



Introduction

Six mega-pressures are conspiring to transform the retail industry, triggering the emergence of (R)Tech, the confluence of retail and technology. Read more in [The Emergence of \(R\)Tech](#).

The act of shopping is changing.

Today's customers want to shop anywhere, anytime—and across any channel convenient to them. They value transparency and healthfulness. And when it's time to purchase, customers are empowered to research and make decisions through ubiquitous access to information.

Customers are spending more on experiences and services over products. Apps enable them to rent products, share ideas, and provide reviews. Experiences and authenticity drive loyalty; unprecedented social connectedness drives trustworthiness; time scarcity drives the desire for convenience. Individualization drives personalization – in marketing and product selection.

Companies now have access to more data than ever before about their customers, stores, products, suppliers, and supply chains. This availability of data enables retailers to deliver on a customized consumer experience, and to identify operational and supply chain efficiencies at a rate never-before imagined.

Leading retailers see these trends not as separate, disconnected issues, but instead as interconnected components of an emerging story. Retailers are adapting to the triggering factors by overcoming their legacy systems and building innovation cultures.

This report was initially developed by the Retail Industry Leaders Association and [Forum for the Future](#), with sponsorship from Target and Unilever.



RILA's (R)Tech Center for Innovation

About the Retail Industry Leaders Association

RILA is the trade association of the world's largest and most innovative retail brands. RILA members include more than 200 retailers, product manufacturers, and service suppliers, which together account for more than \$1.5 trillion in annual sales, millions of American jobs and more than 100,000 stores, manufacturing facilities and distribution centers domestically and abroad.

About the (R)Tech Center for Innovation

The (R)Tech Center for Innovation, an initiative of RILA and Accenture, has a mission to help retailers navigate the industry transformation, and to spur the adoption of the "(R)Tech" term within the retail innovation ecosystem. (R)Tech is a new term that describes the confluence of retail and technology. An (R)Tech company embodies the strongest values of both industries – global and local, nimble and entrepreneurial – to delight profoundly empowered consumers. The term is meant to accelerate retail innovation and to invigorate retail's reputation with innovators, the next generation of retail talent, policymakers, and the public.

Visit www.rtech.org to learn more about the (R)Tech Center for Innovation's activities and to engage in the conversation.

About Forum for the Future

Forum for the Future is an independent non-profit working globally with business, government and other organizations to solve complex sustainability challenges. From our offices in London, New York, Mumbai and Singapore, we convene powerful multi-stakeholder coalitions that are influencing the work of entire sectors, prototyping innovations for sustainable development and experimenting with new governance systems. We also individually partner with many businesses, governments and NGOs – including leading organizations such as Unilever, Target, M&S and WWF – to deliver transformational strategies that address complex sustainability challenges. By connecting these organizations through a supportive network, and launching our new School for System Change, we are also working to equip a growing community of change-makers to accelerate social and environmental progress. Learn more at www.forumforthefuture.org.

Visit Forum for the Future to learn more.



Methodology

The (R)Tech Center for Innovation and RILA, in partnership with The Forum for the Future, performed extensive research and interviews with its membership, and prioritized the trends driving change in the retail industry. This report is repurposed from the initial Retail Horizons toolkit, initially developed in 2014. These 22 trends uncovered address six categories:



New Consumption Patterns

- Ubiquitous & Ultra-Personal Shopping
- Urbanization
- Global Economic Shifts
- The Sharing Economy



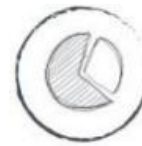
Technology

- Augmented Reality
- Distributed Manufacturing
- Advances in Biotechnology
- Empowered Consumers



Big Data and Transparency

- Ubiquity of Data
- Radical Transparency



Demographics

- Shifting Demographics
- New Approaches to Health and Wellbeing
- Self- and Community Reliance
- Education Revolution



Resource Constraints

- Resource Scarcity
- Time Poverty
- Decline in Ecosystem Services
- Water Insecurity
- Energy Transformation
- Coping with Climate Change



Politics and Economics

- Geopolitical Instability
- Circular Economy



01 | New Consumption Patterns



Ubiquitous & Ultra-Personal Shopping

Shopping will be invisible and ubiquitous, embedded into natural gestures and conversation, managed through a connected ecosystem, and considering all channels and all customers. Retailers and brands will become an integral part of customers' lives, even outside of the purchasing context.

! Signals of change

+ Ubiquitous shopping is possible as a result of a convergence of trends, such as increasing use of smartphones and the growth of the internet of things, which makes digital connections among objects, consumer desire for convenience, and competition for consumer "share of mind." Social, voice, and image commerce are also major contributors.

+ Most Millennials have never known a world without internet, social media, and mobile technology. According to Pew Research Center, they now surpass Baby Boomers with a population of 75.4 million.

+ Millennials want to use voice ordering and social media more in their shopping experience. According to Accenture Customer Journey Research in 2017, 72% of US Millennials are interested in using voice activated ordering with 25% currently or using or can't wait to use that technology. In addition, 40% cited social media as place to find ideas on what to buy and 71% are interested in buying via social media with 22% who are currently buying via social media or can't wait to buy that way.

> Business responses

+ Devices like Amazon Echo (2014) and Google Home (2016) have changed the way consumers shop, using voice enabled assistants to complete tasks for the user.

+ Grocery delivery service Peapod is testing a system that allows consumers to shop "virtual shelves" at train platforms in Philadelphia.

+ Companies like IKEA, Lowe's, and Wayfair have created augmented reality technologies to improve customer experiences, whether or not they are in stores.

? Questions

+ How can your business build brand favorability through ubiquitous shopping?

+ Could there be a consumer backlash against ubiquitous and ultra-personal shopping?

+ How could ubiquitous shopping help consumers adopt more sustainable behavior?



