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Executive Report

The Digital Leader:

Master of the Six Digital Transformations

by Yesha Sivan and Raz Heiferman

In this *Executive Report*, we present six digital-driven transformations. These are neither technologies nor business models per se; rather, they define and act as the connecting tissue between digital technologies and business strategies. They include three *external transformations* that change the market — (1) from atoms to bits, (2) from places to spaces, and (3) from products to services — and three *internal transformations* that change the models and tools we use for strategy formulation — (1) from sustainable competitive advantage to transient competitive advantage, (2) from disruptive innovation to "killer" innovation, and (3) from classical business models to digital business models.

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The Digital Leader: Master of the Six Digital Transformations

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IN THIS ISSUE

HOW TO RIDE THE DIGITAL TRANSFORMATIONS

The goal of this *Executive Report* is to present six digital-driven transformations affecting 21st-century organizations. These are neither technologies nor business models per se; rather, they are transformations that define the connecting tissue between digital technologies and business strategies.

The first three are *external transformations* that describe how digital technologies are changing the market:

1. **From atoms to bits.** The first transformation involves converting physical products and services into digital products and services.
2. **From places to spaces.** The second transforms physical marketplaces into digital and virtual market spaces.
3. **From products to services.** The third transforms physical products into digital services.

The next three are *internal transformations* that describe how digital technologies have altered the models and tools we use for strategy and business model formulation:

4. **From sustainable competitive advantage to transient competitive advantage.** Organizations must understand the dynamics of the new environment. Indeed, they must become more agile and responsive and operate in a world of short-term/transient competitive advantage.
5. **From disruptive innovation to "killer" innovation.** When it comes to the digital landscape, the process of disruptive innovation, which in the past could sometimes take years to disrupt, has accelerated into a matter of months, or even weeks.
6. **From classical business models to digital business models.** Digital technologies have augmented the standard business model and transformed it into a *digital* business model.

These six transformations will provide CxOs a solid foundation to capture how digital technologies can completely change the business environment. We assert

that organizations and managers will have to devote considerable time and resources to evaluate how they will leverage these six transformations to create new value for their customers and new competitive advantage for their business — and, in parallel, thwart the threats and risks of digital technologies.

Let us begin.

WELCOME TO THE ERA OF DIGITAL TRANSFORMATION

Digital technologies have become an essential part of our business environment, and of our personal lives. In 60 years or so, they have gone through an incredible journey: from simple automation of the back offices to supporting almost every aspect of the modern organization; to our homes and living rooms; to our personal use of mobile devices; to part of what we wear (clocks, glasses, bands, etc.); and, as it seems, they will become part of our bodies in the future.

Wherever we look, we see and use digital technologies: at work, at the mall, on the train, at the theater, in our pockets, while we learn, while we collaborate, and so forth. Almost every device today has embedded digital technology. Some products have become fully digital (e.g., music, books, maps, navigation tools), while others have been enhanced with digital technologies (e.g., cars, airplanes, TVs). Some services have been transformed into self-services powered by digital technologies, while other services are being delivered to customers over digital channels (e.g., call centers, websites, self-service kiosks).

Digital technologies completely change the business landscape, including the way businesses craft their strategies and envision their business models, how they create and implement competitive advantage, how they operate their value chains, how they engage and collaborate with all stakeholders (i.e., customers, employees, vendors, and business partners), how they structure and organize, how they divide work among business partners, and much more. In other words, digital technologies alter every aspect of the business environment.

As it turns out, digital technologies have become the foundation of the new economic order. Understanding these changes and managing them for the benefit of the firm is a daunting task. In this *Executive Report*, we offer a practical tool in the form of *six digital transformations* as a mental framework to master these changes.

EXTERNAL DIGITAL TRANSFORMATIONS: AFFECTING THE MARKET

First we focus on the three external transformations happening in today's marketplace.

1. From Atoms to Bits: How Physical Products and Services Are Becoming Digital

Only 100 years have passed since the Industrial Revolution and we are already in the midst of a new revolution, the latest being of a digital nature. Indeed, Erik Brynjolfsson and Andrew McAfee, two leading MIT researchers, have named the latest revolution "The Second Machine Age."[1] While the first machine age, the Industrial Revolution, focused mainly on the automation of physical work (e.g., steam engines, electrical engines, hydraulic cranes, ships, railways, airplanes, cars, and much more), the second machine age centers on automating and extending our cognitive tasks. Digital technologies — hardware, software, networking, data management, and applications — are changing the rules of the economy, the business models, the value chains, as well as the organizational structures and boundaries of every company.

Figure 1 shows how digital transformation has expanded over the last three decades.[2] Certainly, the introduction of the personal computer and then the Internet, two landmark events, ignited the digital revolution. Next, by the 1990s, the first digital products, mainly in the music and entertainment industries, hit the market in parallel with the rapid development of the Internet infrastructure expansion. From there we saw the transformation continue at a steady and fast pace to e-commerce and digital distribution, soon after moving on to the transformation of business models. The latest four forces — mobile, social networks, cloud computing, and big data — continue the revolution.

