



BUSINESS ON-DEMAND

(MANUFACTURING EDITION)

A comprehensive report on disruptive models and technologies,
and how they will impact the manufacturing industry.

A joint research initiative
in partnership with



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Dear Executive,

It's no secret that the nature of business is evolving, and quickly. However, predictions by industry analysts generally fail to capture the full pace, nature and ultimate course of these changes.



Early in 2014, CBD and Kent State University undertook a comprehensive research project. Our purpose was to map where the future of business is likely headed, based on the innovations that are rapidly entering the market now. We aimed to look not just one or two years down the road, but 10 to 15 years.

Our process was to conduct extensive secondary research, interview industry executives and assemble a panel of senior marketers to identify opportunities and implications.

What we found is that a convergence of technology has the power to either create a true renaissance for manufacturing, or drive major industry disruption. The challenges and opportunities facing manufacturers go far beyond 3-D printing and networked value chains. It's important for manufacturing leaders to understand new paradigms just now emerging.

What we present here is a look at the most disruptive technology contributors that will shape new models, empower customers and alter your engagement strategies. We start with retail, the workhorse of the economy. Then, we look at the myriad manufacturing-related industries that will be most impacted.

To be sure, this is an expansive view. Some of the innovations featured may not register as future opportunities to traditional manufacturing companies. But they all signal a movement—one that is synergistically working to reshape values, behaviors, channels and roles.

Our hope is that we have delivered an entertaining, interesting and insightful report that can help manufacturers of all types to imagine what changes their business might need to make now, and then anticipate how they will need to calibrate in order to flourish in the future.

Enjoy!

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With special thanks to our panel of senior marketers:

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MasterCard International

Chris Gardner,
Paydient Inc.

Bob Slaker,
IBM Business Analytics

Brian Eble,
Global Marketing and
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Bridget Kulla,
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Fast Forward to the Future

Simone is an urban-dwelling, time-starved business owner who walks past an office supply store on her way to work. She sees that the store is advertising an item she needs, and checks the time on her phone. Unfortunately, she's late and has no time to stop in.

Later in the day, Simone goes online to research what products are perfect for her new puppy, becoming hopelessly confused about the array of choices a leading brand offers.

These will soon not be problematic at all for Simone.

In our future frictionless shopping world, in which barriers to purchase are all but eliminated, Simone's mobile device takes center stage. She'll be able to scan the ad through the window to enable a purchase and same-day delivery with a single touch or voice command. She'll be able to have a direct relationship with the dog food manufacturer, and even customize her purchase.

We will see very different landscapes emerge for the retail, manufacturing, telecommunications, logistics, banking and financial services, and marketing industries.

What's more, she'll be pleasantly and efficiently served via a human-like assistant on the manufacturer's website, advising her and facilitating her purchase.

Enriched online and window-shopping experiences are just the beginning for Simone. She will no longer have to visit the grocery store. She'll stop at a convenient kiosk filled only with pictures of items she can tap or scan, and she'll receive those



items at her front door almost immediately. In fact, in the future, most every surface or image will be sufficient to serve as a virtual retail channel—print ads, video content, the side of a bus and more. All of this is coming, and it will change whole industries forever.

Technologies, ideas and models that are just emerging today are laying the foundation for a profound revolution. Mobile payment, virtual reality, artificial intelligence, networked operations technologies, robotics, advanced manufacturing... we're experiencing a dizzying explosion of innovation.

Through the lens of a technology futurist, the capabilities enabled by these advances paint an interesting and amazing picture of what's to come. We predict that these technologies will converge in step with economic drivers and shifting consumer preferences, and we will see very different landscapes emerge for many industries including retail, manufacturing, channel marketers, telecommunications, logistics, banking and financial services, marketing, and education and training.

Anticipating these changes should be a number one priority for companies who want to flourish in our frictionless future.

Top Innovations and Ideas Driving the Future



MOBILE PAYMENT ADOPTION PAVES THE WAY

It's not a matter of if, but when. Some industry observers predict that most people in the US will have embraced and fully adopted the use of smartphone-enabled purchasing as soon as the year 2020. Others believe the transition will take place more slowly. But certainly most believe mass adoption is coming, probably starting with key socioeconomic and generational segments of the population.

There are many obstacles to achieving scaled mobile payment adoption in the US, including:

- A lack of standards for data transfer and security
- IP rights and the ownership of customer and transaction data
- Merchant adoption of contactless terminals
- Working through the economics

But the march moves on to tackle these barriers.

The rate of technologies and applications emerging to facilitate mobile payments is astounding. The push is on to drive adoption, and when mobile payment is finally the norm, everything changes.

VIRTUAL WALLETS

Early versions of these apps merely consolidated card information, and transactions were limited to stored value cards. But e-wallets have come a long way, and financial services, telecommunications and tech firms all want a piece of the pie. In fact, they are increasingly cooperating to bring true mobile payment channels to market.

According to research by Parks Associates,

40 million US consumers used a virtual wallet in 2013.

In fact, they are increasingly cooperating to bring true mobile payment channels to market.

- T-Mobile partnered with Visa to offer a financial management and mobile transaction platform for the under-banked market.
- Google Wallet is leveraging MasterCard PayPass technology.

- BBVA is the largest global bank yet to offer a virtual wallet to customers of their 687 US branches. Notably, users of this wallet can use the BBVA “wallet card”—a prepaid card that will connect to any bank account, even non-BBVA accounts. A Near Field Communication (NFC) sticker can be requested to attach onto the back of smartphones that don’t have a native NFC chip. This will allow iPhone users to make touchless payments. Visa is their check card partner.
- PNC Bank’s Virtual Wallet app is tethered to their Visa check card.
- AT&T, Verizon and T-Mobile partnered to develop the ISIS platform that can leverage American Express, Chase and Wells Fargo credit cards.

Online commerce enablers like PayPal and Amazon aren’t letting the opportunity pass them by. PayPal launched a new mobile payment app and is looking into integrating Apple’s iOS 8 Touch ID. Amazon is building a Kindle-based payment app.

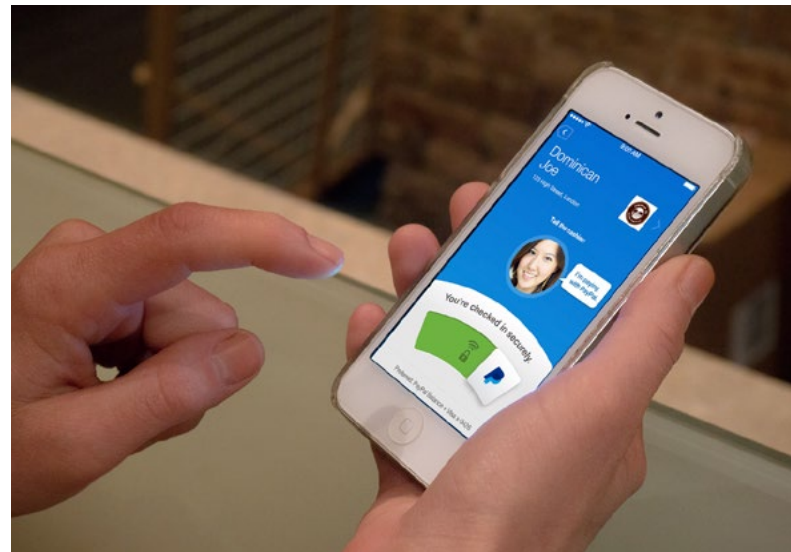
While late to the party, Apple is partnering with Visa, MasterCard and American Express to launch a mobile payment app, incorporating their Touch ID Fingerprint Sensor and Near Field Communication (NFC).