Urbanization

Despite a pause or even reverse in city growth in the late twentieth century, cities are now experiencing a resurgence. Shifting patterns of settlement have implications for infrastructure, people's lifestyles, and for consumer priorities and demands.

! Signals of change

+ According to the U.S. Census Bureau, "the nation's urban population increased by 12.1 percent from 2000 to 2010, outpacing the nation's overall growth rate of 9.7 percent for the same period."

+ In his 2013 book *Reshaping American Metropolitan*, Arthur Nelson explores a shift toward urban lifestyles in the United States, citing surveys that show that "about half of Americans want to live in walkable communities with mixed housing and other mixed uses."

+ By 2025, large U.S. cities are expected to generate more than 10 percent of global GDP growth, a bigger contribution than all the large cities of other developed countries combined.

+ Urban planners are increasingly concerned with smart and sustainable cities. Cities such as New York and London are experimenting with apps for parking and other services, designing for ample green space, and building bike lanes.

+ There is criticism that cities are becoming places where only the rich can afford to live. The most expensive cities in U.S. include New York, Washington D.C., San Francisco, and Los Angeles. City planners and citizens are concerned about gentrification and affordability of city services.

+ Central city planning is likely to change radically in the next decade, becoming increasingly traffic-free with the rise of autonomous vehicles.

> Business responses

+ Retailers like Target, The Office Depot, and Walmart are expanding into cities by opening smaller format stores in urban areas. In some cities, like Chicago, large retailers have been met with resistance from residents.

+ Retailers like Petco and Best Buy are developing new store brands that adapt to smaller spaces.

+ IKEA is developing alternative methods of transportation, like buses and water ferries, to its stores to attract urban consumers.

+ Pop up stores are becoming increasingly popular in urban areas such as New York, Miami, Chicago, and San Francisco.

? Questions

+ What goods and services would appeal to urban dwellers?

+ How might retail stores adapt to a growing urban population?

+ How might changing densities of settlement affect store formats and siting?



Global economic shifts

The global economy is changing, with sustained economic growth in emerging economies such as China, India, and Brazil. The economic center of the world is moving South and East, with middle class growth in those economies. Meanwhile, global economic inequality is rising—the United States has the greatest wealth disparity out of all the developed economies in the world.

! Signals of change

- + “Severe income disparity” ranked fourth in the top 10 global risks in the World Economic Forum’s “Global Risks 2014” report. In 2017, concerns have shifted to “Massive incident of data fraud/theft”.
- + According to a report by Oxfam, almost half of the world’s wealth is now owned by only one percent of the population, and seven out of ten people live in countries where economic inequality has increased over the past three decades. Wealth disparity in the United States has been rising steadily since the 1970s.
- + The Brookings Institution estimates that there were 3.2 billion people in the middle class in 2016, and account for one-third of the global economy.
- + According to PwC, the demographics and wealth gaps between shopper segments are expected to widen by 2020. This may create shopper segments with different expectations for product offerings and shopping experiences.

> Business responses

- + In 2014, Gap, Inc. announced that it would raise its hourly minimum wage to \$10, impacting 65,000 employees; Walmart lifted average hourly full-time rate to \$13.38 in 2016.
- + Today, 57 percent of Unilever’s total global business comes from emerging markets.
- + New business models are being developed to sell a variety of products in African and Asian countries through micro franchisees. Companies like Solar Sister (which sells solar lamps) and Living Goods (which sells a variety of products) are using those models to distribute goods to otherwise difficult-to-reach communities.

? Questions

- + What are the implications of wealth fragmentation for your consumers and employees? How will this affect your marketing and human resources strategies?
- + There may be hidden risks and opportunities to your business from the growth of the global middle class. How can you uncover these and address them?



The sharing economy

Rather than buying new products to consume, people are increasingly sharing or renting things like cars, bikes, power tools, clothes, housing, and even leftover food. This trend could grow and continue to create a new form of consumer economy in which experiences and access to items are more desirable than ownership. However, it is uncertain whether the barriers to the sharing economy will grow as well.



Signals of change

- + According to a report by Merrill Lynch and Bank of America, the sharing economy was worth \$250 billion across transport, travel, leisure and workspace, food, retail, media, financials, and others.
- + Accenture's Customer Journey Research found that almost 1 in 5 U.S. millennials are likely to rent apparel.
- + Upwork and the Freelancers Union's annual report found that 35 percent of the U.S. workforce are opting for freelance jobs; and 81 percent of traditional workers are open to working additional hours outside of their daily job.
- + Regulatory uncertainty is an important factor shaping the future of the sharing economy. For example, peer-to-peer taxi services have been banned in some cities after strong lobbying against them by traditional taxi organizations.
- + The gig economy, a segment of the sharing economy in which people compete to offer services at low prices, has been criticized recently. In a recent Fast Company article, "Pixel and Dime: On (Not) Getting by in the Gig Economy", editor Sarah Kessler highlighted the lack of benefits and struggle to earn minimum wage that many of these workers face.



Business responses

- + Companies like Zipcar, Rent the Runway, and Airbnb are using technology to enable people to share on a large scale. Recognizing the size of the opportunity, car rental company Avis acquired Zipcar for \$500 million in 2013.
- + Instacart, a peer-to-peer grocery delivery service, does not intrude on a regulated industry, provides competitive wages, and is leveraging human labor rather than technology to drive value. TaskRabbit is another such example.



Questions

- + Where do opportunities for your business exist in the sharing economy? Could you develop a new business model around products or services you already offer, develop new partnerships, or acquire new businesses?
- + Is there a risk that consumers will be less inclined to purchase your products because they can simply share items owned by other consumers?
- + How can your business help address the potential downsides of the sharing economy such as the gig economy?



