously optimizing its bank of information, and streamlining intelligence on our preferences. The output patterns are dictating the evolution of tech innovation.

There may be up to 100 billion connected IoT devices by 2020\textsuperscript{18} and a global economic impact of more than USD 11 trillion by 2025.\textsuperscript{19}

With such supreme connectivity, however, comes more vulnerabilities, as we witnessed late in 2016. News headlines concerning the hacking of Internet-connected devices, surveillance concerns, and privacy fears have already captured the public’s attention.
Moreover, despite IoT being firmly in the public domain, companies still struggle to understand how to implement it, what technology is necessary, and the potential use cases.

A survey found that there are 82 percent of enterprises interested in IoT. 23 percent of enterprises say they’re using some form of IoT solution or application. 29 percent are planning to and 30 percent are interested.²⁰

**Interest in IoT by Business**

- **Using IoT**: 23%
- **Planning to use IoT**: 29%
- **Interest in IoT**: 30%
- **Not interested**: 18%

**Key benefits of IoT to a business:**

1. **Faster time to market and buying cycles**
   Understanding consumer needs or preferences up front means less market trials or road testing, allowing businesses to launch new products more efficiently. Consumers also locate the products they are looking for faster, in turn raising demand.

2. **Cleaner inventory management**
   A warehouse, factory or storage business can implement IoT-enabled
remote scanners helping workers easily track inventory of items. Automated IoT inventory management solutions free up companies from manual processing.

3. Energy efficiency
By introducing sensors and trackers, the use of heating and lighting can be controlled remotely, and money can be saved. Using such tools can ensure the way business use the services they are paying for is efficient, and that business premises are adapted to the business needs.

4. Improved productivity
Latest developments in IoT empower employees to accomplish tasks quickly with reduced margin of error. Moreover, companies, businesses and factories can complete their operations with fewer staff members.

5. Consistent product storage or production
For small businesses with storage operations across various locations, where conditions need to be monitored and regulated, such as wine for example, IoT enables them to maintain consistent storage or production quality. In agriculture specifically, sensor readings can tell a business owner what the soil moisture or light levels are at a particular site, or locate fertile ground to increase agricultural output.
IOT AND GLOBAL ECOMMERCE

The industries predicted to invest the most in IoT technology by 2020 are manufacturing, transportation, and technology. Retail, healthcare and wholesale are also in the top six.21

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21 - BI Intelligence Estimates

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Investment in IoT by industry

- Manufacturing
- Logistics
- Tech / information
- Wholesale
- Medication and healthcare
- Retail
- Finance and insurance
- White goods and utilities
- Metals and mining
- Real estate and property rental
- Construction

USD billions


0 20 40 60 80 100 120 140 160
Countries with most IoT opportunities by Industry

- Whitegoods
- Retail
- Medication and healthcare
- Tech / information
- Logistics

Australia: Whitegoods
Belgium: Whitegoods, Retail, Medication and healthcare
Brazil: Whitegoods, Retail, Medication and healthcare
Canada: Whitegoods, Retail, Medication and healthcare
China: Whitegoods, Retail, Medication and healthcare
Denmark: Whitegoods, Retail, Medication and healthcare
France: Whitegoods, Retail, Medication and healthcare
Germany: Whitegoods, Retail, Medication and healthcare
Greece: Whitegoods, Retail, Medication and healthcare
India: Whitegoods, Retail, Medication and healthcare
Indonesia: Whitegoods, Retail, Medication and healthcare
Italy: Whitegoods, Retail, Medication and healthcare
Japan: Whitegoods, Retail, Medication and healthcare
Mexico: Whitegoods, Retail, Medication and healthcare
Netherlands: Whitegoods, Retail, Medication and healthcare
New Zealand: Whitegoods, Retail, Medication and healthcare
Norway: Whitegoods, Retail, Medication and healthcare
Poland: Whitegoods, Retail, Medication and healthcare
Russia: Whitegoods, Retail, Medication and healthcare
Singapore: Whitegoods, Retail, Medication and healthcare
South Africa: Whitegoods, Retail, Medication and healthcare
South Korea: Whitegoods, Retail, Medication and healthcare
Spain: Whitegoods, Retail, Medication and healthcare
Sweden: Whitegoods, Retail, Medication and healthcare
Thailand: Whitegoods, Retail, Medication and healthcare
Turkey: Whitegoods, Retail, Medication and healthcare
UAE: Whitegoods, Retail, Medication and healthcare
UK: Whitegoods, Retail, Medication and healthcare
US: Whitegoods, Retail, Medication and healthcare
The countries that sell the most products that relate to IoT investment are Brazil, UAE, China and India. All four have over 80 percent of their commerce share in the top six IoT industries. Read more about the top B2B and B2C industries in select markets by visiting our infographics library.