In 2013, MasterCard launched their own digital wallet called “MasterPass”, a white-label solution that allows businesses to launch their own wallets and leverage the MasterPass Acceptance Network. Consumers can use the wallet to purchase at over 300 merchants.

CBD interviewed Beth Kitchener, Business Leader at MasterCard International, to get her take on mobile payment technologies. Says Kitchener, “The hope is that with digital wallets, with the permission of the user, the digital wallet will learn the habits of the user and recommend relevant offers.”

Who will win the mobile wallet game? Chris Gardner, the cofounder of white-label provider Paydiant, puts it this way: “It’s important to understand that the mobile

or virtual wallet is a MARKETING platform more than a payment solution. It is the value-added services like offers and loyalty that you wrap around a transaction, that drive customer adoption and retailer return on investment. This is the same reason that mobile wallet offerings from Google, PayPal and others have struggled, in spite of massive investment. Retailers recognized right away that mobile is a strategic customer touchpoint, and they simply were not willing to concede to other players.”



FRICTIONLESS ONLINE

Another advance, this one for online buyers, is Visa Checkout. This new feature can be offered by online retailers, and streamlines purchasing in a dramatic way—requiring the use of only a username and password to conduct the transaction. Buyers set up an account once with their personal information and delivery destination, and never have to enter that information again. Say goodbye to big thumb frustration while buying on your phone. Best of all, buyers can use *any* major credit or debit card.

EMERGENCE OF NO-CARD REQUIRED

One of the biggest challenges to accepting mobile payments is that many options require a retailer to change their POS infrastructure. However, UK player Zapp is bringing a new solution that should be of great interest to those in the US mobile payment race.

Zapp, an application that UK banks can offer to customers, acts as a debit card by sending code to the bank to confirm the transaction. No cards are involved; you only need your phone and a banking account. And no personal or account data is ever exchanged with the retailer. UK banks are thrilled about the new revenue stream of transaction fees. In fact, Zapp already had most of the largest banks in the UK on board before they launched.

WEARABLE PAYMENT TECHNOLOGY

Mobile payment isn't just for phones. Google Glass, perhaps the best-known wearable device, will be integrated with Google Wallet, and PayPal is an early entrant with an app for Android Wear smartwatches. This follows PayPal's apps for Samsung's Gear 2 and Gear Fit devices, which take advantage of the Galaxy S5 fingerprint sensor capabilities to build security. Apple recently patented their own iTime smartwatch concepts, and is thought to be launching a smartwatch soon.

Google's Android Wear SDK operating system has enabled developers to design for wearable devices, and developers are hard at work to bring new devices to market—wristbands, glasses, rings and even clothing. Certainly, Heritage Bank's pay-by-sleeve device is an interesting development. Clothing with embedded chips can enable totally hands-free, device-free purchasing.

ANYTIME, ANYWHERE POS

It's important not to overlook the consumer-to-consumer mobile payment trend. When consumers and micro-business people need to exchange money, there are prolific new devices and apps for that.

Square, Amazon Local Register, Venmo, Dwolla, Bump Pay and Zipmark are leading the way by either linking to personal banking accounts, facilitating card purchases, or leveraging social media channels like Twitter to transfer money on the fly. These early platforms are key building blocks for enabling new marketing and distribution models.

PREDICTIVE RELATIONSHIPS

Retailers have never before had so much data for anticipating and encouraging consumer behavior through customized responses to individual customers.

Merchants are now able (and slowly starting) to drive revenue by applying predictive analytics. According to an Agileone study, email communications that leverage likelihood-to-purchase models are the main focus of retailers now, but they'll quickly move toward other models such as product and behavioral, and likelihood-to-churn clusters.

**By the end of 2014,
over 70% of retailers will be
using predictive analytics in
at least one channel.**

Source: Agileone

Using predictive tactics online will be the next big hurdle for retailers. Behavioral targeting, geotargeting and weather targeting are just a few of the abundant ways in which brands can connect to individuals online. But according to Monetate, only about 25% of digital marketers today attempt to do so. This will change.

As consumers are exposed to more and more content, they are also using more and more tools to filter and avoid it. Marketers must incorporate disruptive technology in order to create more relevant experiences

for them. Marketing automation tools, like those offered by Monetate, Sailthru, Demandbase and Optimizely, are helping brands to leverage geographic, demographic, behavioral and contextual segmentation, and deliver dynamically personalized content across all web, tablet and phone screens.

When predictive techniques are applied, as they inevitably will be, retailers can engage more relevantly in real time with buyers in-store, online and on the street. Multiple technologies are emerging to enable just that.

GEO-MONITORING AND PUSH MESSAGING

Beacons, iBeacons and retail lighting systems like those developed by Phillips are enabling geo-targeted, one-to-one mobile marketing services.

“What we’ll see in the retail world will ultimately become part of the B2B equation. Interactions will become more direct and one-to-one. And as a result, we’ll see the same types of concerns about data use become important.”

*Bob Slaker
IBM Business Analytics*

Beacons are low-cost, conspicuous devices that retailers and others may attach to a store surface. They use low-energy Bluetooth or NFC connections to transmit messages or prompts directly to a smartphone or tablet. Merchants can use the devices to transmit location-specific data such as product information or promotions.

Beacons also play a role in mobile payment systems. PayPal is reportedly pushing to place its Beacon sensors in millions of shops to power digital payments.



Event organizers, airlines, transit systems, enterprises and educational institutions also recognize the power of Beacons to facilitate communication. These industries will be part of driving consumer acceptance and adoption, which is important because there are many barriers to adoption now. Users have to enable Bluetooth, accept location services on the app, and opt in to receive messaging. The challenge of getting consumers comfortable with this can be overcome with widespread civil service applications.

While push notifications require permissions, Beacons can also be used to target mobile banners and social media, and can reach consumers who are using certain shopping platforms. For instance, InMarket, the largest installer of Beacons, is working with CPG brands to message customers who use the CheckPoints app. InMarket clients include Giant Eagle and Safeway stores.

But retailers don't need a broad deployment of Beacons to accomplish geotargeting. They could also change their lighting system.