02 | Technology



Augmented reality

Augmented Reality (AR) allows computer generated images to be superimposed over the user's real-world environment, generally through a cellphone, headset, or video game. Augmented reality applications will increasingly be used in retail environments to give consumers product information and help them interact with brands.

! Signals of change

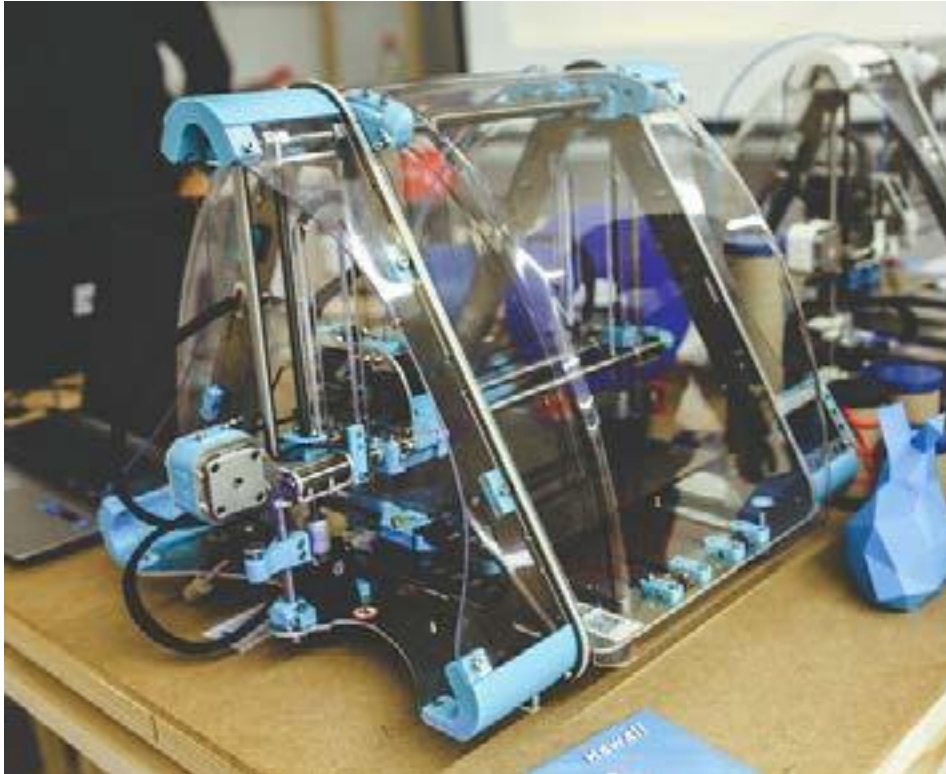
- + The Digi-Capital AR/VR Report Q3 2017 predicts AR being the primary driver of \$108 billion market by 2021.
- + The provision of augmented reality data can be triggered by a user's GPS location or, increasingly, by electronic "beacon" transmitters placed in an environment such as a store. In January 2014, beacons were installed in 150 grocery stores on the West Coast to send highly targeted coupons to customers while they are shopping.
- + AR is changing the way employees are trained, whether it is training on a particular set of machinery, or recreating user manuals to become more interactive.

> Business responses

- + Clothing retailer Topshop and cosmetics company Sephora are using augmented reality to help customers try on clothes and makeup virtually.
- + Pokémon GO, an augmented reality game, sparked enormous interest in 2016. Colonie Center, a mall in Albany, NY capitalized on the fanfare converting its main lobby into a designated Pokémon Go arena for customers.

? Questions

- + How could the use of augmented reality help you improve operations or enhance the customer experience?
- + Augmented reality will increasingly enable consumers to access third-party information about products, such as health or environmental ratings, in real time. How might this impact your business?
- + How could the emergence of augmented reality in the retail environment help consumers make better choices?



Distributed manufacturing

Technological advances are making localized production easier than ever, and 3D printing and information technology could disrupt and localize conventional manufacturing. Industry is using networks of geographically dispersed manufacturing facilities, and 3D printers have become affordable for consumers to own for their homes or use in their local community.

! Signals of change

- + According to the Reshoring Initiative, due to rising labor and shipping costs in China and the demand for faster delivery, an estimated 250,000 jobs were brought back to the U.S. – manufacturers are creating the most job opportunities in the country.
- + Making products by printing them in ultrafine layers, 3D printing has long been used in high-value manufacturing (e.g., to make jet engine parts). Recent improvements in the technology, coupled with a significant drop in price, are transforming it into a disruptive technology. It is now possible to print a wide variety of materials, such as ceramics, textiles, food, and biological tissue. The availability of inexpensive, compact 3D printers is also enabling consumers to print, rather than buy, a growing range of products.
- + A Michigan Technological University study estimated that by using a low-cost 3D printer, such as the RepRap, to produce commonly used household objects, a family could save \$300 to \$2,000 per year.

> Business responses

- + In 2013, Walmart committed to sourcing an additional \$250 B of U.S.-produced goods in ten years.
- + Staples, Best Buy, and other retailers are already selling 3D printers; some retailers are even printing custom 3D products in-store.
- + UPS, recognizing the possible disruption in distribution and shipping, opened numerous 3D printing locations across the U.S.
- + HP introduced a line of Jet Fusion 3D printers, making it more affordable for businesses to have the technology in-house.

? Questions

- + How will distributed manufacturing affect your business?
- + The growth of 3D printing may drive consumer expectations for products that are customizable, modular, and upgradeable. How would this impact the design of your products?
- + Are your products capable of being produced by consumers at home, without any need for you? How can you ensure that you are adding value?
- + How does your responsibility for product stewardship, performance, or recyclability change with distributed manufacturing?



Advances in biotechnology

Biotechnology is rapidly advancing as new technologies, such as synthetic biology and rapid genomic sequencing, work faster and become more affordable. These advancements are driving the development of powerful new applications in sectors ranging from agriculture to energy to medicine.

