



Retail everywhere

No longer confined to traditional stores, retail is increasingly ubiquitous. Transactions are becoming ever easier using mobile payments and automated subscriptions for regularly consumed goods. Stores are also popping up in new and unexpected places, such as train stations and truck and bus “stores.”



Signals of change

- Retail everywhere is becoming possible as a result of a convergence of trends, such as increasing rates of smartphone ownership 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.’
- According to Forrester Research, 60% of U.S. retail sales will involve using the internet by 2017. Consumers will either buy a product online or use the internet to research it before purchasing it in a store.
- Most Millennials have never known a world without internet, social media, and mobile technology. They represent 15% of U.S. consumers in 2014 and will account for almost one third of total spending by 2020.

Business responses

- Launched in April 2014, Amazon Dash is a small WiFi-enabled scanner that consumers can use to scan items in their homes for automatic addition to their Amazon shopping list.
- Grocery delivery service Peapod is testing a system that allows consumers to shop ‘virtual shelves’ at train platforms in Philadelphia.
- Warby Parker, named *Fast Company*’s most innovative retailer, is driving a school bus retrofitted with a showroom across the United States to test different retail markets.

Questions

- How can your business build brand favorability through retail everywhere?
- Could there be a consumer backlash against retail everywhere?
- How could retail everywhere help consumers adopt more sustainable behavior?

Augmented reality

Augmented reality uses mobile or wearable technology to interpose a layer of rich audiovisual data between users and their environment, providing them with useful, context-specific information. Augmented reality applications will increasingly be used in retail environments to give consumers product information and help them interact with brands.



Signals of change

- Semico, a marketing and research firm, estimates that revenues generated from augmented reality applications in the U.S. will exceed \$600 billion by 2016.
- 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.

Business responses

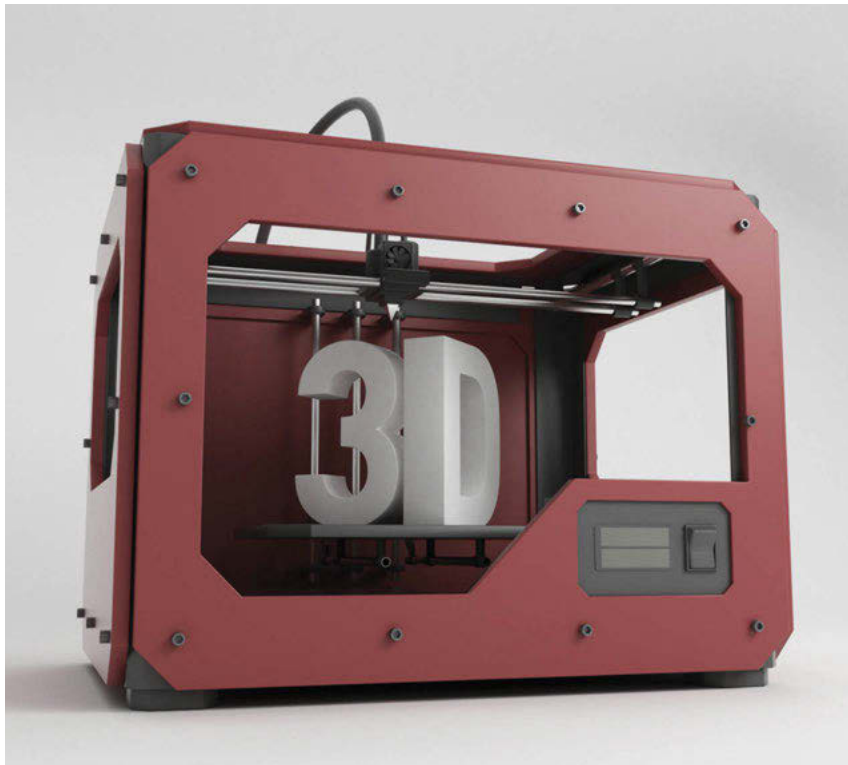
- Google Glass, a wearable computer with an optical head-mounted display integrated into a pair of eyeglasses, is now available to consumers for \$1,500 and offers a range of augmented reality applications, from map overlays to facial recognition services.
- Clothing retailer Topshop and cosmetics company Shiseido are using augmented reality to help customers try on clothes and makeup virtually.