Even through decades of advancements, the digital revolution is really just taking off as we face continuous waves of new and breakthrough innovations. Just looking at the latest developments in artificial intelligence and machine learning, robotics, 3D printing, big data, wearable computing, ultra-high-speed networks, massive parallel computing, and so on, can make you dizzy. But, prepare yourself; this is just the beginning. New waves of continuous innovation bring new technologies that are just starting to make their way into the business landscape — and into our lives. Consider the following few examples:

- **Watson** — the cognitive computing platform developed by IBM, capable of understanding natural language, making inferences from huge

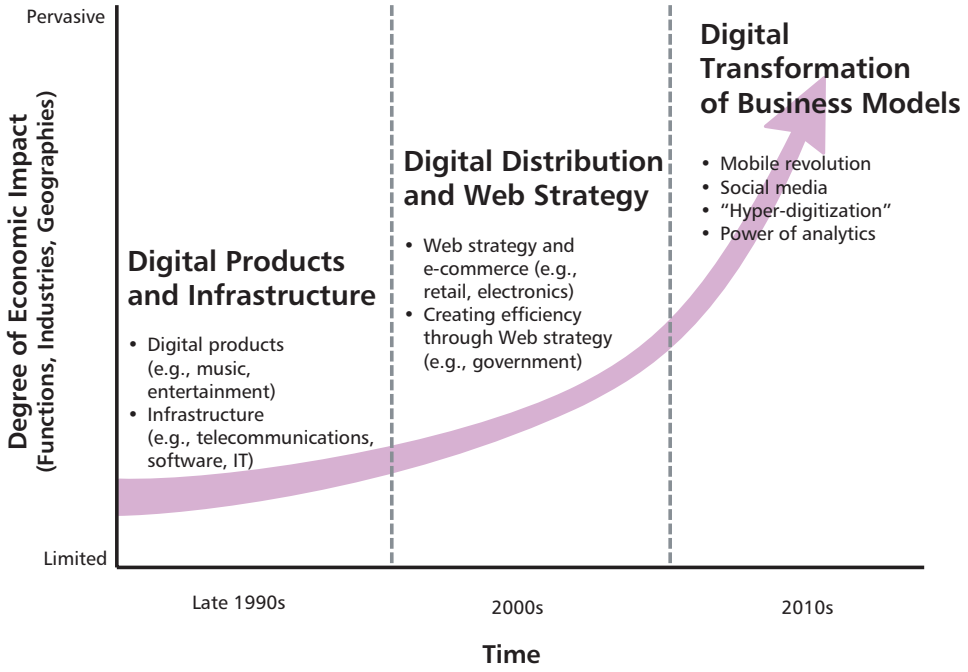

Figure 1 — The increasing digitization degree. (Source: Berman and Bell.)

and unstructured data sources and synthesizing the correct answer

- **Siri** — the speech assistant developed by Apple, making tremendous improvements in understanding natural speech and performing complex tasks based on this understanding
- **Google Translate** — does a good job in translating text from language to language and improves over time
- **3D printers** — just beginning to make an impact and may change many of the ways we produce stuff
- **Autonomous cars** — now being developed by most large car vendors, ultimately changing the way we will commute
- **Internet of Things** — technology that enables every smart device to be connected to any other smart device over high-speed networks and the Internet
- **Wearable computing** — digital artifacts we wear and use all the time, including Google Glass, Samsung Gear, and NikeFuel
- **In-memory computing** — high-performance processing by managing all the data in memory and enabling processes impossible until now

The introduction of digital technologies has paved the way for the physical-digital convergence. Today we are witnessing the endless transformation of physical products and services into digital products and services. Sometimes they are fully converted into digital products while other times they are augmented by technology to provide new functionality. We call this phenomenon *from atoms to bits* (following Nicholas Negroponte's seminal book *Being Digital*[3]). Consider the many examples:

- Physical music records and cassettes gave way to MP3 players like the iPod and others.
- Physical books are being transformed into digital books for e-readers like Kindle, iBooks, and others.
- DVDs are being replaced by streaming directly to our TV sets and personal computing devices.
- Regular postal mail is being replaced by email.
- Our photo albums are being replaced by digital albums on the cloud or on our computers.
- Telephony is being replaced by Skype, Facebook, WhatsApp, and other applications.
- Our homes are getting smarter by embedding processors and software into our home appliances.
- Our cars are being digitalized.

Companies will have to decide how to position their products and services to take full advantage of digital technologies. The boundaries between the physical and digital worlds will continue to blur over time, especially in the age of 3D manufacturing.

2. From Places to Spaces: How Physical Marketplaces Are Becoming Digital Market Spaces

Let's now turn to the physical places we call "markets" and where we do business. Shops, bank branches, retail supermarkets, school and university classes, and service stations are physical markets where we exchange goods for money. Today those physical places are moving more and more to the digital space — websites, Internet banking, e-commerce, mobile commerce and applications, multichannel contact centers, massive online open courses, remote service of cars, and so on. Everywhere, and at any time, you can do business and purchase products or get services such as reserving a hotel room, provide feedback and customer reviews in an instant, learn directly from your home, access entertainment services like movies and TV shows at any hour, and so forth. We call this transformation *from places to spaces*.