! Signals of change

- + The impacts of biotechnology are distributed across the economy, but they are particularly significant for food production. Many experts believe biotechnology will play a key role in food security in the future, but consumer acceptance of it in food is far from certain.
- + The U.S. biotech industry generated \$107 billion in annual sales for 2015, a 16 percent increase over the previous year according to EY.
- + The garage biotech movement is an extension of the hacker principle applied to genetic engineering and synthetic biology. Although not generally pushing the boundaries of the science, do-it-yourself (DIY) groups conduct projects such as analyzing their own genomes, making fluorescent yogurt, and finding ways of making the technology cheaper to use.
- + There is concern that the tools of bioterrorism may become widely available. The U.S. Federal Bureau of Investigation has set up a neighborhood watch-type scheme with groups like DIYbio acting as an early warning system for identifying suspicious behavior.
- + With CRISPR making gene editing faster, cheaper and more accurate, biotech is going to be a game changer for everything from apparel and food to health and pharmaceuticals.

> Business responses

- + Memphis Meats, a “clean meats” startup that grows meat in labs, recently received funding from Richard Branson, Bill Gates, Jack Welsh, and other prominent business-people.
- + Companies like Ecovative are growing Mushroom® Packaging that is compostable; CPG companies are using molasses, sugarcane, cashew nut shells, and other inputs for more sustainable packaging.
- + Unilever has developed algal oils for its Dove and other products.

? Questions

- + Biotechnology is impacting a wide range of materials (such as food and fibers) and industrial processes. How might this affect your business?
- + Manufacturers face mounting opportunity to use biotechnology in consumer products. What role can retail play in helping consumers to make informed choices about the ingredients in their products?



Empowered consumers

Empowered by social media and easier access to more data, consumers are more and more informed about the ecological and social impacts of their buying habits and have greater means to create pressure for change. This evolution of power is transforming the nature of the relationships between retailers and consumers.

! Signals of change

- + Havas Media's 2017 "Meaningful Brands" report found that 75 percent of U.S. consumers think companies and brands should play a role in improving their quality of life and wellbeing. Retail ranks as the number two most meaningful industry.
- + A major finding of IBM's 2016 global chief marketing officer (CMO) survey found that CMOs believe creating a richer customer experiences is a top marketing priority.
- + According to an AIMIA Inc. survey, millennials look to brands who offer maximum convenience with the lowest prices. Their affinity for technology means more access to product information, reviews and price comparisons that retailers will need to keep up with.

> Business responses

- + Chipotle's annual Cultivate Festival inspires consumers to discover family farmers, local products, fresh ingredients, and more around its Food with Integrity platform.
- + My Starbucks Idea seeks to crowdsource ideas from consumers. More than 150,000 ideas have been submitted and two million votes have been cast since its launch in 2008.
- + GoodGuide, a smartphone app, enables consumers to review various health, sustainability and other criteria by scanning the product's barcode. It currently catalogues information about over 210,000 products.

? Questions

- + How will you build trust with consumers of the future?
- + What will you do to ensure that your brands continue to engage with consumers on the issues they care about?



03 | Big Data and Transparency



The ubiquity of data

The accumulation of vast amounts of data, combined with an exponential increase in computing power, has enabled the use of new and powerful insights in every aspect of society. Companies that successfully leverage Big Data can provide highly targeted products and services. At the same time, the proliferation of individuals' data and the increasing sophistication of analytic algorithms threatens to undermine individual privacy.

! Signals of change

- + Cisco estimates that global internet traffic will increase nearly threefold and that mobile data traffic will increase sevenfold over the next 5 years. It is also predicted that the total number of devices connected to IP networks will be more than three times the global population by 2021.
- + The International Data Corporation says that worldwide revenues for big data and business analytics will grow from \$130.1 billion in 2016 to more than \$203 billion in 2020, and see it growing six times faster than the overall information technology market.
- + In 2016, The Federal Trade Commission issued its Big Data Report that made explicit the agency's intentions to expand its unfair and deceptive practice enforcement, and offers guidance on the development of new products and individualized marketing, predicting the preferences of individuals, tailoring services and opportunities.
- + In May 2014, the European Court of Justice ruled against Google in a landmark "right to be forgotten" ruling that would strip Google of a large amount of private data on individuals. Then in 2016, the EU introduced the General Data Protection Regulation (GDPR), a far-reaching regulation intended to give control of personal data back to individuals.

> Business responses

- + Amazon filed a patent for anticipatory shipping in January 2014, a system that can predict purchases and prepare products for shipping before a consumer has purchased them.
- + In 2015, Kroger Co. purchased dunhumbyUSA to create a new consumer insights subsidiary called 84.51°, which analyzes data collected from loyalty card transactions and online shopping to decide what coupons to offer customers, where certain products should be displayed in stores, and other measures that establish a more personalized shopping experience.
- + Technology companies like Google and Facebook are using knowledge of their users to customize the users' experiences and advertise to those users.

? Questions

- + How can your business leverage the insights that are now becoming possible through Big Data to improve operations or enhance consumer experience?
- + What sorts of data privacy issues do you anticipate for your business? How will you address with them?



Radical transparency

The rapid increase in access to data and information – mainly through the internet – combined with shifts in consumer expectations is creating significant change in organizational and individual transparency. Technological developments mean that in the not-too-distant future, every detailed aspect of a business could be fully in the public eye.

! Signals of change

+ According to a 2016 study from Label Insight, the pace of technological advancements and ubiquitous connectivity creates an expectation among consumers for radical transparency throughout their shopping experience, allowing companies to bolster loyalty.

+ Customer demand for supply chain transparency has led to the proliferation of certification standards for commodities. The number of certified goods increases every year according to Fair Trade USA. Three-quarters of consumers surveyed said Fair Trade made them feel “positive” or “very positive.”