In emerging Asian markets such as India, tech was traditionally behind that of the rest of the world, despite the proven talent in this region. India is now emerging as a global hub for enterprise software on the cloud. Companies like Zoho and Freshdesk have become leaders in their spaces, winning clients all over the world for their software products made in India.

Moreover, the entire Asia-Pacific market is expected to report highest growth in IoT between the years 2017 and 2020. Increasing preference in connectivity, device awareness, higher penetration of Internet and falling price of sensors and modules will be the market drivers for growth of the IoT market in APAC.

However, according to Tata Consultancy Services, North American enterprises are investing far more in IoT technology, while Latam and APAC are investing the least, despite technological advancements being adopted in markets such as China, Japan and India.

This highlights a significant gap between consumer demand and business investment, particularly in China. Asian millennial and gen Z consumers, both global in nature and with an affinity for cross-border ecommerce, will
almost certainly turn to overseas markets to fulfil their need for latest tech innovations.

**Investment in IoT by region USD millions**

<table>
<thead>
<tr>
<th>Region</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>94.8M</td>
</tr>
<tr>
<td>Europe</td>
<td>93.9M</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>63.1M</td>
</tr>
<tr>
<td>Latin America</td>
<td>54.7M</td>
</tr>
</tbody>
</table>

**Predictions on IoT by 2020:**

1. **Health and lifestyle**
   Almost all consumers will wear connected devices to give them feedback on their activities, health, and fitness, compared to minority number of consumers today. This will result in faster, more convenient, and lower-cost medical diagnostics. Consumers will also connect to others (their children or employees, for instance). We will have much more situational intelligence on the act of planning our days, avoiding delays or other unfortunate encounters, and meeting our personal goals.

2. **Home**
   People will control everything remotely, from heating their homes, to how often their gardens are watered. Homes will also have sensors that warn consumers about everything from prowlers to broken water pipes, and to restock household goods and products.
3. Community

Embedded devices and smartphone apps will enable more efficient transportation, and give readouts on pollution levels. Smart systems may deliver electricity and water, and warn about infrastructure problems. The Internet of Things will also improve safety in cities, cars will be networked to one another and their environment, and will avoid collisions, and manage speed limits.

4. Goods and services

Factories and supply chains will have sensors and readers that more precisely track materials to speed up and smooth out the manufacture and distribution of goods for ecommerce.

5. Environment

There will be extensive real-time readings from fields, forests, oceans, and cities about pollution levels, soil moisture, and resource extraction that allow for closer monitoring of environmental issues.²³

AUGMENTED REALITY (AR), VIRTUAL REALITY (VR), AND ARTIFICIAL INTELLIGENCE (AI) IN ECOMMERCE

How do they differ?

- Augmented Reality (AR) improves, enhances or expands real life by inserting virtual objects into the user’s real world environment.
- Virtual Reality (VR) creates an immersive, completely virtual world that users interact with using devices that isolate the user from the real world.
- Artificial Intelligence (AI) is the capability of a machine to imitate intelligent human behavior.
VR, AR AND AI AROUND THE WORLD

Market conditions, consumer demand, and the availability of high-quality devices have all aligned to make VR and AR the next major advancements in the tech world.

While VR, AR and AI in a retail and ecommerce environment is preferred by Asian millennials, 70 percent of US, and 62 percent of millennials in Europe still say they would appreciate a brand or retailer using AI technology to show more interesting products, according to a Sonar study, the J. Walter Thompson Intelligence research unit.

Consumers have reported they would find it would be 'very useful' to be able to respond conversationally via a chat window or SMS with preferred businesses in three surveyed industry verticals: financial institutions (63 percent), travel and hospitality companies (54 percent), and retailers (67 percent).24

The number of active VR users is forecast to reach 171 million by 201825

Indeed, today’s consumers are poised for VR in ecommerce and retail, particularly gen Z. They are particularly expectant of experiential stores, with 80 percent more likely to visit a store that offers entertainment, and 80 percent saying the same about stores offering VR and AR technology. Meanwhile, 79
percent are more likely to visit stores that offer interactive experiences that help customize products too.