Again, as with the transition from atoms to bits, there is a continuum between physical places and digital spaces. Some businesses will operate mainly in the digital space (e.g., Facebook), while others will operate in a dual mode, in both the digital space and the physical place (e.g., Apple, Amazon, eBay, Starbucks, Tesco). Some incumbents can now leverage this dual mode, which sometimes is a disadvantage for the digital native companies that have only a digital presence.

Figure 2 shows how more and more industries are moving across this physical-digital continuum.[4] Certainly, no industries or sectors are immune to this digital transformation. It affects every organization — commercial or public, small or big. The pace of the transformation, however, is different in different industries and sectors. Industries like finance, publishing, and music face a rapid pace of transformation while industries like agriculture, industrial products, and consumer products face a slower pace. But even in the slow-paced industries, digitalization is still taking place, mainly in the value chain, vendor relationships, and manufacturing processes.

3. From Products to Services: How All Products Are Shifting to Services

Digital technologies have unleashed another transformation. Many companies have leveraged digital technology and changed their business model. Indeed, some companies have gone from being a manufacturer that sells physical products to a service company that manages long-term relationships with customers. We will call this transformation *from products to services*.

Jet engine manufacturers like Rolls-Royce, GE, and Pratt & Whitney, for example, have started to sell their engines as a service. For instance, they collect a fee based on the running hours of the engines, maintain the engines during maintenance periods, replace engines when they max out operating hours, and so on. Another example comes from tire manufacturers like Goodyear that are now charging truck fleet operators based on mileage rather than per tire. They first acquire the required information from sensors installed on the tire and on the truck. Next, they view tire usage based

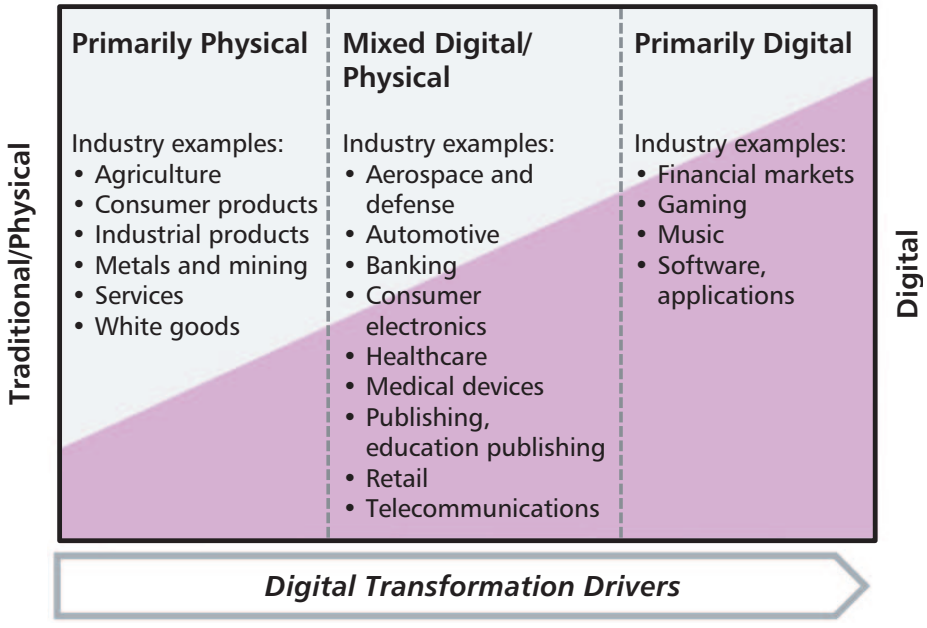

Figure 2 — Increasing product and service digitization. (Source: Berman and Bell.)

on road conditions and driver behavior, and, finally, obtain the ability to replace the tire just in time based on tire condition and so forth. These manufacturers can now provide valuable information to car fleet owners, such as driving load of trucks, driving distance per driver, and so on.

This transformation from a goods provider into a service provider has changed the relationship between the organization and its customers. Today long-term relationships with customers are replacing short-term transactions.

INTERNAL DIGITAL TRANSFORMATION: AFFECTING BUSINESS STRATEGY

The first three external transformations presented in this report call for a response. Internally, the organization needs to transform itself, too. In this section, we focus on three strategic organizational transformations.

4. From Sustainable to Transient Competitive Advantage: How to Build Value over Time, All the Time

Digital transformation also affects the theory of competitive strategy. Michael E. Porter is a well-known authority in the area of strategy and competitive advantage.[5] His models were, and still are, the "strategy" foundation for generations of businesspeople, students, and researchers. His conceptual tools such as the five forces, the value chain, generic strategies, and more are the tools most practitioners and consultants use to analyze the competitive position of companies and even nations. When Porter first published his works, the business landscape was somewhat different from today's. It was more stable, more predictable — a landscape that enabled companies to define their strategy and then execute that strategy for some years. In time, Porter, other strategy scholars such as Robert S. Kaplan and David P. Norton, and various practitioners have introduced more tools and concepts (e.g., the balanced scorecard) for monitoring strategy execution. Certainly, as execution deviates from strategy, companies must revisit and revise both strategy and execution. Still, historically, such revision typically has occurred over long cycles due to a more stable environment.

But then came digital technologies and some of the underlying assumptions began to change drastically due to their different economic nature and dynamics. For instance, the cost of production no longer necessarily relates to the number of units produced, innovation arrives in waves of increased speed that can affect competitors and whole industries, and global reach and distribution are becoming possibilities for all companies.