+ Regulations around data collection, analytics and uses are shifting on a global scale; the European Union last year enacted the General Data Protection Regulation that strengthens citizens’ data privacy protections and harmonizes data privacy laws across the EU.

+ In 2017, blockchain, the free-to-access, unchangeable public record allowing value and information to be transferred securely and transparently without a third party, has attracted many business use cases.

> Business responses

+ Whole Foods has committed to full GMO transparency by 2018 for its grocery stores. By that date, all products that contain GMOs will be clearly marked.

+ Fashion company Everlane seeks to introduce radical transparency to high fashion and challenge the high premiums associated with it. Everlane’s website features an interactive map where consumers can view the factories where products are made and read stories about the production process.

+ In early 2017, Walmart filed a patent for a “delivery management system” that would incorporate blockchain technology to provide consumers with unprecedented insight into supply chain logistics and food cultivation processes.

? Questions

+ How would greater public scrutiny of your operations and supply chain impact your business?

+ What measures can you take to make your business operations more transparent and build trust with all your stakeholders, from consumers to communities to activists?



04 | Demographics



Shifting demographics

The U.S. population is growing and changing, becoming an older and more multicultural society. The global population is also increasing and the Millennial generation is filling out the workforce.

! Signals of change

- + Though the population growth rate is at its slowest pace in 80 years, the population of the U.S. is still growing, because of a relatively steady birth rate, increased life expectancy, and continuing immigration.
- + More than half the growth in U.S. population between 2000 and 2010 was attributed to the increase in the Hispanic population. Based on current census data, the U.S. is projected to become a majority-minority nation for the first time in 2043, with non-Hispanic white remaining the largest single group.
- + By 2030, 20 percent of Americans are projected to be older than 65, compared to the 13 percent from the 2010 Census. As of 2015, Millennials surpassed Generation X as the largest share of the American workforce.
- + By 2020, Millennials will account for \$1.4 trillion in direct annual spending in the U.S. and represent 30 percent of total retail sales

> Business responses

- + New businesses targeting the values-based behavior of millennials has given rise to companies providing access rather than ownership. Companies like Airbnb, Lyft, and SpotHero are providing services to consumers interested in a more “sharing economy.”
- + Technological solutions are being developed to support “aging in place” for the growing elderly population. Startup companies are working on companion robots like ElliQ and Cutii for at-home elderly care as well as in-home caregiver platforms like Hometeam and Honor.

? Questions

- + How are changing demographics impact your consumers and employees? How do you meet the needs of diverse groups, such as the aging population, the multicultural population, and the emergent digital-native generation?
- + How will a growing global population impact your overseas business operations and consumer base?



New approaches to health and wellbeing

The cost of healthcare and a greater understanding of the determinants of poor health are placing a greater emphasis on prevention in addition to treatment. As a result, there has been an explosion in digital healthcare innovation and changes in lifestyle approaches.

! Signals of change

- + According to the CDC's National Center for Health Statistics, total national health expenditures reached \$3.2 trillion in 2015.
- + Forty-five percent of U.S. adults report living with one or more chronic conditions.
- + The opioid crisis is bringing more attention to nonpharmacological treatments to reduce the risk of addiction in prescription drug abuse.
- + Personal health monitoring devices are becoming ubiquitous among a wide segment of the U.S. population.
- + The 2015 National Survey on Drug Use and Health estimates that 43.4 million adults aged 18 or older in the U.S. live with some kind of mental illness that ranges from no or mild impairment to significantly disabling impairment.

> Business responses

- + Nike and other brands are focusing their efforts on providing health services. Retail in-store clinics by top retailers like Walgreens, CVS Health, Kroger, Target, and Walmart continue to provide cost-effective and convenient health services.
- + Nearly 90 percent of food retailers employ store dietitians at the corporate, regional, store or consultant level.
- + With tools like Doctor on Demand or Talkspace, individuals can get "house call" support for both physical and mental health concerns.
- + Insurance providers and doctors' offices are providing online portals or smartphone apps to track appointments, medications, etc.

? Questions

- + Health delivery is moving out of the doctor's office and into everyday life. How can your business help promote the health and nutrition of your employees and consumers?



Self- and community-reliance

New models of self- and community-reliance may flourish as a result of greater access to digital platforms, growth in distributed manufacturing, and the rise of the sharing economy, with the potential to distance people from brands. How this trend will unfold is uncertain, but its impact will be fundamental to retail's health over the next two decades.

! Signals of change

- + Maker Faires—billed as the “greatest show and tell on Earth”—are international events that draw independent inventors, designers, and tinkerers. The three flagship events drew 260,000 people in 2016 and overall global attendance reached over 1.4 million.
- + Makerspaces are fostering entrepreneurship and are often utilized as incubators and accelerators for business startups.
- + Some have called “the IKEA Effect” one in which people cherish the things they build more than the things they buy.
- + The number of farmer's markets in the United States continues to grow. There are now more than 8,500 farmers markets across the country and every year, the USDA celebrates National Farmers Market Week.

> Business responses

- + Etsy, an online marketplace for buying and selling unique goods with 1.7 million global sellers and \$2.84 billion in annual gross merchandise sales in 2016, launched Etsy Studio—a site for craft supplies—in April 2017.
- + Subscription meal services like Plated, Hello Fresh, and Blue Apron provide consumers the semi-homemade experience.
- + Coworking, car sharing, peer-to-peer lending, and fashion all have examples of companies addressing the self- and community-reliance trends. Sites like WeWork, Lyft, Lending Club, and threadUP all address this need.

? Questions

- + How would a move toward self- or community-reliance impact your business?
- + Are there any new opportunities for your business model that support self- or community-reliance?