**Asia will become the market leader in VR**

Globally, the lion’s share of innovation for AR and VR is in North America today, with a significant lean towards Silicon Valley.

This is despite the fact that almost half of the global revenue from VR, in an ecommerce and retail setting, will come from Asia Pacific by 2020, driven by millennial and gen Z consumers in that region. There are growing concentrations of development in Asia, with the Chinese market in particular giving rise to many home grown competitors, yet there is still a gap in the development and investment market compared to consumer demand.

**Global revenue of AR and VR by region 2020**

![Chart showing global revenue by region](chart.png)

Chinese internet giant Baidu announced that it had participated in a USD 27 million Series B funding of 8i, which develops holographic technology.
for VR and AR. Its technology transforms high-definition videos of people, shot from multiple cameras and angles, into photo-realistic 3D holograms.

In Europe, the largest technology players are investing heavily in the AI industry. Google paid £400m for AI start-up DeepMind, Microsoft acquired keyboard app company SwiftKey for £177m, while Twitter invested £102m on Magic Pony Technology, specializes in machine learning.

“The machine learning is increasingly important in the commerce landscape. Intelligence is not just reading data, it is learning to adapt to new sources, to product more reliable, repeatable decisions and better results.”

Gijs op de Weegh, Chief Operating Officer at Payvision and Acapture Technology:

By adopting machine learning, enterprises can build more precise systems, therefore an organization has a better chance of identifying profitable opportunities – or avoiding unknown risks. 26

Use cases for VR / AR in commerce:

• Europe: Swedish retailer IKEA created an app called the IKEA VR Experience. It allows interior decorators and designers to create custom kitchens. The user can change the color of cabinets and drawers and move around the kitchen from the perspectives of small children or tall adults.
• The US: Harley-Davidson created an iPad-based app that provides a virtual shopping experience. Their app gives customers the ability to try out body types, seats, lights and add other options for a truly customized and personalized design.

• Asia: Home purchases can take six to 12 months to complete, and can involve covering large distances in large Asian countries such as China and India. CommonFloor.com, India’s leading online real estate platform, created CommonFloor Retina app, offering potential buyers the chance to view multiple properties from anywhere, at any point in time. Potential customers can explore the property without disturbing the owner or making a pointless drive.
In the future, retailers will use AR and VR to marry shopping channels. Online retailers can create in-store experiences. Devices can superimpose 3D objects in various spaces in the home, as seen in the Pokemon Go model, giving customers a chance to interact with digital renderings from the comfort of their own homes. This can be applied to clothing, home furnishings or consumer electronics.

Between physical stores and online marketplaces, intense competition is being waged across all verticals. Incorporating AR and VR is an immediate way for retailers to stand out from the rest.

**AI BRIDGES THE GAP BETWEEN DATA AND EXPERIENCE**
Consumers are facing increasing background noise from their always-on lifestyle, and as a result they expect more personalization, and an overall superior service from their preferred brands. They expect their shopping experiences to stand out from the rest. By converting consumer data into meaningful insights, artificial intelligence does exactly that.

AI and big data has been buzzwords for years, but thanks to improved technology and software, now is the time to tap it. Retailers, big and small, now have the opportunity to capitalize on data with artificial intelligence. It allows for hyper-personalization, and almost one-to-one marketing, closing the gap between data and customer experience.

Retailers face barriers when attempting to garner insights from their data, but by using sophisticated data mining technology, information can be gleaned to provide these experiences to win repeat custom for consumers.
These are the primary functions retailers should expect from their data software:

- Make bespoke suggestions on specific database contacts
- Deliver personalize messaging at opportune moments for individuals
- Optimize intelligent insights through machine learning
- Work in real time, without requiring manual intervention from the retailer

**Use cases of AI in business:**

1. **Personal product recommendations**
   AI can analyze consumer browsing and purchasing history and cross-reference this data with available products, to present the most potentially appealing suggestions to the consumer. Such a process is virtually impossible in a manual scenario. AI technology, however, can provide one-to-one personalization and give retailers time to focus on higher-level strategic decisions and brand equity.

2. **Conversational commerce**
   Virtual online customer service assistants and chatbots use artificial intelligence to interact with consumers over sales, complaints and queries. There are two types of chat
bots, those that dynamically learn from their data and use intelligence to optimize their services, others that are entirely rule based. Questions remain over how natural these bots appear, whether they can be created with personalities or if they are ultimately two-dimensional compared to human interaction.