In early 2014, Royal Phillips unveiled a new lighting system that uses intelligent LEDs. The system enables the transmission of data from the lights to a user app,

giving customers information and coupons based on where they are in the store. An added benefit is in the lighting itself—use of LEDs lowers electricity bills, which can be a considerable expense for a retailer.

Can it be long before the B-to-B world finds a way to leverage this technology? It's entirely possible that manufacturers can find myriad uses, from communication across channels to guiding employees to more efficient paths in the warehouse.

OMNIPRESENT COMMERCE

One day soon, Simone might be perusing a magazine or watching TV, see an item she likes, and purchase it instantly from her mobile device.

Peri might be the most interesting app to help shape the frictionless future, and it is notably innovated by a bank. In partnership with Monitise PLC, U.S. Bank developed the Peri app, which will add a new tech dimension to ads in print, television, movies or radio. In other words, Peri makes “old” marketing channels “clickable,” and purchasing a near-instant experience.

The app will be empowered with the ability to detect digital watermarks—embedded digital information in audio, images and printed materials. These watermarks are imperceptible to humans, but can be detected by smartphones and computers. Best of all, the watermarks come with a serial number so the advertiser can track the performance of each ad.

U.S. Bank digitally watermarked several pages of their 2011 annual report to engage investors with Digimarc technology, likely leading to the inspiration for Peri. The bank is working to white-label this app to fashion brands and other companies.

Get ready for more unusual moves by banks. In a recent article announcing the planned app, Dominic Venturo, Chief Innovation Officer for payments at U.S. Bank, is quoted as saying, “Don’t think of us as a bank. Think of us as commerce. We are experts in payments and enable commerce.”

Peri is exactly the type of innovation that can transform retail and revitalize the advertising industry, and it is the first of many technologies that will enable new channel models. Multimedia, physical showrooms and microshowrooms will enable consumers to purchase a product without hesitation or hassle, wherever they see it.

“Apps like Peri will make broadcast and print advertising viable again.”

*Victorya Maryan
Toddy Gear*

VIRTUAL EXPERIENCES

Two other technologies will shift the landscape of business dramatically—virtual reality and holographic imaging.

Nissan may have been the first to provide a rich, interactive, holographic experience powered by Xbox Kinect and a 3D holographic projector at the Toronto International Car Show in 2013.



However, the holographic showroom recently unveiled by Lowe's Home Improvement demonstrates that a low-footprint, immersive retail shopping experience is not only possible, but practical. Customers can enter a small viewing box and design the bathroom of their dreams. Lowe's has big plans for expansion across product categories. It can't be long before this technology enables users to purchase specific items within the experience.

But that's not the end of holographic applications for retail. Virtual people are in store, like 4What's Virtual Holographic Greeter, which allows retailers to deliver a

nonconfrontational, novel and branded experience to engage store visitors. The technology incorporates QR codes to steer customers to the information they want or to special deals. It is being used at hotels, retail outlets, grocery stores, home improvement stores and at trade shows. With the incorporation of digital watermarks, this technology will become a sales channel that is portable, engaging and scannable to enable instant purchasing.

Industry naysayers—and many consumers—believe technology will never be able to replace the experience of touching and feeling merchandise in the store. But haptic technology is working to bridge this gap.

Haptics, which add the sense of touch to previously visual-only experiences, are gaining acceptance as a key part of virtual reality systems. Researchers have already developed 3D holograms that can be touched using acoustic radiation to create a pressure sensation on a user's hand. Plus, companies like Immersion are bringing haptics to smartphones.

Virtual reality may someday be able to do the same thing—but outside of the box. Oculus was first to market with the groundbreaking virtual reality headset for immersive gaming they dubbed "Oculus Rift." Facebook purchased Oculus in July of 2014. Oculus's mission is to enable you to experience the impossible, and Facebook intends to eventually help them expand on their gaming focus to encompass many other experiences. They envision both entertainment and communications capabilities, and aspire to see applications emerge to address virtual education, healthcare consultations and more.

As virtual reality matures, it shouldn't be long before retailers look to applications to incorporate a brand and shopping experience, while businesses use it for teleconferencing and product demonstrations. The concept of a future in which we might don a headset and go to a virtual mall—or experience the latest in medical instruments—is not such an outlandish idea.

ARTIFICIAL INTELLIGENCE

The line between the sterile online and the personal in-store buying experience will soon blur, thanks to artificial intelligence.

Apple's Siri, Google Now and Windows Phone's Cortana, as well as the BlackBerry Assistant, all support voice command and sport a learning backend. Some virtual assistants have already begun to use geotargeting technologies to localize the experience. For instance, Cortana will be leveraged within the popular Foursquare app.

VBC's Hologuide is a next-generation holographic store assistant that has both retail and industry excited. Hologuide, or Hali (Holographic Lifelike Intelligence), incorporates 4K video and answers questions in 26 languages with the help of its "unique virtual intelligence software." The experience is not merely a projected image and a recorded message. While Hali is interacting with visitors, it is also assessing and adjusting to the customer's mood, and collecting a wide variety of data about store visitors.

In the future, a familiar, friendly voice will be there to answer, whether a customer types, taps or speaks their request. TVs, holograms, computing devices, apps, phones and more—consumers will have access to both online and offline assistants with natural language understanding, and the ability to perform many more commands than they do today.

Apple is currently working on a version of Siri that will be able to research purchases and conduct transactions. Ex-Apple employees started Viv Labs to try to beat them to the punch with their Viv software. Interestingly, both companies are considering a model based on charging transaction fees to end users, as well as licensing to developers.

Many companies don't need and can't afford to offer this expansive set of personal assistant functionality. A low-cost middleware solution offered by Yseop uses a

combination of artificial intelligence and natural language generation (NLG) to communicate through written form in multiple languages. It has the unique ability to "dialogue" with customers using contextual references, and to pose unscripted questions. A customer's typed response guides Yseop to provide recommendations for products, as well as explain the reason for the recommendations. And the software is capable of reflecting a particular tone of response—be it sassy or formal. This advance can give brands a branded, product-specific, virtual personal assistant with a bit of personality—all built on structured data and decision trees.



IBM's Watson intends to bring businesses a more intuitive, voiced solution. Their "Watson Developer Cloud Enterprise" allows developers to leverage the program's ability to analyze, discover insights and learn from big data. And IBM is serious, with a commitment to invest \$100 million in specific, handpicked companies that develop a solution on Watson technology. How will those companies be selected? Part of the criteria is "the ability of the application to positively disrupt and spur innovation in a market or industry."

Earlier this year, Watson Group chose to invest in Fluid, Inc. and is helping them create an app for online retailers to provide that personal, expert advice while shopping. The app, called Fluid XPS, is being piloted with North Face. In an IBM fact sheet about the project, Brooke Aguilar, Fluid's VP of Global Business Development, is quoted as saying, "We're putting the best possible sales associate in the hands of every customer, every time."

There is still considerable work to do to make Watson's conversation abilities on par with humans, and there is some speculation that IBM and Apple might form a partnership, and even merge the Watson and Siri projects.