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 more sustainable 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

- 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 \$2000 per year.
- A Boston Consulting Group survey found that more than half of US-based manufacturing executives at companies with sales greater than \$1 billion are planning (or actively considering) to shift production from China back to the U.S. However, other studies suggest that while there is a slight increase in U.S. manufacturing, there is not a wide-scale movement towards reshoring.

Business responses

- Organovo, a California-based start-up, is developing printable human liver tissue.
- New Matter, an easy-to-use \$200 3D printer, is being created to make sharing a 3D object with a friend as easy as sending a text message. It's expected to be available in 2015.
- In 2013, Walmart committed to sourcing an additional \$250 billion from US-produced goods in ten years. It will do that by buying more of the goods it already buys from U.S. manufacturers, sourcing new-to-Walmart US-produced goods, and reshoring some products that it already sells.

Questions

- How could the growth of distributed manufacturing affect your business?
- The growth of 3D printing may drive customer 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?
- If consumers have more power to create the product they want, how does that affect the retailer's responsibility for product stewardship, performance, or recyclability?

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 generates \$98 billion in annual revenue and employs roughly 1.6 million people.
- 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 as an early warning system for identifying suspicious behavior.

Business responses

- Ecover is developing an algae-based liquid laundry soap in an effort to reduce the use of palm oil in its products. Other benefits include fewer greenhouse gas emissions, less water use, and reduced land competition.
- Unilever has also developed algal oils and adopted them for its Dove and Brylcreem products through a joint partnership with biotechnology company Solazyme.

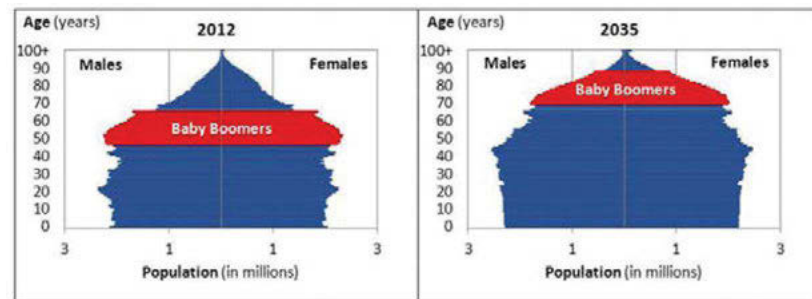
Questions

- 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 pressure to use biotechnology in consumer products. What role can retail play in helping consumers to make informed choices about the ingredients in their products?

Shifting demographics

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

Population by Age and Sex: 2012, 2035, and 2060



United States
Census Bureau
U.S. Department of Commerce
Economic and Statistics Administration
U.S. CENSUS BUREAU

Signals of change

- Unlike many developed countries, the population of the U.S. is still growing rapidly, as a result of a relatively high birth rate, increased life expectancy, and continuing immigration, thus increasing the size and diversity of local markets.
- 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 white majority will become the minority by 2043.
- By 2030, current projections estimate that there will be about 72 million Americans older than 65, more than twice the number there were in 2000. Projections also say there will be 78 million Millennials in 2030.
- Millennials already account for \$1.3 trillion in direct annual spending in the U.S. This sum is projected to increase as they reach peak earning and buying power.

Business responses

- New businesses targeting the needs of ethnic groups are emerging. Retail real estate firm The Legaspi Company has successfully rehabilitated 10 struggling shopping malls by transforming them to cater to Hispanic families.
- Technological solutions are being developed to alleviate the caregiver shortage for the growing elderly population. Devices like Lively provide low-cost, in-home kits that monitor the whereabouts of the user so that family members can remotely keep track of elderly relatives and be alerted if there are any breaks in their daily routines.

Questions

- How will changing demographics impact your customers and employees? How will you meet the needs of different groups, such as the aging population, the multicultural population, and the emergent Millennial generation?
- How will a growing global population impact your overseas business operations and customer base?