3. In store assistance
Retailers are deploying artificial in-store assistants through mobile applications to help shoppers find products, departments and brands, services and facilities. By inputting natural language questions, consumers receive customized, relevant responses. Much like chatbots, machine learning capabilities means the platform will become more intelligent and accurate with every customer interaction it has.

4. Digital financial advice
In a financial advice and banking business scenario, machine learning algorithms can identify and analyze recurring transactions, in order to provide consumers with financial advice. From a B2B perspective, machine learning to make accurate credit decisions and analysis for underwriting. AI and machine-learning techniques can also be used to deploy predictive tools based on their likelihood of being fraudulent.

5. Identifying Inefficiencies
AI is saving businesses hundreds of millions annually by identifying process inadequacies, and streamlining systems to increase conversion rates. Other organizations are using machine learning to increase sales, improve hiring and diversity, and decrease employee turnover.
6. Intelligent healthcare
By using intelligence to supplement human knowledge, companies such as Philips are optimizing their radiology solutions. By delivering actionable insights to help guide decision making in radiology, it is possible to speed the time between diagnosis and treatment, and to enable faster administration of treatment plans with greater accuracy and fewer scans. Wearables and health trackers are also providing on-the-spot insights and health diagnosis.

MACHINES LEARN PREJUDICES
Data is fundamentally the future of understanding consumers and their inherent behaviors, but the way in which this data is artificially interpreted should be carefully considered. No AI is created in a vacuum.

As we develop more reliance on this valuable personal data, the machines that create the rules and trends are learning bias, in the same way human actions can be intrinsically flawed by a subconscious predisposition. Algorithms that read consumer data are ultimately created by humans, and have the potential to be flawed rather than neutral.

There has been a serious example with societal implications of such a bias in the criminal justice system. In the US, AI software designed to risk assess criminals in an entirely neutral setting was used to predict the likelihood of individuals reoffending.
In this example, the AI was revealed to contain bias. An investigation by ProPublica revealed the software in question was twice as likely to mistakenly flag black defendants as being at a higher risk of committing future crimes. It was also twice as likely to incorrectly flag white defendants as low risk.

Because bias is persistent and not always obvious, business leaders and members of any data team should be aware of it and take steps to avoid or minimize its effects.

**Examples of bias in AI and machine learning:**

1. **Data-driven bias**
   This occurs if the dataset provided gives an unintentional skew towards a certain outcome. An example of this is facial recognition issues, such as Nikon’s facial technology mistaking Asian faces for blinking faces, or the recidivism prediction example above. If the data examples are skewed or flawed, the output can be also. Human intelligence is required to fix problematic data.

2. **Interaction**
   When AI learns and optimizes its output from its environment, interaction with biased consumers can bias the machine. An example was a Microsoft chatbot, designed to learn to adapt from its interaction with community. The bot quickly became racist and misogynistic and ultimately shut down within 24 hours. The scenario has identified that such malleable systems will learn the biases of their surroundings and people, reflecting the opinions of those who train them.
Mobile wallets are perhaps the single biggest evolution in payments preferences, led by the influence of millennial tech adoption.
3. Confirmation and personalization

When data algorithms, such as Facebook’s newsfeed, attempts to aggregate content for a user, it will use a matching system based on interaction, preference and ideals. The result is a flow of information skewed towards the users existing beliefs. A consumer who is only getting information from those who think like him or her will never see contrasting points of view and will tend to ignore and deny alternatives. This example has been evident in the recent political shockwaves of Brexit and the American presidential election. Many social network users were surprised by the outcome, seemingly surrounded by peers of a similar political belief only, rather than representing the full cross-section of society.

NEW TECHNOLOGY IN PAYMENTS

Mobile wallets are perhaps the single biggest evolution in payments preferences, led by the influence of millennial tech adoption, and our youngest consumers’ behavior.

Mobile payments such as Apple Pay, WeChat Pay and Samsung Pay offer valuable data insight into customer transactions that companies can optimize to enhance the consumer experience. The speed of mobile payments can also help increase foot traffic in stores, which in turn would generate more sales.

BI Intelligence expects in-store mobile payment volume to grow from USD 75 billion in 2015 to USD 503 billion in the US alone by 2020.

Intelligent payments

Colorado-based FinTech company BillHero was the first to leverage a
Facebook Messenger chatbot to pay bills via chat commands. In September 2016, Facebook enabled all of the 34,000 plus developers on the platform to support payments.