ROBOTS

Retail robots are already emerging to handle menial tasks such as folding and fetching merchandise, and artificial intelligence is being applied to enable customers to access instant product information, and to deliver a distinctive experience.

Robots have dominated manufacturing for a long time now, but they are evolving quickly. One low-cost coworker robot that's about to leave the manufacturing floor is semihumanoid Baxter. Baxter was introduced in 2012 by Boston-based firm Rethink Robotics, and it excels at fast, repetitive work. But Baxter is now being developed into more of a multipurpose robot which can carry out a wider variety of activities. Some of the most intriguing advances in robotics include:

- A robotic-themed restaurant in China with 20 robot workers
- CHARLI II—the first human-sized robot in the US, developed as a helper robot by Virginia Tech
- JIBO, the “world’s first family robot,” personal assistant and companion
- Chef Robot with human-like hands to gently work with fragile foods
- RP-VITA telepresence robot to help physicians provide remote, yet interactive, healthcare services

It's worth noting that in the last two years, Google has acquired at least seven robotics and one artificial intelligence firm – but they're not sharing their plans.



Meet ASIMO

Honda's newest version of the humanoid robot ASIMO is the most human-like robot yet. It's autonomous, intelligent, responsive and much more agile than previous generations.

ASIMO can:

- Use sign language
- Adjust its behavior based on context
- Open a bottle
- Run, climb stairs and walk backward
- Understand when multiple people are speaking at once
- Make decisions

In fact, it's almost to a stage where it can perform anywhere, right alongside people.

One of the most innovative store concepts using robots today is Hointer, with stores in Seattle, Washington and Palo Alto, California. And while they are using robots in the background for inventory management, Hointer aims to make shopping in a store both faster and more fun for the consumer. But in doing so, they are also making a system that's infinitely more efficient for any retailer.

The Retail Store of the Future

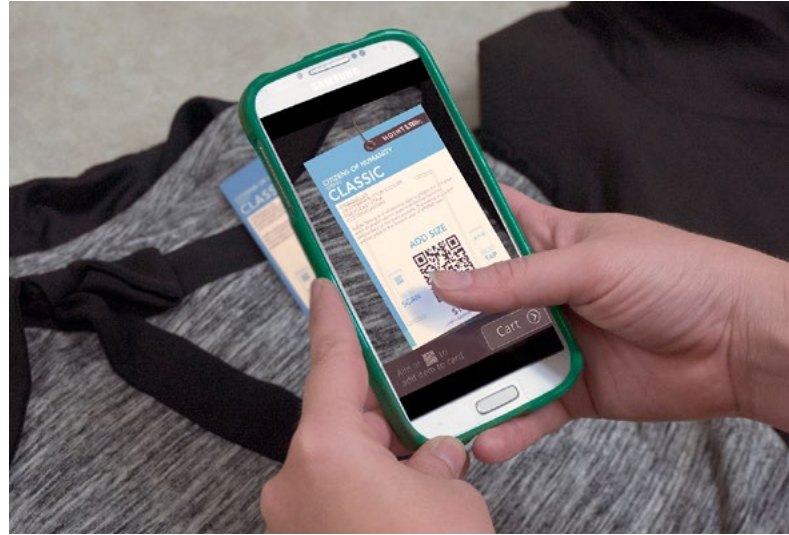
Hointer stores are small—less than 5,000 square feet. Only one of every product line is displayed, and each product features an electronic tag. When a customer sees a style they like, they'll use the Hointer app. Shoppers hold their phone next to an NFC-enabled tag on the item, tap (not scan), and specify color, size, etc. Within 30 seconds, the item is sent to a dressing room via a robot, and the app notifies the customer which room to go to. Selection of the item on the showroom floor automatically populates their virtual shopping basket order. If they need another size, they put the item down a chute in the dressing room, and the item automatically disappears from their shopping cart. Once they are ready to buy, the customer taps their phone to a POS terminal in the store and swipes their credit card.

The app itself also functions as a personal shopping buddy—giving suggestions about what the customer should try next, providing fashion trend content from social media, extending coupons and pointing out special deals.

Hailed as the store of the future, Hointer's vision actually isn't to have a broad footprint of retail stores. Rather, they want thousands of retailers to use their technology. And it appears the concept is gaining ground. MDS, a fashion retailer in Singapore, and a Levi's store in New York were early adopters.

Converting an existing retail store is fast. Hointer can transform a store in as few as two weeks. And while fashion brands are leading adoption now, Hointer envisions other categories, including shoes, grocery, electronics, shoes, home goods, office supplies and more.

Hointer's app isn't utilizing artificial intelligence yet, but right now it is gathering data about sales, conversion rates and associate productivity, as well as what people



like about products so retailers can continue to improve merchandise selection. You can bet, though, that because the founder hails from Amazon, the focus will be on continuing to be more and more efficient. Artificial intelligence is likely one of the places they will explore next.

A Hointer solution requires almost no staff for stocking, no attendants in the fitting rooms, no cashiers...the 5,000-square-foot Hointer store in Seattle is run by only one employee. One Hointer technology buyer, retailer MDS, touts that they've been able to reduce manpower needs to three associates at any given time, even on weekends. If artificial intelligence is applied within the app, and robots evolve will include humanoid qualities in future, MDS may have the option to be completely human-free.

Same-Day Delivery Is the Next Frontier

Some would say that the efficiency of logistics and transportation in the retail industry has greatly improved with the development of more predictive analytics and logistics management technologies. We haven't seen anything yet.

When commerce went online, a whole new category of service enabler emerged: the third-party e-commerce order-fulfillment service. This model is built on huge warehouses and centralized staff to pack and ship. Shipwire, a leader in the industry, sports nine massive warehouses sprinkled across the globe. Webgistix has five in the US, and pride themselves on providing a two-day delivery option. Their model is about to be severely disrupted as same-day delivery demand grows.

One of the key reasons customers still go to stores is a desire for instant gratification. The difference now is that they do extensive research online first. Based on a new study by Business Insider, this behavior, called "reverse showrooming", is far more prevalent than viewing a product in a store and then buying it online. Physical retail stores aren't going anywhere, and will only evolve to become more like value-added resources for customers.

"If you move to the showroom approach, your costs structure shifts. . . you don't need the overhead. Therefore, offering free same-day delivery won't cut deeply into the profit margin."

*Bridget Kulla
James Hardie Building Products*



This is why online heavyweights such as Amazon.com, Google and eBay Inc. have all launched same-day delivery services to bypass the 2-day express and 5-to-7-day standard delivery options available through traditional logistics channels.