Urbanization in the United States

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 recent 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 of 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.

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 met with resistance from local 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.

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. It also ranked as the risk most likely to occur for the third year in a row.
- According to a recent 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 are 1.8 billion in the global middle class (as of 2013), which will grow to 3.2 billion by the end of the decade.
- 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 February 2014, clothing retailer Gap, Inc., announced that it would unilaterally raise its hourly minimum wage to \$10, impacting 65,000 employees.
- As of 2012, 55 percent of Unilever’s total global business comes from developing markets.
- New business models are being developed to sell a variety of products in African and Asian countries through microfranchisees. 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 customers 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?

New approaches to health and wellbeing

Medical spending on obesity in the United States now accounts for 20.6 percent of U.S. health care expenditures; at \$190 billion per year, this figure exceeds costs related to smoking.



Signals of change

- 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.
- Medical spending on obesity in the U.S. now accounts for 20.6% of U.S. healthcare expenditures; at \$190 billion per year this figure exceeds costs related to smoking.
- According to the Pew Internet Research Project, seven out of ten Americans track a health indicator for themselves or a loved one.
- Governments are more and more interested in introducing taxes and other measures to nudge behavior to improve health. The Prevention and Public Health Fund under the Affordable Care Act provides funds for local governments that want to experiment with obesity prevention.
- Although the fate of New York City's soda ban sits with the State Court of Appeals, Mexico launched a similar scheme in January 2014 in an effort to curb sugar consumption and address its obesity crisis.

Business responses

- Nike's FuelBand tracks whole-body movement and intensity and provides feedback and reminders via a smartphone app.
- Retailers like Walgreens and CVS are investing in in-store clinics to provide cost-effective and convenient health services.
- Safeway provides its employees with a variety of healthcare options including its CareConnect program, discounts at national fitness centers, online healthcare decision tools, and more. Its healthcare programs were so successful that it spun off a new venture, Safeway Health, to help other organizations apply the same programs.

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 customers?

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

- In 2012 alone, humans generated more data than over the course of our entire history up to 2011. The rate of production of data from internet and mobile phone use, digital sensors, and the digitization of public and commercial data more than doubles every two years.
- The International Data Corporation and International Institute for Analytics estimate the global market value of Big Data at \$16.1 billion (as of 2014), and see it growing six times faster than the overall information technology market.
- Regulations around what data is truly private are shifting; Google search histories and tweets, for instance, are both admissible as evidence in court. In 2009, Google searches were used to convict a hit-and-run driver when it was found he was searching for the phrase “hit and run” after the crime.
- 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.

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 2013, personal genomic analysis company 23 and Me came under fire from the U.S. Food and Drug Administration for offering users a profile of their health risks based on an analysis of their genomic data.
- 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 customer experience?
- What sorts of data privacy issues do you anticipate for your business? How will you deal 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 Deloitte, future consumers will “expect and demand transparency in product and service quality, pricing, and company policies, and procedures.”
- 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, such as the U.S. Securities and Exchange Commission’s conflict minerals rules, are increasingly requiring companies to be transparent about the sourcing and composition of their products. Similar regulatory mechanisms are already being proposed to tackle other supply chain issues.

Business responses

- Whole Foods Market 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.
- Consumer products companies like Clorox, S.C. Johnson, and Seventh Generation are listing their product ingredients on their public websites.

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 of your stakeholders, from consumers to communities to activists?
- Would greater transparency about the challenges you face around operating more sustainably have a positive or negative impact on relationships with your customers?

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

- The number of Maker Faires around the country has grown more than twentyfold in the past seven years, from 22,000 in 2006 to 530,000 in 2013. President Obama hosted the first White House Maker Faire on June 17, 2014.
- 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 increased 9.6 percent from 2012 to 2013, maintaining the trend of steady increases since the U.S. Department of Agriculture began monitoring them in 1994.