The social media giant is working with several players in the credit card and FinTech industry, to process all types of payment options. All transactions using a Facebook chatbot are encrypted or processed through a trusted third-party payment processor.

**Selfie payments**

By using facial recognition, Mastercard’s Selfie Pay technology was first tested in the Netherlands, the US, and Canada and will be rolled out gradually across the world throughout 2017.

According to Mastercard, 71 percent of users rated Selfie Pay highly during trials. To prevent fraudsters from presenting a picture to the camera, the app requires a blink or head shake to verify the image’s validity. Selfie Pay then compares the picture with stored algorithms to identify the user.

During the trials, 73 percent of users believed that Selfie Pay will reduce fraud and 90 percent of them would use it in the future.  

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**Technology:** Consumer data dictates development
73% of users believed that Selfie Pay will reduce fraud and 90% of them would use it in the future.
Future trends in consumer behavior

More connectivity, more data, more vulnerability

Consumer behavior between now and 2020 is shifting to more connected ecosystems, smart devices, and omnichannel retail touchpoints. This connectivity allows for data collection, supreme insights on trends, preferences and buying patterns. These trends in turn allow for more targeted technology to be developed, to answer the growing needs of consumers.

However, with more connectivity comes increased security risk, with more open access points for hackers and cyber criminals to compromise. Hackers use malware to enlist connected devices for use in large-scale coordinated attacks causing security breaches.

With consumer preference for ‘connected-everything’ growing stronger each year, and the predicted 100 billion connected IoT devices in play by 2020, the intrinsic vulnerability, combined with the capabilities of IoT-based attacks, pose serious risks.

The growth of IoT devices and sensors will require enterprises to reassess their risk strategies, and it is predicted that by 2020, IoT security will make up 20 percent of annual security budgets.28

28 - Gartner
IOT VULNERABILITIES

The biggest security issues with IoT devices are attributed to insecure credential management, inaccurate consumer data collection, a lack of security testing in development, insecure or lack of network pairing control options and little ongoing support through the product lifecycle.

The threat posed from increased numbers of network-connected security cameras and badge readers in an enterprise setting is causing concern for IT professionals. Unpatched security devices may be creating gaps and provide hackers a business backdoor. Such devices currently make up the majority of connected ‘things’: 62 percent of businesses reported network-enabled security cameras in 2016.29

The greatest risk however, according to IT professionals, is employee wearables that are connected to business networks, despite representing a lower number of connected devices than security equipment. Most consumers are unaware of the security gaps posed by their wearables, or even when they are compromised.

The rush to bring smart devices to market to meet consumer demand means the majority of such devices between now and 2020 will be low priced with even lower attention to security. If they continue to perform their primary function with no interruption, there is no reason for the user to suspect an attack. More devices will be hacked silently, and more sophisticated DDoS attacks will continue to target companies, as a result.
Internet enabled devices connected to networks

IoT devices most likely to be a source of security threat or breach
In order to address these emerging risks, companies should follow a set of guiding principles, such as from the Online Trust Alliance (OTA) – a not-for-profit with a stated mission to increase online trust. The OTS IoT Trust Framework aims to maximize security and privacy, to secure IoT devices and data through their entire lifecycle.

A study by the OTA said that 100 percent of reported Internet of Things vulnerabilities in connected home and wearables products are avoidable.

If manufacturers and developers take security and privacy measures into account throughout the development process, breaches need not be fatal.

The OTA principals have been updated in January 2017 to include key learnings from field testing, the evolving landscape or security threats, feedback from industry leaders and related efforts.

“Security starts from product development through launch and beyond but during our observations we found that an alarming number of IoT devices failed to anticipate the need of ongoing product support. Devices with inadequate security patching systems further opens the door to threats impacting the safety of consumers and businesses alike.”

Craig Spiezle, Executive Director and President, Online Trust Alliance
 BLOCKCHAIN, PAYMENTS SECURITY AND DATA DISTRIBUTION

By allowing data to be disseminated but not copied, blockchain technology has formed a new type of digital security for the digital-first consumer.

USD 1.4 billion was invested globally in blockchain startups in the last nine months of 2016

Originally crafted for digital currencies, such as Bitcoin, the potential uses for such a technology is now gaining traction, while cryptocurrencies are being left behind, deemed the currency of the black market or unsavory activities.