Education revolution

The educational model that prevailed in the United States for decades is rapidly changing. There is a widespread feeling that education is no longer preparing students adequately for the world, but little agreement on how it should change. At the same time, technology is enabling new forms of teaching delivery, such as massive open online courses (MOOCs), that are making education more widely accessible and affordable.



Signals of change

- + Educational models are being questioned as employers identify a gap between degrees and the skills that jobs require. According to McKinsey, 45 percent of U.S. employers say lack of skills is the main reason for entry-level vacancies, and only 42 percent of worldwide employers believe new graduates are adequately prepared for work.
- + The rising cost of U.S. college education has left many questioning its value and many others graduating from college with a heavy debt burden. According to the Wall Street Journal student debt topped \$1.4 trillion in 2016 with 44.2 million Americans now with student loan debt.
- + According to the U.S. Bureau of Labor Statistics, one-third of the labor force completed no more than high school, while the remaining two-thirds had at least some college experience in 2016.
- + Renewed focus and investment in upskilling, retraining, and apprenticeships have entered the national conversation to help address the reported skills gap challenge and provide opportunities for those not seeking secondary education for a variety of reason.



Business responses

- + Companies like Apple, Ford, LEGO, and Disney are members of the Partnership for 21st Century Skills, an organization that builds partnerships among educators, businesses, communities, and governments to promote the teaching of 21st century skills.
- + Online education models like Coursera, Udemy, and edX are offering alternative education that attracts a combined 44 million users as of the end of 2016.
- + Companies like McDonald's, Starbucks, Gap Inc., Walmart, and CVS Health have introduced upskilling programs to help their employees move up into new jobs within the company and prosper.



Questions

- + What skills will be needed for the future jobs in your industry?
- + Is there a role for your business to work with those innovating in the educational system?
- + What will it mean for the workforce and consumers if people leave college with a high debt burden?



05 | Resource Constraints



Resource scarcity

Many key natural resources are becoming more scarce and expensive. An increase in global interconnectedness means that shocks can quickly ripple throughout supply chains, causing price spikes and volatility. Governments and businesses will likely continue to struggle to secure continuous supplies of key resources and are developing alternatives where possible.

! Signals of change

- + Humanity currently uses resources at a rate 70 percent faster than they can be regenerated by nature. By the early 2030s, we are projected to need more than two planets to meet resource demand, compared to half a planet's worth in the 1960s.
- + Resource demand from emerging markets, particularly in Asia, in the past decade has reversed the price declines of the 20th century.
- + In 2014, 80 percent of countries consume more biocapacity (e.g., cropland, fisheries, forests, etc.) than is available within their borders. Copper, zinc, tin, and nickel have seen a near exponential rise in production. There is not enough copper to meet the demands of the future global population at the same levels used in Western lifestyles today.
- + According to Accenture's Circular Advantage report, continued dependence on scarce natural resources for growth will lead to revenue reductions, increased costs, and a disadvantage in intangible assets.

> Business responses

- + Pronutria, a biotech company, has developed a process that converts algae to protein necessary for human nutrition. The company claims it can feed a billion people on an area of land the size of Rhode Island.
- + BlueOak received \$35 million to build the first urban mining refinery in the U.S. capable of retrieving valuable metals, including gold, silver, copper and palladium, from e-waste.
- + The Closed Loop Fund, a partnership between retailers and brands, was founded to provide low-interest loans to municipalities and businesses developing advanced recycling infrastructure.
- + The Ellen MacArthur Foundation's Circular Economy 100 brings together companies governments to address new consumption models.

? Questions

- + What natural resources does your business depend on for its products, and what are the medium- and long-term prognoses for these resources?
- + How could resource scarcity affect your business indirectly (e.g., through regulation, consumer demand, resource conflict, or protectionism)?
- + How can you secure resources or find alternatives?



Time poverty

Time poverty is a growing concern for Americans, who work longer hours than citizens of many other countries. This influences many other retail-related trends such as pressure for greater convenience, online shopping, delivery-on-demand, and ubiquitous shopping. Time poverty also contributes to increased stress and mental health problems.

! Signals of change

+ The average American worked nearly 1,800 hours in 2016, more than workers in countries like France (1,470 hours) and Germany (1,360 hours). People in developing countries, including Chile, Costa Rica, and Mexico, work even more hours than Americans.

+ According to the OECD Better Life Index, on average, a U. S. worker spends 60 percent of the day (14.3 hours) on personal care and leisure (including eating and sleeping). This is less than the average (15 hours) for the 34 Organization for Economic Co-operation and Development (OECD) member countries. Working parents in Americans have an especially challenging time balancing work and life commitments.

+ According to the Anxiety and Depression Association of America, anxiety disorders are the most common mental illness in the U.S. and affect 40 million Americans. Lack of time, or stress, can exacerbate an anxiety disorder. Anxiety disorders cost the U.S. \$42 billion per year, almost one-third of the nation's yearly mental health bill.

> Business responses

+ More employers are experimenting with ways to ensure their employees are healthy and happy—from offering four-day work weeks to nutritious food on the job. Many corporate executives describe the productivity gains that came from shifting his company to a four-day work week.

+ Meditation training is becoming widespread in innovative business communities in Silicon Valley. Companies such as Google are hiring Zen masters to lead mindfulness exercises.

? Questions

+ How will time poverty impact the way consumers interact with your products and stores?

+ How can your products or services enhance consumer wellbeing and minimize time poverty?

+ What can you do to ensure the productivity and wellbeing of your employees?



Decline in ecosystem services

Ecosystems provide essential goods and services that sustain life – from the purification of air and water to the provision of food, fuel, and fiber. Although generally not valued or factored into investment decisions, industries such as agriculture, pharmaceuticals, or cosmetics could not exist without them.