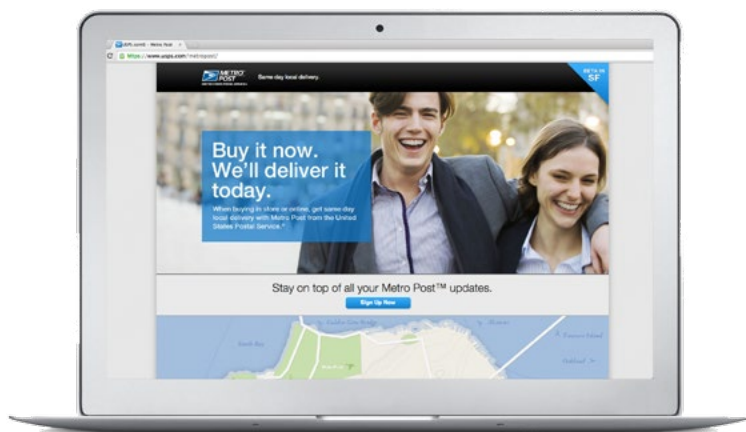
Google is taking the idea a few steps further by offering a shopping app that streamlines ordering from local and national retailers like Costco, Target and Walgreens. Their app, Google Shopping Express, is linked to Google Wallet, and offers free shipping for six months. However, for now, delivery from this portal is only available in a few areas around San Francisco. In fact, Hointer has partnered with Google to facilitate same-day delivery of apparel as part of its plan to build a network of stores that also double as small warehouses to allow for same-day delivery.

Same-day demand isn't just a B2C phenomenon. Lowe's recently launched a same-day, on-demand service for their professional contractor customers, delivering just-in-time worksite needs, as well as regular visits to

restock supplies. Lowe's has taken the extraordinary measure of developing its own light vehicle fleet to enable this offering.

Same-day offerings can only lead to one thing—parity delivery offerings from air and ground logistics competitors.

Beleaguered USPS is certainly hoping to cash in with their Metro Post service, which was tested in San Francisco in 2012. The service promised 2- to 6-hour delivery from online or in-store purchases at select retailers. At that time, they failed to secure enough retailers to meet a 200-package-per-day goal, and the program was suspended in March of 2014. They plan to reinstate the program after they secure the retailers they need, and even have ambitions for a shopping app like Google Shopping Express.



FedEx and UPS will need to evolve or accept a much smaller piece of the logistics pie. While FedEx and UPS already offer same-day delivery in all fifty states, their operational model is not yet efficient and cost-effective for retailers or consumers. They may yet take a hard look at ways to compete in same-day delivery, and may be forced to leverage each other's strengths in a competition model. Or perhaps they'll embrace drones or crowdsourced subcontractors, as it appears their German competitor DHL is doing.

“What if consumers are worried about the security of the purchased items delivered to their homes? I can envision the need for a type of secure Delivery Pod product.”

*Susan Kryl
Kryl & Company*

In Sweden, DHL is giving a network of individuals the opportunity to deliver packages directly to other end consumers. Using a mobile app, the MyWays service connects individuals who ask for flexible deliveries with those offering to transport parcels along their daily routes for a small fee. DHL is also well on their way to leveraging drone technologies, and recently tested their yellow remote-controlled helicopter by delivering a box of medicine from a pharmacy in the city of Bonn to the company's headquarters on the other side of the Rhine River. DHL's drone follows the debut of Amazon's Octocopter, which could be used to deliver packages to its customers in the future, replacing postmen and cutting the delivery times of its goods.

It won't be long before the expectation for same-day delivery becomes the norm in heavily populated areas. And with the potential integration of delivery drones and self-driving vehicles, 30 minutes could be the standard. Our children's children may reach adulthood with absolutely no idea that it used to take 5 to 8 business days—or more—to receive an item ordered online.

What is clear is that the demand for same-day delivery will necessarily transform current product distribution models to facilitate local product access and delivery. The single, centralized warehouse will be a thing of the past. As will the centralized factory, in many cases.

On-Demand Customization and Supply

Amazon is getting a head start with their online 3D printed products store, where they can increase conversion rates, demand a relatively high price point and drive loyalty, as well as capitalize on consumer desires for novelty and individualism.

3D printers are the future of manufacturing...and that future is looking highly democratic indeed. Consumers and B-to-B buyers are able to customize plastics, metals, ceramics, edibles and apparel—and they are able to do it fast, bypassing the supply chain entirely.



3-D Printed Castle

Andrey Rudenko in Shorewood, Minnesota, took this photo of a concrete castle he printed in his back yard—with a 3-D printer of his own design.

Convergence Will Change Our Lives

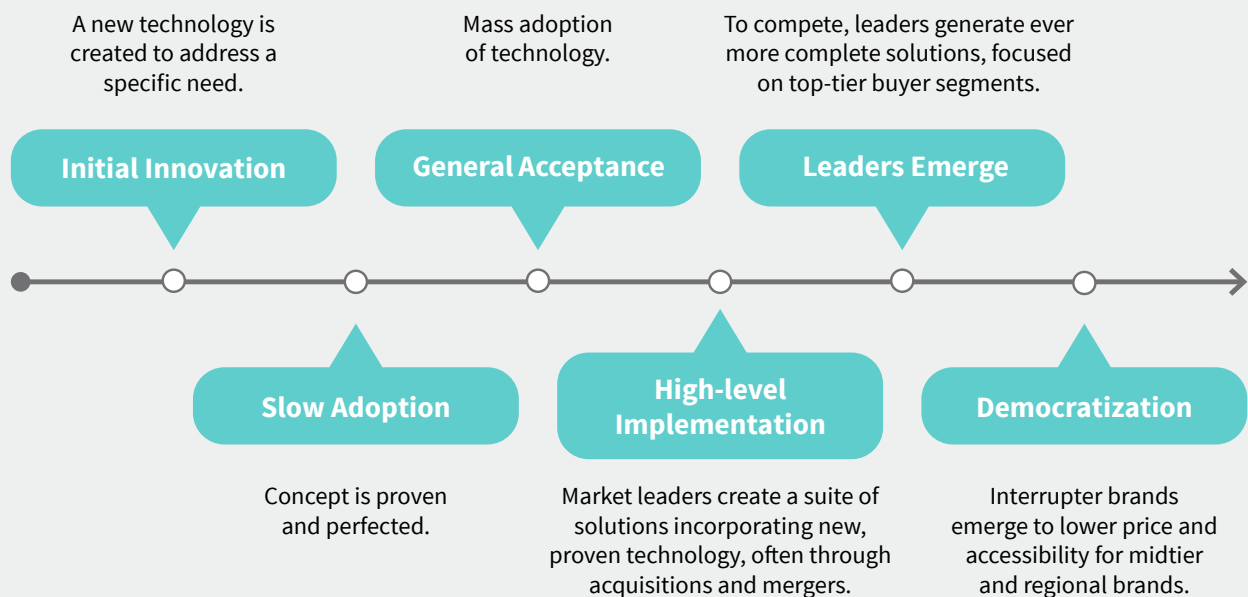
Looking at the technologies, trends and innovations mentioned earlier, you can see that they each signal a movement which may end retail and retail marketing as we know it, and start a chain of industry shifts. No doubt there will inevitably be a gradual fusion of technologies that will forever change the way business is conducted, transforming whole industries.