The technology behind bitcoin, blockchain, is now being rolled out across other online industries that require additional layers of security. This is evident from music distribution, medical records, and digital identity verification to precious metal jewel sales, title registry and legal drug distribution.

Information held on a blockchain exists as a shared — and continually resolved — database. At the same time, it has no single point of entry from which data can be hacked or compromised. Because of its distributed-ledger technology, blockchain has applications across every kind of digital record and transaction. They promise a model to add trust to untrusted environments and reduce business friction by providing transparent access to the information in the chain.
Future uses of blockchain in payments:

1. Cross-border payment simplification
Sending money across borders can be a complex process, involving multiple currencies and banking institutions before funds can be cleared. The process can be simplified currently, with Western Union for example, but at a considerable cost to the customer. The blockchain can speed up and simplify this process, cutting out many of the middlemen. At the same time, remittance is more affordable. Until now, the costs of remittance were 5-20 percent. Blockchain reduces the costs to 2-3 percent of the total amount, and provides guaranteed, real time transactions across borders.

Santander has become the first major bank globally to use blockchain for cross-border payments. The bank has created an app that facilitates international payments. Users only complete their profile details and can then make an international payment. It connects to Apple Pay, where users can confirm payments securely using Touch ID.

2. Digital paperwork efficiency
The current legal structure involves a huge depth of paperwork, which is financially good for solicitors, barristers and litigators, but less so for customers. Blockchain can reduce the hefty transaction costs associated with legal contracting by cutting out any intermediaries. From a marriage vows to divorce proceeding, a house sale, to a land reclamation, a purchase of a diamond to an insurance claim for the loss of a diamond, or anything else that involves digital proof.

In ecommerce, logistics and shipping involves a number of parties handling papers and payments. Being able to cut out intermediaries and reduce the administrative burden may allow for huge savings for all stakeholders.
3. Secure anti-money laundering (AML) and know your customer (KYC)

In the financial sector, AML and KYC practices have a strong potential for blockchain adaption. Currently, financial institutions must perform a labor intensive multi-step process for each new customer. When identity management is moved to the blockchain, users are able to choose how they identify themselves and with whom their identity is shared, while providing every party in the network access to the same source of information. KYC costs could be reduced through cross-institution client verification, and at the same time increase monitoring and analysis effectiveness.

“The 2017 will be a pivotal year for blockchain tech. From a customer viewpoint, this will not be obvious as blockchain tech should dominantly be invisible – even as its features and functionality improve peoples’/business’ lives. This implementation stage, which 2017 should represent, is a crucial step in the larger adoption of blockchain tech, as it will allow skeptics to see the functionality, rather than just hear of its promise.”

George Howard, Associate Professor Brown University, Berklee College of Music and Founder of George Howard Strategic

THE RIGHT TO BE FORGOTTEN

This right to be forgotten, or the right to erasure, enables an individual to request the deletion or removal of personal data whether there is a compelling reason for its continued processing, or not.
Globally, there are contrasting attitudes to consumer data protection, and the right to be forgotten. In the US and other American countries, transparency and the right to free speech according to the First Amendment, and the right to ‘know’, have typically been favored over the removal of published information regarding individuals and corporations. Some argue that the removal of information from the Internet amounts to censorship.

In China, however, the courts ruled that citizens do not have the right to be forgotten. A judge found favor with Baidu, rather than a consumer, in 2016 in a lawsuit over removing search results. It was the first of such cases to be heard in Chinese court.

In Europe, the European Union adopted the European Data Protection Directive to regulate the processing of personal data. This is now considered a component of human rights law. The EU’s General Data Protection Regulation (GDPR) will come into force in May 2018, bringing with it major implications for any business that manages personal data.

The value of European consumers’ personal data could grow to nearly 1 trillion euros annually by 2020.31

As such a valuable source of information, the new GDPR will have strong implications on businesses that seek to capitalize on this figure.
The Regulation aims to strengthen consumers’ fundamental rights, such as the right to be forgotten in the digital age. Businesses will be obliged to inform consumers as clearly, understandably and transparently as possible about how personal data will be used, so that they are in the best position to decide what data they share.

As well as the right to erasure, the GDPR also intends to simplify the data rules for companies in the Digital Single Market, thereby streamlining EU business processes. Businesses will have incentives to use techniques such as anonymization (removing personally identifiable information), pseudonymisation (replacing personally identifiable material with artificial identifiers), and encryption (encoding messages so only those authorized can read it) to protect personal data.