Business responses

- Etsy, an online marketplace for buying and selling unique goods, sold more than \$1.35 billion worth of creative goods in 2013 – the biggest year for the Etsy community since it was founded in 2005.
- Threadless is an online community of artists who create designs, which are then evaluated via their e-commerce website. The community votes on submitted designs each week, which are then printed on clothing and sold worldwide through Threadless's online store. Winning designers receive an award up-front and a commission when one of their designs is sold.

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?

The rise of 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 *Fast Company*, the U.S. sharing economy was worth \$26 billion in 2013 and is predicted to increase.
- Havas Worldwide, one of the largest integrated marketing communications agencies, reported in its 2014 “New Consumer and the Sharing Economy” study that more than a third of Millennials already belong to a sharing service or expect to join one within the next year.
- Regulatory uncertainty is an important factor shaping the future of the sharing economy and may impact its ability to grow, and the rate at which it can, in different industries. 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

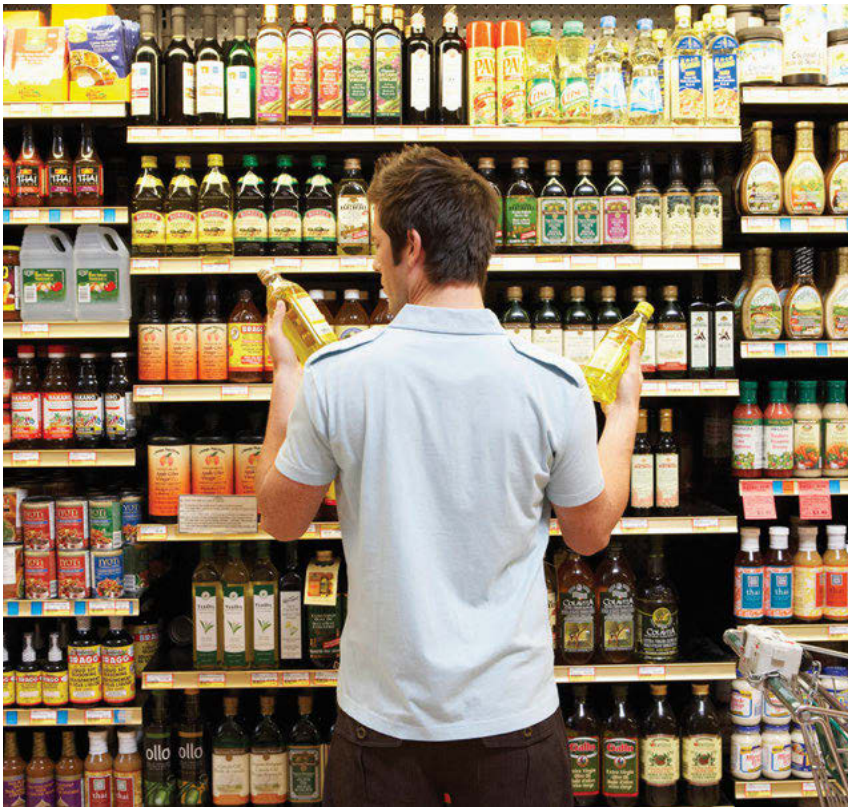
- Companies like Zipcar, Rent the Runway, and Airbnb are using technology to enable people to share on a large scale. Recognizing the size of the opportunity, car rental company Avis acquired Zipcar for \$500 million in March 2013.
- Instacart, a peer-to-peer grocery delivery service, connects people who have money, but no time to go shopping with people who have time, but would like to make extra money. It’s notable in that it 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?

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 2014 "Meaningful Brands" report found that 71 percent of U.S. consumers think companies and brands should play a role in improving their quality of life and wellbeing, while only "36%" think that brands work hard at improving their quality of life and wellbeing.
- One of the three major findings of IBM's 2013 global chief marketing officer (CMO) survey found that CMOs believe an organization's character (i.e., how it behaves) is as important as the products and services that it sells.
- According to the World Economic Forum's *"Engaging Tomorrow's Consumer"* report, trust (78 percent), environmental friendliness and ethical practices (71 percent), and alignment with a cause or social issue (61 percent) are among the top buying concerns for Millennials. 86 percent of Millennials are willing to share their brand preferences online.