We're at the relative beginning of a very predictable technology lifecycle. Time and time again, we've seen similar waves of innovation. It starts with small innovations brought to market to address a specific need. In this phase, slow adoption helps prove and perfect the concept, at which time there is general acceptance and an increase in adoption.

Increased adoption signals market leaders that it's safe to add the innovation into their own suite of solutions. This is most efficiently accomplished through buying new technologies via acquisitions and mergers. A few leaders will eventually emerge. To compete and differentiate against each other, they will seek to create ever more complete solutions to address more holistic needs.

If we combined all we can predict related to technology-aided commerce and everything we know about the explosion of marketing automation platforms today, we can forecast that what will eventually evolve is a handful of companies which sell a seamless, data-driven ecosystem to enable ease of merchandising, transacting, marketing, predictive analysis and operational efficiency for the biggest brands.

Technology Life Cycle



Implications

In our frictionless future, retail will look profoundly different to consumers. However, there are far-reaching implications across other industries, ranging from banking to logistics, which impact both form and function. The changes will not happen within the next five years, but in as little as ten to fifteen years we could be looking at a vastly different business landscape.

For Retailers

PRODUCT

Manufacturing innovations and retail technology commoditization will eventually level the playing field for large and small retailers alike.

Delivering an increasingly personalized approach to brands, including customized products and personalized pricing and services, will be key to survival. Amazon is getting a head start with their online 3-D printed products store.

Speed to market and continuous codesign with both consumers and cross-industry partners will help retailers stay ahead.

As robots enter the workforce, consideration needs to be given to functional applications and implications, e.g., automation of dreaded and expensive inventory cycles; packaging and display may need to evolve to enable greater efficiency. Managing shrinkage is another area of opportunity. Machines with sensors are potentially much better than humans at detecting theft.

PEOPLE

Being a vital competitor will necessitate shifting from a product-driven model to an everything-is-service model, a self-service model or a total automation model.

“Retail businesses will simultaneously expand and contract—smaller footprints, more boutiques, more franchises. Companies that can’t provide customization are going to have a hard time. I will have to find out logistically how I can make that customization work. If I can’t, someone else will.”

Tony Priore

Council of Residential Specialists

At the high end of retail, look to companies such as Neiman Marcus and Saks to refine and advance the role of the store associate from that of taskmaster to teacher, advisor, enabler, personal assistant and brand ambassador. Value brands, however, will likely look to phase out more human resources in favor of self and automated services.

Better experiences command a slightly higher price point, and we predict that premium brands won’t let go of their people. These brands will be rewarded through investing in employee-facilitated product comparison tools and training, as well as broadening employee education outside of the category. Customers will want a modern shopping experience that is not readily replicable online, and there will always be a place for brands that can cultivate store teams with well-polished soft skills and the right attitude. People will be the new differentiator.

PLACE

Retailers will virtualize their retail experience. This can mean anything from online or offline virtual reality to 3-D showrooms and virtual product customization experiences—all facilitating instant purchase capabilities and nearly instant delivery.

Meeting demands for customization and real-time supply — plus the need for lower operations costs — will mean synchronization with partners, manufacturers and suppliers. Data exchange across the value chain, and cooperative data mining, will be necessary for both manufacturers and retailers to thrive.

However, as 3-D printing matures and scales up, retailers will have the option to be less dependent on manufacturers. They'll have the ability to assert total control over the brand experience with nearly real-time, localized, customized production. But products may not be the only things they'll be offering.

Lawn services purchased at Aldi's? Restaurants owned by Safeway? Home oil change service from Target? Diversification is the darling strategy of brands looking to extend their relevance in a commoditized space. As competitors struggle for share of wallet in our frictionless future, we'll see retailers expanding to differentiate. However, retailers should note the lessons offered by history. Brands like Sears diversified into auto repair and optical services without innovating their core experience or products.

While smaller retail locations will proliferate, traditional department stores will cease to exist. Malls, however, likely won't. Same-day delivery will solve a big problem for mall shoppers—how to navigate and buy from so many stores while lugging heavy and awkward bags. Upscale malls are already starting to offer the service. Malls will expand on their entertainment strategies to enrich the social, multi-media and cultural experiences of visitors.

PROMOTION

If you think that the jobs of CEOs and COOs will be more challenging in the future, CMOs will also see their role, and that of their team, evolve significantly. In fact, the CMO might finally take a central role in business and operations decision-making.

How will marketers succeed in future?

We posed this question to our panel of senior marketers, and here are some of their thoughts:

- “Build a solid reputation as a trusted source”
- “Publicize the ways you are proactively protecting consumer security”
- “Give consumers more control over their data and what they receive from you”
- “Balance technology and data with compassion and relevancy”
- “Find and engage opinion leaders”
- “Harness consumer generated content through paid product placement”
- “Be nimble, and be ready to sacrifice sacred cows”
- “Constantly update technology to harness new capabilities”

Hyperlocal, hyperrelevant and predictive marketing tactics will help brands drive sales in the future. This requires heavily leveraging predictive analytics and cognitive computing that will be enabled through more sophisticated marketing and analytics tools. Marketers with deep IT expertise will be in high demand for a time, but as marketing technologies evolve, this demand will wane.

With the algorithms out of the way, marketers can focus on the art. Freed from tasks related to delivery and optimization, brands will concentrate on strategy and creative, with a greater focus on the brand and brand experience across channels. This will involve engaging the consumer directly, and collaboratively shaping strategies with their input. Marketers will need to expand their focus on their channels, content development, and brand entertainment, and develop virtualized transaction experiences.

For Manufacturers

Manufacturers, distributors and logistics players will all see the impact of manufacturing democratization. The era of the “maker” consumer is here, and retailers now have the ability to bring their own customized product manufacturing to the salesroom floor. What does this mean for your organization?

AUTOMOTIVE AFTERMARKET

What if a repair shop decided to increase their margin and reduce their inventory through on-site production of parts?

CPG

What if upscale and value-brands alike offered on-site food customization based on calorie, ingredient and allergy requirements?

APPAREL

What if a co-op of consumers united to bring custom apparel production to their own community?

Online and offline, merchandising will take on more experiential forms. Brand stores will build on the experience of both acquisition and ownership to immerse customers in sensation. Models like Bass Pro Shops, LEGO Stores, and the American Girl stores are just the tip of the iceberg.

In the future, prevailing methods of demand creation and the belief that inventory drives sales will be sorely challenged for both B-to-B and B-to-C manufacturers.

Manufacturers will have to carefully consider the production method to address speed to market and price, or the buyers will figure it out for themselves. Economies of scale might ultimately become a market disadvantage. Small teams and microfactories will outmaneuver scaled manufacturing operations.



Look for 3D printing to explode as a service model, enabling rapid local customization and production—or replication—of anything from sports gear to Halloween costumes. In future, the competition could come from enterprises of any size. Anyone with the intellectual property can provide a local solution customized to a specific need.