The main financial impact of the GDPR will stem from the fact that it will upgrade the cap from GBP 500,000 to up to EUR 20 million – or 4 percent of global annual net sales (not profit) – on fines for businesses that do not comply with the changes to data protection and privacy policies.

**In the first year of the new GDPR, we could expect to see fines of up to GBP 122 billion imposed against UK firms in 2018 alone. In 2015, the regulatory fines were closer to GBP 1.4 billion, according to the Payment Card Industry Security Standards Council (PCI SSC).**
The value of European consumers’ personal data could grow to nearly 1 trillion euros by 2020.
Conclusions

1. More ecommerce from millennials but more omnichannel by 2020

WHAT NOW?
 Millennials and Generation Z, the societal sets expected to shake up the retail and ecommerce landscape between now and 2020, will drive more omnichannel shopping, globally.

Millennials are the ecommerce generation, and of all the consumer groups, this section of society support online shopping over traditional retail. In Europe and the US, they are also incredibly price sensitive, compared to their Asian counterparts.

Research has indicated, however, that the gen Z consumer group equally value face-to-face interaction to digital and social commerce, and prefer to marry up their buying channels via their mobile phones, wearable devices and real life experiences in store.

With far less price sensitivity than their older, Western peers, gen Z value company ethics, brand experience and convenience over value. However, these consumers will have little patience with delivery delays, poor customer experience or connectivity issues.

WHAT NEXT?
 Retailers with multiple sales channels should focus on sharpening both their online and offline strategies, and spend resources on understanding the preferences of their consumers as well as overall market trends.

However, regional focus should dictate the level of detail required on these
strategies. Asian consumers have the strongest preference for pure online communication, virtual reality commerce and non-traditional retail. They also have far more disposable income than their Western counterparts. European and North American based businesses, however, should focus on a clear multichannel strategy, where in-store experiences are valued as much as virtual ones by millennials and gen Z.

In any region, all big businesses and traditional retailers (not just tech focused startups that target our youngest consumers) should ensure they can provide both supreme experiences and a brand personality with genuine company ethics. These consumers value social responsibility and political standards over prices and value for money.

2. Most IoT growth expected in Asia but seeing less investment

WHAT NOW?
Thanks to a consumer set with a preference for connectivity, online commerce and virtual interaction, the IoT market in Asia is expected to see the largest amount of growth, globally. Millennials across the world are invested in smart devices, but none as much as those in countries such as China, India and Japan.
It is surprising, therefore, that businesses in Asia are investing far less in IoT technology than those in Europe and North America. Currently technology
development, globally, is focused in Silicon Valley and London.

**WHAT NEXT?**

Such lack of investment from Asian businesses reveals a gap in the global market. Today’s youngest consumers are global beings, with far more disposable income than their Western counterparts, and will happily search overseas if their domestic offerings do not meet their demands. If more investment in IoT comes from Silicon Valley, it will not take long for young Chinese consumers to cross virtual borders to the US, to shop for the latest technology or cutting edge gadgets.

An opportunity exists for technology enterprises to capitalize on Asian consumer needs and spending habits, by investing carefully in AR, VR and connected devices, to keep up with the expected growth and demand in this region.

**3. Mobile is the wallet of the future**

**WHAT NOW?**

Millennials and gen Z could be the first true cashless generation, a vast majority of our youngest consumers prefer not to visit a bank branch, not to carry cash, and like to send money instantly and directly to their peers via mobile banking.

Millennials and gen Z are far less likely to hold credit cards than their older peers, and as such are migrating towards digital and mobile payment methods in line with their preferred habits, such as Apple Pay, Samsung Pay and WeChat Pay. FinTech advancements are allowing newer methods
of authentication, such as Mastercard’s Selfie Pay technology, and chatbots integrated into messenger services like Facebook. Most importantly, our youngest consumers are global in nature, and have a preference for cross-border purchasing and international retail. But with less preference for credit cards, there lies a challenge for internationally minded merchants looking to capture the business of these shoppers.

**WHAT NEXT?**

Unlike crypto currencies, which are considered outdated or disreputable in the FinTech space, the technology that sits behind them is being leveraged to advance payments security in this movement towards newer forms of digital wallets and mobile authentication.