This particular transformation of the economic landscape has changed the way we should look at strategy in general and competitive advantage in particular. Business cycles are shrinking; competitors can come from anywhere, not just locally or nationally; entry barriers are blurring; and disruption is just beyond the corner. Companies must be agile and on constant alert.

Management professor Rita McGrath believes that companies can't plan for sustainable competitive advantage.[6] Instead, they must adapt and operate in a dynamic environment, constantly looking for short-term advantages, exploiting them, and quickly changing their strategy to adapt to new competitive advantages.

Business cycles are shrinking; competitors can come from anywhere, not just locally or nationally; entry barriers are blurring; and disruption is just beyond the corner.

In less than 30 years, one of the most fundamental concepts in business strategy, the *sustainable competitive advantage*, is giving way to a different concept, the *transient competitive advantage*. Digital technologies have made a significant contribution to this shift because they have changed the business environment into one that is more innovative, dynamic, and chaotic. The external phenomena we described earlier — when atoms meet bits, when places meet spaces, when products meet services — have transformed competitive advantage from sustainable to transient. Organizations must learn how to succeed and survive in this new business environment, an environment that has forever changed due to digital technologies.

5. From Disruptive Innovation to "Killer" Innovation: How to Deal with Deep, Fast, and Detrimental Chances

Disruptive innovation, another well-known business concept as defined by Clayton Christensen,[7] is also changing. When he first defined this concept back in 1997, digital technologies already existed, but they were just beginning to make their impact on strategy and the process of disruption.

The concept of innovative disruption is generic and we can apply it to any technology or business model, not just digital innovations. When a disruptive innovation that is simpler and less costly than the existing market standard appears, it forms a niche market that initially seems unappealing or trivial to the incumbent company and

to investors, but that product will eventually redefine the industry. An obvious example is the tablet. Although Microsoft invented it, Apple managed to improve it and became the market leader, presenting a more convenient alternative to personal computers and laptops. Worldwide sales of personal computers based on Windows are declining today, while the sales of iOS and Android tablets are growing.

In the same way digital technologies affected competitive advantage, they have also altered the disruptive innovation process. Today more and more examples exist of companies that have ill interpreted the new digital technologies, and are now part of history, or fighting for existence. The lesson is simple: digital disruption is very painful — fast, deep, and detrimental. Consider these examples:

- **Sony Walkman.** Sony's famous innovative product surrendered to the iPod/iPhone revolution and has ceased to exist.
- **Kodak.** The leading global and innovative company in the area of photography for many years ill interpreted the technology of digital photography, which it actually invented. Japanese companies such as Nikon, Fuji, and Canon took the lead with the new technology and eventually disrupted Kodak's film processing business model. Kodak no longer exists in this industry. Incidentally, the Japanese companies now face the risk of disruption coming from smartphone cameras. Digital continues to create new opportunities, as seen by the success of GoPro (a small digital movie camera that made US $1 billion in revenue for 2013[8]).
- **Blockbuster.** The primary DVD rental company, with thousands of branches and machines spread globally, could not compete with Netflix. Netflix cancelled late fee charges, improved the film selection process by using an advanced recommendation engine on its website, and enhanced customer experience by sending requested DVDs to homes via postal mail. In essence, Netflix joined the atoms and bits model, canceled out the space required for a storefront, and eventually used the Web as a store "space." Next, the company well positioned itself and quickly identified the trend of streaming content. Netflix soon modified its business model and is now one of the leaders in this area. Blockbuster has gone bankrupt.
- **HMV and Tower Records.** These two well-known music shops with many worldwide branches had to close their businesses after iTunes became the biggest music shop in the world.
- **Borders.** This leading bookstore chain did not react well to the digital transformation to e-books and e-readers. Instead, it kept its old business model and went bankrupt.
- **Nokia.** One of the most successful, leading, worldwide cellular vendors had to sell its mobile division to Microsoft due to the strategic mistake of ill interpreting the introduction of the iPhone and the quick shift to smartphones. It remains to be seen if Microsoft can succeed in the fierce competitive landscape of Android and iOS operating systems.
- **BlackBerry.** Once a dominant cellular vendor for business phone users, this company is now in free fall and unlikely to succeed in recovering from the iPhone/Android revolution.
- **Motorola.** The company that invented cellular technology and led the industry for some time has been sold to Google, mainly for its many patents. Google then sold the mobile device division to Lenovo.
- **TomTom and Garmin.** These two successful vendors of personal digital navigators lost their competitive position in a short period of time after iGO and Waze introduced their iOS and Android versions of navigation software. iGO itself had to change its business model after Waze came on the market as a free-of-charge navigation software, providing real-time navigation with social network capabilities.

We could go on and on with other examples, but we are sure that the message is clear: in today's digital age, the risk of "killer" disruption has grown significantly.