Manufacturers will need to work to understand local, shifting nuances in consumer demand and preference, and anticipate in a way they have never really had to before. In order to deliver the speed and price point that buyers want, manufacturers will need to collaborate much more closely with customers, and proactively shape operations around those needs at a local level. Distributed manufacturing will be necessary for many to compete against upstart local companies, and many will need to outsource their manufacturing to local facilities with capacity.

Manufacturers will also need to gear up to advance and protect their intellectual property and product designs. Look for emerging technologies for product

authentication, such as DROP labels, to expand outside luxury goods and software to parts and components. However, what the big winners might do instead is to empower new manufacturing models by being proactive partners to match customers to the right manufacturing and distribution options, and facilitate those options. This may look like licensing the 3-D plans for their established commodity products, being tighter collaborators with buyers to drive product differentiation, becoming design and engineering services rather than makers, or opening satellites close to major customers. Another interesting opportunity is for manufacturing to emerge as franchise networks.

In the future, manufacturers will need to find new ways to deliver value for retail partners, consumers and commercial buyers, and work to augment the customer buying and ownership experience. This may entail providing researched consumer insights to retailers, or extending services and experiences directly to consumers.

Once this is certain, partnerships, alliances and relationships will be much more important than they are today. Over the next few years, those who will win in the future will be working to become a connected web across facilities, distributors and end consumers, and focusing on building brand recognition, reputation, quality and a record for innovation.



More Control for the Makers

With a new array of sophisticated marketing tools, virtual assistant platforms, virtual reality showcase capabilities and same-day distribution options, what future use might a manufacturer have for their current channel partners?

Manufacturers will be in an enviable position of being able to take control of the sale, the customer, and the brand experience. They'll have the option of recapturing and controlling their margins...and their data.

In fact, Hointer, the pioneering retailer model of the future, is engaging directly with manufacturers to set up pilot stores to test direct-to-consumer concepts, and enable manufacturers to finally collect and harness big data to build consumer relationships.

We don't imagine we will see wholesale disintermediation, but manufacturers will seek to incorporate an ideal mix of channel partners capable of enhancing distribution efficiency.

Distributors must anticipate ways in which they can add efficiency, speed and accountability to a manufacturer's value chain...by developing closer partnerships, facilitating customer data transparency, and relying less on manufacturers to boost sales through promotional marketing.

Sales strategies must be more personalized and...well, strategic. The sales force must acquire a very deep understanding of the buyer—not just the products they buy—and they'll need to share that knowledge with the manufacturer. Sales will need ways to obtain a constant stream of information about buyers' end customers, product uses and experiences.

Intermediaries that don't make the cut would have to adopt new business models. Perhaps they will become the local warehouse that facilitates same-day delivery, rather than be the customer's point of sale. Maybe they'll become microfactories fulfilling a manufacturer's local demand. Or perhaps they emerge as diversified, customized service suppliers, monetizing their industry-specific and customer-specific knowledge base.

Manufacturers who do dissolve channel networks and provide direct value and experiences for buyers have an amazing opportunity, and a big challenge. Developing relationships with end users will redefine manufacturers and create new opportunities for growth. However, they must take on all the trappings of a B-2-C model, including marketing infrastructure, new skills, and especially, a new cultural paradigm. We suspect that those who are up for the challenge will lead their categories.

Retail Supply Manufacturers



The inability to adjust to sudden changes in demand can be the most costly supply chain disruption for retailers and manufacturers alike.

Those at risk include manufacturers of shopping carts, POS systems, shelves and display systems, hangers, tagging guns and price-label systems, etc. These firms may experience a dramatic contraction in demand, and infrastructure and overhead pressures would lead to further market consolidation and diversification.

However, those who manufacture shipping container solutions will expand and necessarily innovate in order to optimize material use and reduce pricing. For instance, the array of standardized box and bag sizes will need to expand to accommodate order-size ranges and automated distribution methods more efficiently. The industry will also need to work with consumers to explore how they can efficiently address the need to reuse or repurpose used shipping materials.

Retail Real Estate Crash, Building Material Boom?

What happens when same-day delivery becomes the norm and consumers reach critical mass in the adoption of virtualized retail experiences? A dramatically reduced retail real estate footprint.

When a storefront can be a 20 x 20 nook or an automated 5,000-square-foot space...when items can be purchased from the side of a bus, a magazine page, or a park bench...when stores become accessible via a 3-D experience in one's living room...there's little need for massive square footage.

Should we be worried about land values, empty buildings, and the tax base of our communities? With rising populations and changing retail formats, there's little need to fear.

With a little rezoning, a future condo development could transform the average 106,000-square-foot Walmart into 44 comfortable 2,400-square-foot luxury dwellings. Retail giants like JC Penney, Kmart, and IKEA will need to be similarly downsized, and space-repurposed.

While landlords and property managers are facing many challenges, the remodeling industry is potentially looking at an exciting renaissance. This is a key opportunity for building products manufacturers to innovate streamlined, turnkey retrofit solutions, and help developers weigh the cost benefit equation of options for repurposing retail real estate.

However, retail stores are not the only type of structure that will need to be addressed. Virtual banking is already killing US bank branches. Nearly 1,500 branches were closed in 2013, and a total of 281 in the first quarter of 2014. Virtual banking institutions now own almost 10% of the market.

The banking industry is clinging to the fact that customers still want advisory services in the areas of private banking and investments, and customers still want to talk to someone to resolve issues. Personal virtual assistants may eliminate a bank's need for a branch entirely. And both Yseop and IBM's Watson Group are tackling financial services automation solutions.

Questions to Ask Now

- What is your firm's long-term vision?
- What opportunities does this wave of innovation signify for your firm?
- How will these innovations equip new models and interruptors?
- What will your firm need to do to lead?



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About CBD Marketing

CBD Marketing is a B-to-C and B-to-B marketing services agency that understands today's complex consumers and businesses, and develops innovative growth strategies for companies that are ready to lead. We clarify and articulate what's most meaningful about your brand, product or service, and help you build more intimate and profitable relationships with your customers. At CBD, "market what's meaningful" is our mission, guiding all disciplines from research, business strategy and brand development through media strategy, public relations and creative.

Let's Talk!