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 over five years (more than the last mayoral election in Chicago).
- 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?

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. In addition, the report expects this economy's expansion to lead to such benefits as innovation, land productivity, soil health, and job creation.
- Thirty-one U.S. states have extended producer responsibility (also known as product stewardship) laws for specific products. Connecticut, Massachusetts, and Vermont 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.
- Foss Manufacturing produces a high-quality polyester fiber from 100% recycled plastic bottles that are used as fiber in clothing, carpeting, furniture, and other applications.
- Patagonia provides product repairs, helps host a marketplace for reselling used clothing, and recycles all of 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?

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 The Economics of Ecosystems and Biodiversity (TEEB) 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 2005 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

- A few 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.

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, which will necessitate changes in usage and conservation in both industrial and household contexts.



Signals of change

- According to the Organisation 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.
- Although the United States is classified as medium risk for water stress overall, large areas are already suffering: Arizona, California, Kansas, Nebraska, New Mexico, and Texas are all classified as being at high or extreme risk.
- Concern over embedded water in food and other products is also 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

- The Coca-Cola Company has committed to becoming “water neutral” by 2020. It needs 333 ounces of water to generate one dollar of revenue and is highly dependent on efficient water use.
- 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.

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?

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 50 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. For example, metal prices have jumped 176 percent since 2000 after declining throughout the 20th century, according to McKinsey.
- 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.

Business responses

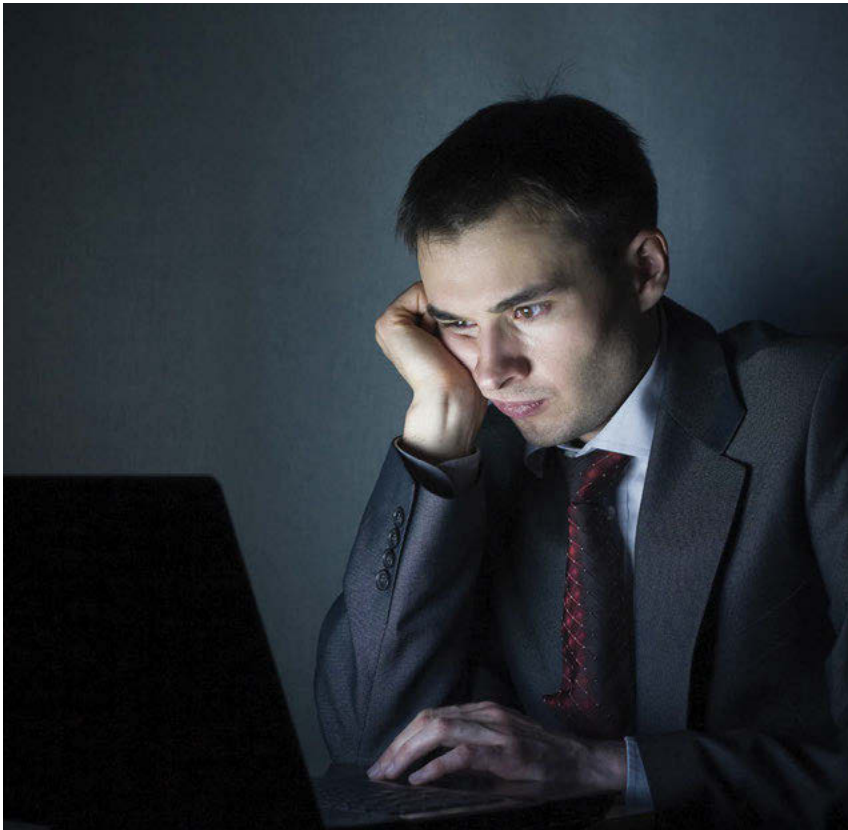
- Pronutria, a biotech company, has developed a process that converts algae to protein necessary for human nutrition. The company claims it can feed a billion people on an area of land the size of Rhode Island.
- In June 2014, BlueOak, a leader in sustainable sourcing, received \$35 million from the Arkansas Teachers' Retirement Fund (a consortium of European and domestic investors) and the Arkansas Development Finance Authority to build the first urban mining refinery in the United States capable of retrieving valuable metals, including gold, silver, copper and palladium, from e-waste. Production at the Arkansas facility is scheduled to begin by the end of 2015.