The concept of disruptive innovation is now evolving due to digital technologies. In his book *Digital Disruption*, James McQuivey describes how digital technologies have accelerated and changed the disruption processes.[9] He claims that in every industry digital competitors are taking advantage of the new technologies, platforms, and tools to disrupt the usual way of doing business. "Digital disruption is not only a possibility for your company's future but the only possibility," he writes. McQuivey urges companies to change their mindset and start exploiting digital technologies because this is what their customers want. There is a new breed of competitors, which he calls "digital disruptors," that can come from anywhere and quickly disrupt your business. They can deliver value to customers at a lower cost, with faster development and deployment cycles, and with an improved customer experience.

Digital technologies have the power to disrupt your business *and* can do it at a pace never before experienced. In

their book *Big Bang Disruption*, consultants Larry Downes and Paul Nunes claim that digital technologies can disrupt and devastate companies virtually overnight with a product or a service that is better and cheaper than one currently delivered by others.[10] Small startups with few employees, minimal experience, and almost no capital can unravel your firm before you even begin to grasp what's happening. Just look at what WhatsApp with its 59 employees has done to the incumbent cellular operators, forcing them to erase billions of dollars from their SMS businesses. Facebook acquired WhatsApp and its 470 million customers for the unimaginable sum of $19 billion.

Some call this "Digital Darwinism," where slow companies just disappear, sometimes within years, sometimes within months, as they make space for the new species of business.

6. From the Classical Business Model to the Digital Business Model: How to Digitalize the Nine Building Blocks of Every Business

In the same way digital technologies have impacted the process of crafting competitive strategy and have accelerated the process of disruptive innovation, digital technologies have transformed the business model into the *digital* business model. In this section, we present this digital business model based on the building blocks of Alexander Osterwalder and Yves Pigneur's Business Model Canvas.[11] The building blocks and their digital layer are mostly generic and match any type of organization.

The digital business model focuses on how the organization utilizes and leverages digital technologies to do business, to operate, and to produce value in the digital era. It's not a standalone model but rather a layer of the business model, a layer focused on how the organization *defines*, *implements*, and *optimizes* the digital part of its business model. This layer affects all nine building blocks of the business model and examines how digital technologies engage to create value and provide a unique experience to customers.

Figure 3, adapted from Osterwalder and Pigneur, presents four categories that contain the nine building blocks. The four categories are: (1) the *infrastructure* category, which describes the key resources, activities, and business partnerships required to operate the business model; (2) the *offer* category, which answers the question of the company's value proposition; (3) the *customer* category, which describes the customer segments and the channels and relationships the company

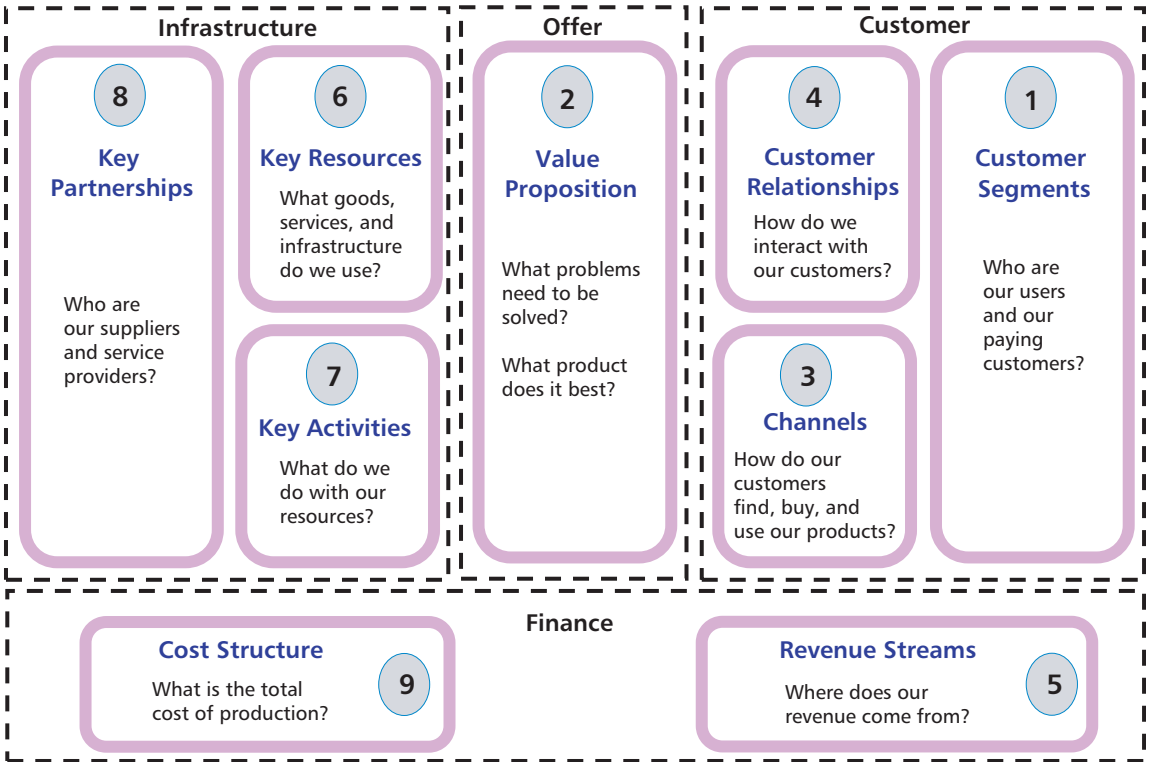

Figure 3 — The nine building blocks of the business model. (Adapted from Osterwalder and Pigneur.)

manages; and (4) the *finance* category, which describes the revenue streams, the cost structure, and how the company generates profits.

