



A SHORT ARTICLE SERIES

The adoption of disruptive technologies in the consumer products industry

Creating seamless experiences through
disruptive technologies

Barb Renner, Curt Fedder, and Jagadish Upadhyaya

THE DELOITTE CENTER FOR INDUSTRY INSIGHTS

When disruptive technologies work in tandem, everyone wins, and the future looks brighter.

MEET Sara, a mom and a supply chain executive in a leading food company. She's a tech-savvy consumer and has embraced several solutions from the blockchain,¹ artificial intelligence (AI),² digital reality,³ and cloud domains,⁴ the very disruptive technologies we have discussed in this series. These solutions have positively influenced her personal and professional life, and today she can execute tasks that in the not-too-distant past required significantly more time, energy, and financial resources. Let's take a look at her morning:

Beginning with brushing her teeth, Sara's AI-based, smart toothbrush records her habits (frequency, brush zone patterns, etc.), allowing her to monitor the efficacy of her dental regime, identifying problem areas and solutions to improve her dental health.⁵

In the kitchen, Sara's smart refrigerator with its enhanced AI and IoT capabilities allows her to assess her breakfast choices

based on the food items inside. Using voice commands, she browses the internet for recipes based on these food ingredients. Her smartphone shopping list is also automatically updated depending on the amounts of ingredients used and their expiration dates. Added to this, the refrigerator's smart screen downloads the morning news and weather.⁶

As Sara dresses for work, she chooses lipstick, mascara, and eyeliner that she purchased online using AI- and augmented-reality-enabled applications. Sara was able to "virtually" try a vast number of shades using a smartphone application to decide on the one that best suits her.⁷

At work, Sara's responsibilities center around managing supply chain and automation processes for her company which procures, processes, and markets meat-based products. In a recent incident, Sara's team needed to identify the source of contaminated meat. Earlier, traditional procurement and supply chain methods did not permit them to do so. With the advent of blockchain technology, however, Sara and her team are now able to easily trace its source. Further, Sara's company has begun applying QR codes on its packages, allowing consumers to identify where the meat originated.

Being in the meat business, Sara's company needs to adhere to the highest standards of safety, cleanliness, and efficiency. To ensure these standards are maintained, Sara had recommended investing in the latest training resources at regular



intervals to train employees in these areas. In the past, such programs typically involved hiring expensive world-class trainers and often significant travel time for employees, which was a major expense for the company. Now, however, the company has invested in virtual reality training methods that have helped in reducing the number of regulatory lapses. At the same time, Sara has been able to significantly reduce her team's training budget, while ensuring business continuity, as she can control how many people take training in a given period. Sara even offers her employees the option to take the training again at any time of the year at no extra cost.

Powerful solutions built upon the interface of disruptive technologies

Disruptive technologies are the basis on which novel solutions can be built. These solutions have wide applicability across industries. There are many ways in which disruptive technologies can be useful to both consumer product companies and their consumers.

- **Blockchain** has the potential to usher in a new era of transparency for consumer products companies and consumers alike, especially regarding tracking and monitoring of products and the flow of information, services, and money.
- **AI** technologies can strengthen a company's competitive advantage while enhancing the customer experience. Companies can benefit from automated processes, AI-based product and service innovations, and augmented decision-making. Consumers can reap the rewards of

personalized products, online product recommendations, and timely service.

- **Digital reality** technologies may lead to increased operational efficiencies for companies while offering advanced methods enabling consumers to interact and experience products prior to purchasing them. Companies can deploy digital reality to create effective marketing and advertising, drive innovation, improve employee effectiveness, increase efficiency, as well as create three-dimensional and interactive product visualizations. In addition to virtually experiencing products, consumers can explore product personalization and access details supporting product transparency to make informed food choices.

- **Cloud technologies** can help create an enabling environment for the smooth execution of the other disruptive technologies. Further, the cloud can help companies with rapid implementation of hardware and software, while offering dexterity in deploying IT capabilities. Returns on cloud investments can be fast and companies can have predictability of costs, thus

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helping enable better financial planning. For consumers, the cloud can enable numerous *seemingly* mundane daily activities, such as using email, online shopping, browsing the internet, and so on, in a seamless, pervasive way.⁸ Together,

these can result in uninterrupted experiences and better company-consumer engagement—a win-win situation.

Importantly though, these technologies don't exist in isolation. They "talk" with one another, helping create powerful solutions. This makes it possible for companies to improve efficiency and



safety—leading to increased profitability—while enhancing the customer experience.