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)?
- What actions can you take to 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 retail everywhere. Time poverty also contributes to increased stress and mental health problems.



Signals of change

- The average American worked 1,800 hours in 2013, significantly more than workers in countries like France (1,490 hours) and Germany (1,430 hours). People in East Asian countries, including Korea, Hong Kong, and Singapore, work even more hours than Americans.
- 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.
- 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 workweeks to nutritious food on the job. In a 2012 *New York Times* article, tech CEO Jason Fried described the productivity gains that came from shifting his company to a four-day workweek.
- 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 customers interact with your products and stores?
- How can your products or services enhance customer wellbeing and minimize time poverty?
- What can you do to ensure the productivity and wellbeing of your employees?

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% to 70% of historical commodity price movements are associated with non-commodity shocks, such as political insecurity, rather than direct shocks to commodity markets.
- According to a study conducted by the Millennium Project in 2012, half of the world is vulnerable to social instability and violence due to growing global and local inequalities, falling water tables, increasing energy demands, outdated institutional structures, inadequate legal systems, and increasing costs of food, water, and energy.
- 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 is 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?

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.
- Although natural gas emits fewer GHGs than coal, fracking is associated with environmental degradation, especially of water sources, and has attracted much public scrutiny.
- The cost of solar panels has dropped 75 percent 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 and it remains to be seen whether they will be implemented.
- On May 11, 2014, Germany set a new record by producing 74 percent of its energy from renewables. This record production occurred midday and solar and wind energy filled in 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, IKEA, Kohl’s, Macy’s, Staples, and Walmart were among the top 10 on the 2013 Solar Capacity Rankings for installing more than 445 megawatts (MW) of solar photovoltaic capacity (up from 300 MW in 2012). This investment in solar has allowed companies to reduce energy costs and better plan for the future.
- 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?

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

- In recent years, thousands of students who cannot access elite universities have been enrolling in online courses. At Stanford University in 2011, 160,000 students in 190 countries registered for an online artificial intelligence course.
- 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 *New York Times*, student debt topped \$1 trillion in May 2014. A record number of college students in America graduate deep in debt. Former U.S. Treasury Secretary Lawrence Summers said that student loan debt was taking the “life out of the housing recovery.”
- Net Impact, a leading nonprofit that supports a new generation to work within and beyond business for a sustainable future, reported in its 2013 “Business as UNusual: The Student Guide to Graduate Programs” that social and environmental issues are becoming a standard feature in leading MBA programs, in part driven by overwhelming student demand.

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.
- In partnership with handset makers Nokia, Samsung, and Ericsson, and network infrastructure manufacturers Qualcomm and MediaTek, Facebook CEO Mark Zuckerberg launched Internet.org to connect the world’s poor to basic internet services. It aims to alleviate poverty and provide education by allowing more people to participate in the knowledge economy.

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?

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 regulations will shape the future of retail. Governments and organizations are likely to focus even more on reducing carbon emissions and to place a greater emphasis on adapting and developing climate resilient models.



Signals of change

- The Intergovernmental Panel on Climate Change's "Fifth Assessment Report" warns that carbon emissions grew twice as fast during the past decade as they did over the previous three decades.
- 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.
- 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 recently hired the world's first Chief Resilience Officer to plan the city's long-term adaptive response to climate change.

Business responses

- Two dozen major U.S. corporations (including ConAgra Foods, Delta Airlines, DuPont, Duke Energy, General Electric, Google, Microsoft, Walt Disney, Wells Fargo, and five major oil companies) are factoring the price of carbon into their strategic planning.
- Chipotle recently warned investors that extreme weather "associated with global climate change" might force it to stop serving menu items such as guacamole.
- According to Ceres's 2014 "Power Forward" report, 60 percent of the Fortune 100 have goals for shifting to more renewable energy or reducing greenhouse gas emissions.

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?