Let's take a more detailed look at the nine building blocks, including case examples of each.

1. Customer Segments

The first building block outlines which customer segments the company chooses to attract, serve, and provide value. There are different types of markets a company can reach. These include: mass markets without any specific segmentation; a niche market with a specific type of customer; a segmented market with some specific and different customer groups (e.g., a bank that serves private and business customers); a diversified group of customers sometimes even unrelated (e.g., Amazon, which runs an e-commerce retail business, a cloud computing business, and an e-books and tablets business); and multisided platforms that serve two or more interdependent businesses (e.g., a credit card company with credit card holders and merchants). Digital technologies enable the organization to reach new customer segments (e.g., customers in other countries or geographies, young customers that prefer only digital presence). By using business intelligence technologies, a company can mine data and refine its offerings to smaller and well-defined customer segments ("microsegments").

Digital technologies have enriched the channels companies can use. Every company must evaluate which channels to use for its different customer segments.

For example, the banking industry has been restructured based on the different customer segments it serves. Historically, a bank structured itself along products (i.e., the savings division, the home banking division, the securities and investment banking division). Today most banks are structured along different customer segments (i.e., private banking, commercial banking, personal banking).

2. Value Proposition

The second building block defines the bundle of products and services that create value for specific customer segments. There are many ways that represent the value a company creates: newness, performance, customization capabilities, design, brand/status, price, cost reduction, accessibility, convenience and usability, and others.

Consider the following examples:

- Retail giant Tesco decided to use face-recognition technologies in its 450 owned gas stations. This technology enables Tesco to provide automatic and quick payment capabilities to its five million customers as well as presenting them personalized offers on gas station digital screens.
- Office equipment retailer Staples wanted to reduce stock in its branches and therefore developed a website that allows customers to place purchase orders for shipment to their address the next day.
- Spanish health provider Osakidetza introduced Microsoft's Kinect technology to help some patients receive remote personalized physiotherapy treatments.
- Insurance provider Progressive Insurance offers its customers a digital device for use in their cars. This device transmits data about the driver's behavior and, based on that personal information, calculates personalized insurance premiums.

3. Channels

The third building block describes what channels the company uses to reach its customers and deliver its value proposition. Companies can use different channels such as direct sales force, branches, sales partners, direct sales over a website, wholesale partners, and more. They can also use different channels for different stages (e.g., a partner retail chain for sales and another partner for post–sales service). Digital technologies have enriched the channels companies can use (e.g., websites, contact centers, email, chats). Every company must evaluate which channels to use for its different customer segments. Many companies use new digital market spaces to augment their physical shops and enable customers to switch easily between the different channels.

Consider the following examples:

- Tesco has developed an advanced website for customer purchases and deliveries. The company also uses its website channel to provide new financial services (e.g., insurance, personal loans), something never provided by a supermarket.
- The Israeli Ministry of Transportation has deployed many digital kiosks in the Super-Pharm chain stores, enabling customers to obtain driver licenses and car

permits very easily, without having to wait in office queues.

- Cement giant CEMEX provides its business construction companies a call center to enable them to make modifications to their purchase orders almost up to the delivery day.

4. Customer Relationships

The fourth building block represents the different types of customer relationships a company wants to establish and maintain. A company can establish many coexisting relationships such as personal assistance during the sales cycle (e.g., an insurance agent or a call center agent); dedicated personal assistance by allocating specific persons to specific customers (e.g., investment advisor for large bank account holders); self-service without any personal relationship (e.g., selling only via website with the use of a credit card); automated services that combine some form of self-service with personal assistance based on a customer's profile (e.g., selling insurance over the Internet and allocating a specific claims adjuster for claim processing); customer communities (e.g., Harley-Davidson user group); and co-creation relationship (e.g., enabling customers to write reviews other customers will see).

Digital technologies have become the backbone of modern customer relationship management. It is difficult to imagine a modern company without websites, CRM technology, computer telephony integration, interactive voice response, business analytics, data mining, and other technologies and platforms that provide personalized services to millions of customers.

Consider the following examples:

- From its beginning, Netflix has built a powerful website that enables customers to order movies, documentaries, and television shows. Due to the endless variety of content, Netflix has built a recommendation engine that learns the unique preferences of each customer and then shows the customer the most relevant content based on actors, directors, genres, and many more parameters.
- Online retail giant Amazon uses a sophisticated recommendation engine to promote books and other products based on customer preferences.
- Taiwanese Let's Coffee chain of 2,000 shops uses digital technologies to provide a unique experience to its customers ("Latte Art"). The company enables customers to send their personal photos from their mobile devices and digitally print them on the foam of their coffee order.

5. Revenue Streams

The fifth building block defines the revenue streams a company generates. Here, the company defines the value the customer is willing to pay; for example, asset sales where the company sells an asset to the customer; usage fees based on the use of an asset or service; subscription fees based on selling continuous access to a service; lending/renting/leasing; licensing fees; brokerage fees based on intermediation services provided to two or more parties (e.g., credit card providers that take a percentage from the sales transaction); advertising fees; and so on.