Investments in disruptive technologies

Recognizing the potential of these technologies, companies have been increasingly investing in them. It's projected that the market size and revenue will likely grow in the near future. For example, global blockchain revenue has been on an upward trend since 2017.⁹ Given these projections, a day in Sara's future could be more efficient, providing her with more choices now than in the past regarding how she will allocate her most valued asset, time. Specifically,

- Global **blockchain revenue** is expected to grow from approximately US\$2.34 billion in 2017 to US\$13.9 billion by 2022, at a compound annual growth rate (CAGR) of 42.8%.¹⁰ Additionally, by deploying blockchain technology, financial institutions alone stand to generate savings of more than US\$27 billion on cross-border settlement transactions by 2030.¹¹
- The **AI** market size is expected to grow from US\$21.46 billion in 2018 to US\$190.61 billion by 2025, at a CAGR of 36.62%.¹²
- The **augmented reality** and **virtual reality** market's revenue in the global manufacturing sector is expected to reach US\$55 billion by 2021.¹³

- Worldwide public cloud computing revenue will likely grow to US\$278 billion by 2021.¹⁴

Overcoming the barriers to adoption

Even with these robust predictions, some companies remain slow to adopt disruptive technologies. The *2018 Annual Study of Digital Business* by *MIT Sloan Management Review* and Deloitte¹⁵ indicates that on the spectrum of digital maturity, respondents from the consumer products companies rated themselves at the mid-to-lower end in comparison to other consumer-facing industries.¹⁶ The study also identified specific behaviors that companies would likely benefit from embracing to move forward on their journey to digital maturity. These include:

1. **Making digital systems and infrastructure a priority:** One reason for relatively lower levels of digital maturity may be the priority assigned to digital transformation by senior management.
2. **Driving innovations and decision-making with digital at the core:** Companies that are further along the path of digital maturity are more likely to have digital at the core of all processes and functions.
3. **Upskilling existing talent with digital skills and developing digital leaders:** Many organizations continue to rely on traditional methods of training for developing these skills, whereas encouraging an environment that allows for on-the-job learning can be more effective.
4. **Addressing challenges that hinder effective competition in a digital environment:** Generic challenges inhibiting organizations from progressing along their path to digital maturity can include the lack of experimentation (getting

people to take risks and work in a more agile way), pyramid-style decision-making, ambiguity, constant change, and failure to implement the right technology.

The untapped potential of disruptive technologies in the consumer products industry

These are exciting times for companies investing in disruptive technologies. As advancements continue to emerge, so will the possibilities. As mentioned in Deloitte's *Tech Trends 2019*,¹⁷ companies would likely benefit from addressing the challenges of channeling and guiding the *collective* value of these disruptive technologies to gain competitive advantage. Future applications of such technologies in the consumer products industry are abundant. For example, as food manufacturers

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continue to invest in marketing fresh foods, these technologies can play a role in ensuring their efficacy. In the agriculture sector, precision farming enabled by these technologies can help ensure the most efficient methods are deployed to help boost profitability in manufacturing.

Further, the intersection of advancement in AI and Industry 4.0 will likely create organizations in which humans and machines work together within designed digital systems to harness data-driven insights. In the future, whether in the production of food, household, and personal care products or apparel, businesses will likely be able to connect

machine learning, embedded sensors, augmented-reality-based training, visualization, predictive flow-scheduling, secure networks, and cloud-based tools for managing work-flow across a supply-chain.¹⁸ Just imagine what the end of Sara's day might look like in the future!

As Sara closes out her day at work, she quickly scans an AI-enabled dashboard updating her on procuring batches of raw meat for the factory. Automated robots operate the factory floor using an AI-enabled algorithm and smart sensors, which generate vast amounts of actionable data. Results of the latest employee engagement survey came in just this afternoon and Sara scored the highest in the company. She's glad that her efforts have paid off—last year, she rallied for cognitive HR solutions for her team, which were implemented by the company a few months ago.

Sara heads home in an AI- and sensor-enabled self-driven car. She checks on the status of her son whose class was visiting the zoo today. While her smartphone previously read her emails and put them on her calendar, newer AI-enabled technology arranged her son's pickup from school as well; continued technology advancements such as this provide new and evolving solutions to help simplify daily tasks.

As she continues her drive home she uses her digital reality-enabled goggles to browse different food recipes on the smart screen. After Sara decides what she wants for dinner, she winks twice to convey her choice. The information is passed on to her humanoid robot at home, who has already mopped the floor, dusted the furniture, and washed the laundry during the day. In the meantime, her smart watch has quickly

scanned Sara's electrolyte and mineral levels. AI technology consolidates the data and places an order at the nearest retail store. Once the groceries are delivered to her home by a drone, her humanoid robot cooks the meal in time for Sara's exact time of arrival—predicted using the robot's cognitive-learning feature. Mindful of Sara's allergies, her robot has avoided products with possible allergens.

As Sara prepares to go to bed, the lights in the house begin to dim, the main door lock secures itself, and the wireless mobile charger begins to charge Sara's smartphone that she leaves in a different room nightly. The trigger for them is the AI-enabled toothbrush, the type that Sara has been using for many years. Tomorrow will be another exciting day with vast technological possibilities.

Endnotes

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Today's digital and mobile devices provide unprecedented access to information, products and services across a variety of digital channels. Businesses need to create a seamless brand experience, projecting their brand clearly across the many touch points, channels and devices their customers use. They also need to leverage analytics and the wealth of data available in and around the business to sense and shape market opportunities ahead of their competition. Such a digital strategy is an important step toward becoming an intuitive enterprise. Contact the authors for more information or [read about Digital Strategy here](#).

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