! Signals of change

+ A study by The Economics of Ecosystems and Biodiversity found that environmental externalities—including loss of natural resources and nature-based services—are costing the global economy \$4.7 trillion per year. The study estimates that conserving forests would eliminate \$3.7 trillion in damage related to climate change by 2030 and that mismanagement of the world's fisheries costs \$50 billion each year.

+ The Millennium Ecosystem Assessment found that approximately 60 percent of global ecosystem services are degraded or used unsustainably, resulting in nonlinear changes (i.e., accelerating, abrupt, and potentially irreversible) that have important implications on human wellbeing and are affecting the poor disproportionately.

+ Emerging complementary approaches to traditional conservation include restoration and rewilding, where targeted interventions aim to increase biodiversity in degraded ecosystems. Examples include re-introducing native plant and animal species back into the White River National Forest in Colorado to address disturbed areas and reintroducing trout into the River Wandle in London, England to restore river health in a polluted area.

> Business responses

+ Companies are exploring monetary valuation of ecosystem services and, in some cases, are even integrating these financial values into their corporate accounting. PUMA's Environmental Profit and Loss Account (EP&L), for instance, evaluates "environmental impact for greenhouse gas emissions, water use, land use, air pollution and waste generated through the operations and supply chain," and has received considerable media attention and a few prominent supporters. The practice is now run by Kering, PUMA's majority owner, which also expanded the program to its other brands.

? Questions

+ In what ways does your business depend, directly or indirectly, on ecosystem services?

+ How would your investment decisions change if you or your stakeholders incorporated the costs of ecosystem services?



Water insecurity

More water is being used for agriculture, industry, energy generation, and in-home uses as population grows and globalization increases. Freshwater is becoming scarcer and increasingly expensive in certain regions, which will necessitate changes in usage and conservation in both industrial and household contexts, while floods are increasingly common elsewhere.

! Signals of change

+ According to the Organization for Economic Co-operation and Development (OECD), almost half the world's population will be living under severe water stress by 2030 under a business-as-usual scenario.

+ According to the U.S. Department of Agriculture, the ongoing drought in California could potentially have large and lasting effects on fruit, vegetable, dairy, and egg prices beyond forecasted CPI increases; drought conditions in Texas and Oklahoma could drive beef prices up further.

+ Concern over embedded water in food and other products is expected to increase in the next five years. Trade in embedded water has steadily increased over the last four decades. Approximately 15 percent of domestic water is exported via trade.

+ According to the Water Research Foundation, water rates increased in over 1,961 utilities in six U. S. states over the last decade – at a rate faster than Consumer Price Index (CPI) inflation.

> Business responses

+ In 2015, Coca-Cola returned 191.9 billion liters of water to nature or human communities – 115 percent of the water it used in its beverages that year.

+ Levi's introduced a line of "Water<Less" Jeans that uses significantly less water in production than a typical pair of jeans.

+ Gap's "Women + Water" initiative, a partnership with USAID, improves access to clean water and sanitation services for women in the global apparel supply chain.

? Questions

+ What is the water footprint of your current products, services, and operations?

+ What are the implications for your business if relatively inexpensive and/or adequate water supplies are no longer guaranteed?

+ What steps can you take to minimize your reliance on fresh water?

+ How can your business help people use water more efficiently?



Energy transformation

The U.S. energy system is transitioning in response to multiple factors including energy security, increasing demand, cost, safety, advances in technology, and the need to lower greenhouse gas (GHG) emissions. Volatile energy costs will have profound impacts on business, both directly and indirectly.

! Signals of change

- + A resurgence of fossil fuel production is underway in the United States, driven by the use of hydraulic fracturing ("fracking") to extract "tight oil" and natural gas. Advocates see the shale boom lasting for 100 years; however, skeptics say it could collapse within five to ten years.
- + Helping to spur momentum for change, coal production is plummeting while solar and wind solutions are becoming more financially competitive.
- + Solar and wind production are growing rapidly across the country, especially in the Midwest and West. The cost of solar panels has dropped precipitously since 2008.
- + In June 2014, the U.S. Environmental Protection Agency (EPA) announced regulations to cut GHG emissions from coal-fired power plants by 30 percent by 2030 (from 2005 levels). The regulations will face years of legal challenges, especially given the Trump Administration's priorities, and it remains to be seen whether they will be implemented. Regardless, even states are pushing for more stringent GHG emissions cuts.
- + On May 11, 2014, Germany set a record by producing 74 percent of its energy from renewables. This record production occurred midday and solar and wind energy filled a large portion of the power. The country is aiming for 80 percent of power to come from renewables by 2050.

> Business responses

- + The solar portfolios of many leading U.S. retailers are growing as the overall commercial market continues to develop. Apple, Costco, GGP, IKEA, Kohl's, Macy's, Prologis, Target, and Walmart were among the top 10 on the 2016 Solar Capacity Rankings for installing more than 1 gigawatt (GW) of solar photovoltaic capacity (up from 300 MW in 2012). This investment in solar has allowed companies to reduce energy costs and better plan.
- + Retailers like Ahold, Cabela's, Macy's, Safeway, Staples, Walmart, and Whole Foods are testing fuel cells at their stores to generate energy on-site.

? Questions

- + How exposed are your business and supply chains to unexpected increases in the cost of energy, including electricity and fuels?
- + How exposed is your customer base to increases in energy costs? How could increases change their lifestyle and purchasing behavior?
- + Are there steps your business should take to hedge against possible cost increases and a change in the energy mix, for example, through on-site power generation?



Coping with climate change

In addition to the direct environmental impacts of climate change (e.g., increases in floods, droughts, extreme temperatures, sea level rise, etc.), societal responses like activism and regulations will shape the future of retail. Global governments and organizations are likely to focus even more on reducing carbon emissions and will place a greater emphasis on adapting and developing climate resilient models.