Never have organizations been more dependent on talent as in the digital era.

Organizations can now utilize revenue models such as per usage (e.g., pay per use on cloud services); micropayments (e.g., Apple's iTunes supports payments per album track); freemium schemes (i.e., no charge for basic services and payments for premium services); free-of-charge services (e.g., Google provides many free services for customers and charges advertisers per click or some other scheme); renting (e.g., Amazon's Kindle renting of digital books for a given period of time); and many more innovative revenue-generating schemes.

6. Key Resources

The sixth building block describes resources required to operate the business. Key resources include: physical (e.g., manufacturing facilities, buildings, machines, point-of-sale systems, distribution networks, warehouses); intellectual (e.g., brands, proprietary knowledge/process/patents/customer databases); human resources for knowledge-intensive and creative industries; and financial (e.g., cash, financial guaranties, lines of credit). Digital technologies have become one of the most critical resources organizations use. The innovative usage of such platforms can create competitive advantage. Thus, every organization must evaluate how it uses and deploys these resources. Employees who develop and maintain the many digital technologies an organization uses have also become an important resource to attract and retain. Never have organizations been more dependent on talent as in the digital era. Some companies hire resources internally, but many are outsourced or part of the business partner's network.

For example, Apple has defined product designers as a key resource and does most of its product design internally. As such, it chooses to outsource most of its manufacturing to China and other countries.

7. Key Activities

The seventh building block illustrates the activities a company must do to operate its business model. These activities fall in the categories of production, specific problem-solving (e.g., a turnkey software project, a consulting engagement), and platforms (e.g., Apple iTunes, Microsoft Windows). Digital technologies support every aspect of the value chain and activities of the organization. Most business processes have become digital business processes, making it easier to disintegrate, reconfigure, and perform them along a company's value chain on a global scale.

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For example, well-known Spanish apparel designer and manufacturer Zara employs many digital technologies to deliver fast fashion — fashion that it can design, manufacture, pack, and deliver to the shops in a matter of a few weeks. Zara has chosen to perform the activities of design and manufacturing internally, and not offshore. Gap, on the other hand, outsources all its fashion production to the supply chain orchestrator company Li & Fung, which procures, manufactures, and ships Gap products directly to retail shops worldwide.

8. Key Partnerships

The eighth building block describes the network of suppliers and business partners required to operate the business model. There are different motivations for a company to create partnerships, including optimization and economy of scale, reduction of risk, and acquisition of particular resources and activities. Digital technologies allow organizations to collaborate with global partners and distribute their value channels worldwide.

For example, Pomarfin, a family-owned shoemaker based in Finland, found itself competing with low-cost Asian companies. Squeezed for profits, Pomarfin changed its business model. Instead of outsourcing its manufacturing to Asian companies and just becoming a brand, it looked for a way to differentiate itself and, consequently, developed a unique business model. The company decided to manufacture personalized made-to-measure shoes for customers who want a perfect fit of their shoes and have them delivered to their homes. Pomarfin placed digital 3D foot scanners in its shops. After taking the unique measurements of a customer's foot, the image is uploaded to its servers. The customer can then use Pomarfin's website to select the shoe model he or she wants, make the payment, and then await shipment to his or her address within a couple of days. Once a customer completes a foot scan, he or she can place reorders through the company's website without the need to visit a retail store. To operate its unique business model, Pomarfin has signed agreements with Italian top shoe designers, Estonian shoemakers, Finish software companies that develop 3D cameras and software, and leading logistics companies like DHL, FedEx, and UPS for home delivery. Pomarfin named its new made-to-order brand LeftFoot.

Other examples following the key partnership building block include Nike, which outsources most of its shoe and apparel production to suppliers in the Far East, and Apple.

9. Cost Structure

The final building block describes the costs incurred to operate the business model. Some business models are cost-driven and require the minimization of costs whenever possible, while other business models are value-driven and based mainly on value creation and less on cost. Digital technologies have enabled companies to reduce the cost incurred in operating their business models due to automation and digital business processes.

For example, car manufacturers heavily use robotics and other digital manufacturing technologies to manufacture cars with reasonable prices, although the sophistication level of cars is always rising. Retail giant Walmart uses digital technologies to reduce costs and provide the best prices to its customers.

Nine Building Blocks Wrap-Up

As we have demonstrated in this section, companies must revisit and evaluate every business model building block and refocus on digital capabilities and opportunities. This is what we call the digital layer of the business model, aka the digital business model.

SUMMARY: DIGITAL LEADERSHIP TRANSFORMATION

The three external transformations outlined in this *Executive Report* (from atoms to bits, from places to spaces, and from products to services) and the three internal transformations (from sustainable to transient competitive advantage, from disruptive innovation to killer innovation, and the general transition to the digital business model) present huge opportunities and challenges for business leaders.

All senior stakeholders from the board to the CEO, CIO, and all other CxOs must adapt and adopt new leadership skills and styles (see sidebar). The known CIO role, which by itself has changed several times over the years, is now undergoing a major transformation. CIOs must refocus and reshape their skills, mindset, and approach in order to embrace digital technologies. Due to the rapid pace of the digital age, these leaders can't be passive; they must be proactive in leading their organizations to exploit digital opportunities, create new value for customers, and successfully deal with disruptive threats.