To talk about how CBD can help you create moments that matter to your audience and better connect them to your brand, product or service, please contact:

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Sources:

Published information delivered from the websites, blogs and press releases of companies cited within this document:

Overview of Virtual Reality Technologies, by Yuri Antonio Gonçalves Vilas Boas, School of Electronics and Computer Science, University of Southampton

The Future of Money in a Mobile Age, by Aaron Smith, Janna Anderson and Lee Rainie

Amazon vet's robot-powered apparel startup now beating Amazon prices, partners with Google Shopping, by Taylor Soper

The Disruptive Potential of Artificial Intelligence Applications, by Lars Hård

Google Wallet Is Coming To Glass, by Frederic Lardinois

PayPal already exploring integrating Touch ID into their mobile payment app, by Yoni Heisler

Amazon to Offer Kindle Checkout System to Physical Retailers, by Greg Bensinger

Analysis: 14 mobile payment services Amazon's Kindle would compete with, by Rebecca Thomson

Mobile payments market—Trends and understandings, by David Stein

BEACONS: What They Are, How They Work, And Why Apple's iBeacon Technology Is Ahead Of The Pack, by Tony Danova

How Do You Win The Mobile Wallet War? Be Like Starbucks., by Steven Bertoni, Forbes

Facebook Completes Oculus Rift Purchase, Goes On Hiring Spree, by Thomas Halleck

Stores Weigh Risks and Rewards of Going Mobile, by Kate Kaye, AdAgeMobile

Is 2014 Finally the Year Of Mobile?, by Kim Whitler, Forbes

Inside Google's Latest Series of Acquisitions, by Celeste Lecompton

Apple in Talks to Launch Its Mobile Wallet Service This Year: Report, by Robin Sinha

First Look: U.S. Bank Developing Mobile Shopping Software, by Mary Wisniewski

Honda's new ASIMO robot is all grown up, by Stu Robarts

mPOS is the key to mobile payments adoption, by Jan Deepen

5 Mobile Payments Data Points That Will Blow Your Mind, by The Business Insider

Mobile Payment Experiment: Can An iPhone Replace Your Wallet?, by Steven Bertoni

Real-Time Big Data Analytics: Emerging Architecture, by Mike Barlow

American LifeStyles 2013: Five Years Later – US – April 2013, by the Mintel Group Ltd.

Overstock.com is going to accept Bitcoin in 2014, by Amit Chowdhry

In Bitcoin's Orbit: Rival Virtual Currencies Vie for Acceptance, by Nathaniel Popper

USA Technologies and Setomatic Systems Join Forces to Accelerate Cashless Payment in Multi-Billion Dollar Self-Service Laundry Market, by Business Wire

Cashless trend is redefining money, and a central bank's role as printer, by Andrew Sheng

Nigeria embraces cashless revolution, by Xan Rice

Sweden moving towards cashless economy, by CBSNews

The Cashless Society is Almost Here – And With Some Very Sinister Implications, by Patrick Henningsen

Cashless society: A huge threat to our freedom, by Scott A. Shay

Touch Just Got Real, Fujitsu's Haptic Sensory Tablet, by Jennifer Hicks

Updated Google Wallet app for Android delivers easier mobile payments, by Darren Murph

Hands-On With Coin, The Electronic Credit Card That Hopes To Declutter Your Wallet, by Ryan Lawler

Weve plans mobile payment offering in MasterCard deal, by Arif Durrani

Credit and Debit Cards: What You Need to Know, by Jennifer Barrett

Mobile Payment Systems: The Era Of A Cashless Future, by Singyin Lee

How Digital Wallets Work, by Nathan Chandler

Uber Will Focus On Southeast Asia Launches Over The Next Two Months, by Catherine Shu

Mobile Money, by T-Mobile

Cash Is Trash: The Future of Mobile Payment, by Ryan Rommann

Mobile payments, by PayYourWay

Clinkle Blog Post: Hello World, by Lucas Duplan

The cashless society is coming. More reason than ever to use cash, by Oliver Burkeman

Paypal executive leaves for mobile payments startup Clinkle, by Donna Tam

Square and Starbucks: Cashless lattes, by Laurie Segall

Six Things to Know About Chip Cards (EMV), by Carolyn Balfany

What does the bank of the future look like?, by Susie Poppick, Taylor Tepper

PayPal helps restaurant customers avoid waiters, by Adam Bender

Bitcoin Gets An Endorsement For College Tuition Payments And A MOOC, by Panos Mourdoukoutas

Seizing the Moment: On the Road to Financial Inclusion, by the Center for Financial Inclusion, Accion

MasterCard at MWC13, by Rebecca Kaufman

World Payments Report 2012, by Capgemini, RBS, EFMA

Electronic Payments Modernize the Face of Government Benefits, by Jennifer Schulz

Apple's iBeacon And The Future Of Mobile Shopping, by Laura Heller

Charlie Rose Talks to Starbucks CEO Howard Schultz, by Charlie Rose

Starbucks generates more than 3M mobile payment transactions per week, by Rimma Kats

Cashless self-checkout: a growing trend that may be right for you, by IBM

Mobile microtargeting, by Jonathan Bacon

Retailers 'geotarget' consumers with deals in their area, by Linda Nguyen

Will Apple's iBeacon Change the Way We Shop?, by Lance Ulanoff

If Your Phone Knows Which Aisle You're In, Will It Have Deals on Groceries?, by Joshua Brustein

The dark side of Apple's iBeacons, by Zach Epstein

Is Impulse Shopping Bigger Offline or Online?, by Tom Ryan

The Logic Problems That Will Eventually Pop the Bitcoin Bubble, by Kurt Eichenwald

Reinventing retail: What Businesses Need to Know for 2014, by WalkerSands Communications

3 Bye-Bye, Wallets, by Harry McCracken

Bitcoin phenomenon needs more study: Lew video, by CNBC, Jack Lew

Consumers hate in-store tracking (but retailers, startups and investors love it), by Erin Griffith

For Shoppers, Next Level of Instant Gratification, by Hilary Stout

Extreme Electronic Payments in a Cashless Society, by the National Transaction Corporation

Consumer behavior unchanged after Target breach, by The Associated Press

Credit Card and Debit Card Transaction Volume Statistics, by Tim Chen

Cashless Society, by Global TGI

The Future of Money: Are We Going Cashless?, by Joshua Ritchie

12 Crucial Consumer Trends For 2012, by trendwatching.com

e-Port Surveys Show Growing Consumer Trend to Cashless, by PR Newswire

Death of cash? Maybe, but not quite yet in Japan, by Michael Fitzpatrick

Apple in Talks to Launch Its Mobile Wallet Service This Year: Report, by Robin Sinha

First Look: U.S. Bank Developing Mobile Shopping Software, by Mary Wisniewski

Honda's new ASIMO robot is all grown up, by Stu Robarts

American bank branches are closing faster than new ones are opening, by Mark DeCambre

Omni-Channel Fulfillment and the Changing Dynamics of Wholesale Distribution, by Sedlak Management Consultants

Lowe's Brings Pro Customers On-Demand Delivery Service, by PRNewswire

Robots Could Take Over Even the Boss's Job, by Herb Weisbaum

10 Jobs that Won't Be Taken By Robots, by Maura Kelly, The Fiscal Times

Amazon undercuts Square with new mobile credit card payments service, by Chris Isidore

'Reverse Showrooming': Bricks-And-Mortar Retailers Fight Back, by Emily Adler, Business Insider

Amazon goods to be entering 3rd dimension, by Reuters

Apple to Include Mobile Payments In Next iPhone: Report, by Benjamin Hart