! Signals of change

- + The World Bank estimates that adapting to climate change will cost the world \$70 to \$100 billion per year by 2050—the same order of magnitude as the foreign aid that developed countries now give each year.
- + The 2014 U.S. National Climate Assessment declared that climate change is no longer a future possibility, but a current reality.
- + We can see the effects of changing weather patterns in drought stricken California, as well as powerful hurricanes like Harvey and Irma, which have left catastrophic damage in their wake.
- + Regional cap-and-trade initiatives have cropped up in the United States and Canada and are considered more efficient and effective than actions taken by individual states because they cover a broader geographic area (and more emissions), eliminate duplication of work among states, and help businesses by bringing greater uniformity and predictability to state rules and regulations.
- + San Francisco hired the world's first Chief Resilience Officer to plan the city's long-term adaptive response to climate change. Other cities have joined the 100 Resilient Cities by creating a CRO role.

> Business responses

- + Over 1,200 companies around the world are factoring the price of carbon into their strategic planning. That includes major U.S. corporations like ConAgra Foods, DuPont, Duke Energy, General Electric, Google, Microsoft, Walt Disney, Wells Fargo, and five major oil companies.
- + Chipotle warned investors that extreme weather “associated with global climate change” might force it to stop serving menu items such as guacamole.
- + According to the 2017 Power Forward report, 63 percent of the Fortune 100 have goals to procure more renewable energy or reduce GHG emissions. Nearly 80k emission-reducing projects by 190 companies reporting data showed nearly \$3.7 billion saved in 2016 alone.

? Questions

- + Are your supply chains and operations resilient to climate change impacts, such as increased flooding, drought, and extreme storms? Do you have a climate change adaptation strategy?
- + How might action by others to address climate change affect your supply chains and products?
- + How could you improve business performance while lowering carbon emissions and preparing for climate risks?



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Geopolitical instability

Climate change, resource scarcity, poverty, and ideological conflicts all threaten to continue or deepen geopolitical instability. Today's retail supply chains are global in nature; meaning that even localized natural, humanitarian, and political disasters can influence the raw material extraction, production, and transportation of products around the world.



Signals of change

+ Geopolitical instability indirectly contributes to fluctuations in commodity prices and impacts the supply of raw materials. Experts believe we are likely to see more system-level disruptions (e.g., attacks on oil pipes, power grids, IT networks, and the food supply) as a high-impact way of expressing dissent. Approximately 60-70 percent of historical commodity price movements are associated with non-commodity shocks, such as political insecurity, rather than direct shocks to commodity markets.

+ Populist and nationalist trends have grown on a global scale over the last few years, as evidenced by the U.K.'s "Brexit" vote, continued immigration backlash throughout the EU, and the surprise election of U.S. President Donald Trump. In 2017, U.S. policy has continued on this path given our recent departure from the Paris Climate Agreement and the Trans-Pacific Partnership.

+ A September 2013 McKinsey survey found that 47 percent of executives considered geopolitical instability the biggest threat to domestic growth in the next year; 69 percent of respondents (up from 51 percent in June) cited geopolitical instability as a threat to global growth.



Business responses

+ In May 2014, the Financial Times reported that China and Vietnam's political standoff in the South China Sea was causing significant disruption to global supply chains. For example, Taiwanese electronics manufacturer Foxconn, which produces iPhones and iPads for Apple, halted work for three days as a precaution. Yue Yuen, the world's biggest manufacturer of sports shoes and supplier to Nike and Adidas, also shut down its operations.



Questions

+ In what regions would conflict disrupt your supply chains?

+ How resilient are your supply chains to changes in global trade relations?

+ Have you conducted a risk assessment of your critical supply chains taking into account indirect threats such as resource scarcity, poverty, and climate change? What mitigating actions could you take now?



Circular economy

The circular economy is an integrated industrial system inspired by the natural world, in which waste from one process provides the input for another process. In that way, nothing is discarded. For retail, applying this system typically means finding new uses for products and materials that would otherwise be discarded. As resources become scarcer and more expensive, interest in developing a circular economy is growing.

! Signals of change

- + Highly beneficial from a materials and costs point of view, a circular economy is likely to continue to emerge over the next two decades. Its development is at an early stage, and barriers to scale include the need for regulatory change, new technology, cross-industry collaboration, and changes in consumer behavior.
- + According to the Ellen MacArthur Foundation, the circular economy has the potential to generate more than \$1 trillion in GDP globally. Currently, only 20 percent of material goods are recovered, primarily to be reused or decomposed.
- + Accenture has identified a \$4.5 trillion opportunity in the circular economy by 2030, and many disruptive companies applying circular economy thinking to transform in ways that seriously threaten incumbents.
- + Thirty-one U.S. states have extended producer responsibility laws for specific products. CT, MA, and VT have become the first states to ban the disposal of organic matter in landfills, forcing significant improvements in food waste reduction.

> Business responses

- + Launched in May 2014, the business-led Closed Loop Fund aims to provide low interest loans to U.S. municipalities to advance projects that improve recycling infrastructure from a \$100 million fund. Initial investors include Walmart, The Coca-Cola Company, PepsiCo, Procter & Gamble, Unilever, Johnson & Johnson and Goldman Sachs.
- + Nike's Grind program uses old shoes and some of its own manufacturing waste to develop useable materials for other uses, like gym floors, outdoor playground surfaces and other products.
- + Patagonia provides product repairs, helps host a marketplace for reselling used clothing, and recycles all its products.

? Questions

- + How could your business help build a circular economy? Do you or your consumers produce waste products that could be valuable inputs for another part of your supply chain or another sector?
- + Which businesses, within or outside of your sector, are potential collaborators in building circular material systems?
- + What is the role of your business in addressing the barriers to creating a circular economy, including regulatory, technological, infrastructural, or behavioral barriers?

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