SKILLS OF CIOs

Many academics, researchers, and consulting firms have investigated the various transformations in the role of the CIO over the years and have published their findings in several reports. Earlier this year, EY published one such interesting report,[1] which presented an investigation of the DNA of CIOs.

According to that report, the new CIO should:

- **Have a strategic vision of how technologies transform the business and know how to implement that vision.** The report discusses the different transformations and advises that the new CIO should have a solid understanding of all of them.
- **Become a relentless innovator.** Without a doubt, the new CIO should concentrate on this quality. He or she must become a proactive generator of new products and services, develop new customer channels, and, in general, initiate and support innovative business models. The new CIO must become the trusted advisor of the management team and a well-respected partner to other senior managers. Nobody expects the CIO to be the only innovator in the organization, but digital technologies have sharpened the need for CIOs to take the lead due to their skills in digital technologies.
- **Focus on driving growth.** Growth is one of the biggest challenges of any organization, and digital technologies can become a new platform for revenue generation based on new and innovative products or services, for improving the customer experience and channels, for improving and reconfiguring the value chain, for driving better decisions based on modern business analytics, and much more.
- **Ensure the company understands the CIO's vision.** Having a good vision and identifying new opportunities is not enough. The execution of the vision and the implementation of the new ideas are a team sport. The organizational obstacles of digital technologies are sometimes the most challenging parts of this journey. It is not about the technology per se; it is really the people that must transform due to digital technologies. The communication skills of the new CIO are crucial. His or her team-building and interpersonal capabilities are crucial in becoming a real digital leader.
- **Move beyond operations and infrastructure.** Traditionally, CIOs have devoted much of their attention to the operations and infrastructure part of their job. Sometimes, we call this "keeping the lights on." In the new and digital environment, this is not enough and even sometimes distracts from the issues the CIO should focus on. He or she must find good managers who can take over that part of the CIO's duties and make room for innovation and growth-seeking opportunities. The CIO must learn to use external partners, outsource part of the ongoing operations, and move more and more parts of the infrastructure and applications into the cloud. The cloud has become a crucial platform for agility, efficiency, and innovation.
- **Be a courageous risk-taker.** There is no innovation without risks. The CIO should be willing to use new technologies and applications; otherwise, innovation will be difficult to implement. For many years, CIOs have grown in an environment that doesn't encourage risk-taking. Every new infrastructure and new platform or application has created risks that CIOs have learned to avoid. Instead, they have sought stability, with widely used and proven technologies. Digital technologies require CIOs to adopt a different attitude — one that encourages risk and knows how to identify and contain those risks while at the same time value the opportunities.

[1] "Born to Be Digital: How Leading CIOs Are Preparing for a Digital Transformation." EY, 2014 (www.ey.com/GL/en/Services/Advisory/EY-CIO-Born-to-be-digital-The-rise-of-the-digital-business).

This report has explored the turbulence digital technologies create. Almost every aspect of the business is changing rapidly. Companies must understand the roots of this turbulence and ensure that they remain on the top of the tsunami waves. The six transformations described affect every facet of the modern business environment. Thus, organizations and their leaders must learn how to leverage the opportunities and, in parallel, avoid the threats. Remember, only the paranoid survive.

ENDNOTES

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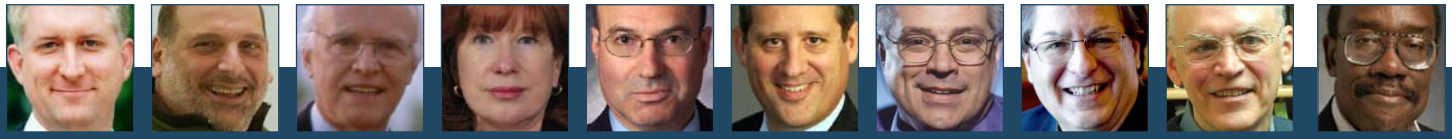

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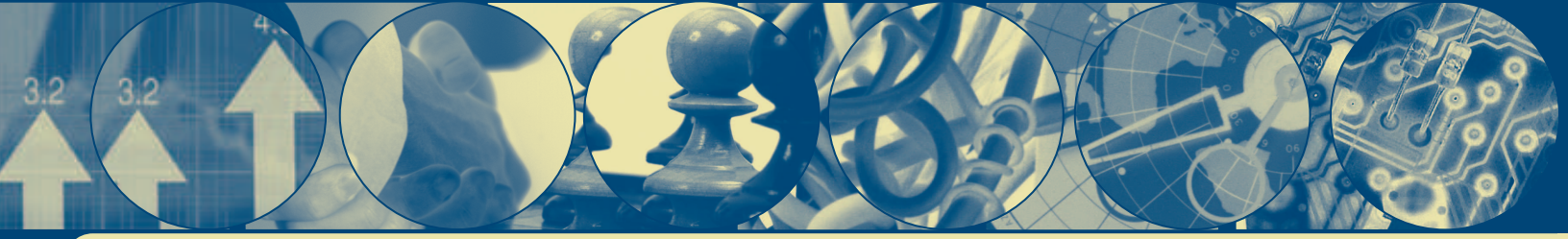

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