Digitized supply chains, distributed ledger technology and blockchain will facilitate advanced payment security of new forms of digital payments. In response to the international nature of millennials and gen Z, there are discussions around more cross-border online banking by 2020, and real time global payment networks to facilitate more cross-border consumer behavior.

Blockchain will be instrumental in lowering the costs and increasing the speed of such cross-border payments, an essential experience for our youngest consumers.
4. Connectivity gives more valuable data, but greater risk

WHAT NOW?
The future is connected. With 100 billion connected devices expected by 2020, the future of retail and consumer behavior will move into a landscape of perpetual data collection, optimization and aggregation. The most efficient way to make sense of this vast volume of data is artificial intelligence, which will map trends and behavioral patterns, in turn shaping the future of technology.

But with more and more IoT connected devices allowing for more consumer data trends and insight, comes greater security risks. As consumers collect more smart, Internet enabled devices, and connect them to company networks, users are inadvertently providing back door access to hackers, or providing a platform for large scale DDoS attacks to bring businesses offline.

Moreover, business across the globe must be aware of increased sensitivity towards the Right to Erasure, and in the EU specifically, there will be financial implications to enterprises handling large volumes of consumer data and failing to comply with new policies.

WHAT NEXT?
IoT data collection is giving vast opportunities to businesses, and enabling smarter, more targeted marketing of products. However, this use of connected devices by global consumers will push businesses to revisit their risk assessments, and evaluate how to secure themselves against new vulnerabilities. One of the biggest threats by low cost, high risk devices is
the fact that the user may have no reason to suspect their device has been compromised.

In order to address these emerging risks from IoT vulnerabilities, companies should follow a set of guiding principles, such as from the Framework published by the Online Trust Alliance (OTA).

It includes guidelines on a rigorous software development security processes, encryption of all passwords and usernames, capability to reset devices to factory settings and be in compliance with applicable regulatory requirements, and processes to promptly notify a user of threats.
With 100 billion connected devices expected by 2020, the future of retail and consumer behavior will move into a landscape of perpetual data collection, optimization and aggregation.
About the publishers, author and editor

PAYVISION GROUP
Awarded Best PSP at MPE Berlin in 2017, Payvision Group combines the experience of an established payment industry leader with the flexibility of a start-up.

Payvision is one of the world’s fastest-growing global acquiring networks. For over 10 years, it has been providing banks, PSPs, ISOs and their merchants with one global acquiring platform, a high-end reporting interface and a solid risk management solution. Housing these companies under its umbrella, Payvision Group bridges the gap between the old and new school of payment providers, offering the ideal solution for the omnichannel era. Payvision Group is headquartered in Amsterdam, with offices in New York, Utah, San Francisco, Madrid, London, Toronto, Singapore, Tokyo, Hong Kong and Macau.

ACAPTURE
Acapture, a new global omnichannel PSP, designs solutions that eliminate the obstacles modern online merchants face in their payment processing and support cross-border growth. Acapture’s system features SlicePay for simplified allocation of funds to multiple parties from a single transaction, flexible reporting for improved data analysis, a one day integration using one RESTful API, a streamlined reconciliation process, 20 ecommerce platform plugins and the ability to handle 60+ of the most popular alternative payment methods and 150+ transaction currencies. Combining simplicity, flexibility and reliability, Acapture offers the most effective payment platform for maximizing international sales, particularly in the world’s top 25 emerging markets.

For more information about Acapture visit: www.acapture.com
Keira is the B2B Content Writer at Payvision. She is the author of all Payvision white papers including the annual Key Business Drivers in Cross-border Ecommerce paper, Mobile Payments Report, and the library of Acapture ecommerce infographics.

Keira is a graduate from Oxford Brookes University and prior to becoming a part of the Payvision marketing department in 2014, she worked for companies in the Netherlands, the UK, New Zealand and Canada.

Rolf Visser is the Co-Founder and Chairman of the Cross-Border Ecommerce Community (CBEC), a strategic cross-border knowledge hub for manufacturers and web merchants around the globe. In view of his outstanding contribution to world ecommerce industry, he was recently appointed Vice Chairman of the World Ecommerce Industry Alliance (WECIA), a worldwide network assisting enterprises in developing international business cooperation and exchange.

Rolf is the Vice President of Global Marketing at Payvision and Acapture, a data-driven omnichannel enterprise awarded Best PSP at MPE Berlin 2017. Rolf has a forward thinking marketing vision, introducing multichannel, inbound marketing techniques and an award-winning business model, helping transform and elevate businesses to the next level.