




# PERSPECTIVES

VOL. 13

**COMPETING IN  
DIGITAL ECOSYSTEMS**  
AND AN AGE OF ABUNDANCE



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A WORD FROM KRISHNAN

## Opportunities are Abundant in the Digital Ecosystem Economy

Seemingly every day brings another headline about a big company that's reaching outside the traditional boundaries of its industry to tap new customers and collaborate with new business partners. Apple teaming with hospital systems on iPhone apps that monitor consumer health. Hyundai creating an alliance with insurance and data analytics companies to price policies on actual driver behavior. Delta Air Lines connecting with wireless networks to bring stronger Internet service on flights.

It tells us that all companies now compete in an economy of digital ecosystems, and that strategic planning based on traditional industry structures is suboptimal. When leaders view customers, competitors, and partnerships through the lens of these cross-industry ecosystems, they will see abundant opportunities to provide value.

But exactly how do company leaders do this? How can they sort through the hype and complexity to set an effective path forward—one on which every member of the leadership team can embrace? This issue of *TCS Perspectives*, our 13<sup>th</sup>, dives deep into the concept of digital ecosystems, and explores what leaders can do to steer their companies successfully through them.

I hope each article stirs your imagination about the abundant opportunities we see for large companies of every type in a digital ecosystem world.

**Krishnan Ramanujam**

President, Business and Technology Services  
Tata Consultancy Services

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# INTRODUCTION

**The View Inside:  
Seizing Opportunities in  
an Ecosystem Economy**

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The digital ecosystem economy is here, but it has been for some time. All one has to do is to look at the ways digital startups, and age-old firms with digital savvy, have erased industry boundaries.

It's not just Airbnb tearing down the barriers to entry in the hospitality sector, or Uber and Lyft rewriting the rules of the taxi business. It's also companies like Hong Kong-based insurer Ping An's digital platform, which also provides banking, health care, and automobile financing to hundreds of millions of people. The fact that we're now in a digital ecosystem economy is reflected, too, in how automakers like Ford are talking more like software companies about mobility services, than they are about manufacturing cars.

Each article in this issue of *TCS Perspectives* explores today's ecosystem economy and how company leaders can take advantage of the abundant opportunities. Our articles are grouped in three sections.

## The New Ecosystem World



In “**How to Navigate a World of Digital Ecosystems,**” Frank Diana, Bill Quinn, Kevin Mulcahy, and Rose Castellon-Rodriguez explain why company leaders must look at their opportunities, and their competitors, through a very different lens. The notion of industry borders is becoming irrelevant. Companies with winning digital business models see themselves as competing in digital ecosystems whose stakeholders jointly create new kinds of value for customers.

Competing in a world of digital ecosystems requires leadership teams to greatly accelerate decision-making. That, in turn, requires agile approaches to management, and deep knowledge of how digital technology changes the game. Leaders also must be in synch on their company’s digital strategy. None of this is easy to attain quickly. In “**Strategically Agile, Greatly Aligned, and Digitally Deep at the Top,**” Nidhi Srivastava explains how to get senior executives aligned on digital strategy and how to reshape it rapidly when necessary.

Companies in digital ecosystems capitalize on new business relationships that erase once-sacrosanct industry boundaries. But with that comes significant new risk. As Sundeep Oberoi writes in “**Tackling Cyber Security in a World of Digital Ecosystems,**” this risk comes from digitally connecting a company’s systems and data to those of other companies. To prosper in an ecosystems world, companies must revamp security procedures and institute new policies and technologies to guard their systems and data (especially customer data). This requires conducting strong due diligence on new ecosystem partners—assessments of the type that many firms have used for years with their technology suppliers. It also means rigorously authenticating requests to connect to their systems.



As nebulous as it might sound, the ‘Internet of Things’ (IoT) in actuality is a fundamental building block in this digital ecosystem economy. The reason: IoT technologies let companies establish around-the-clock online connections to their operations and to products they sell, both before and after they leave the factory—and even after customers take possession of them. In **“Bringing Life to ‘Things’: A Framework for IoT,”** Regu Ayyaswamy explains four strategic impacts of IoT technologies—the introduction of new business models, the removal of logistical and other headaches for customers in using a product, more flexible and efficient supply chains, and a better quality of life through safer business operations.

## The C-Suite’s Challenges



Every executive at the top of a company can have a different view of their firm’s ecosystem opportunities. In this group of articles, we go deep on the digital opportunities for chief marketing, IT, and finance officers.

For CMO’s, now is the time for them to lead their function far beyond its traditional role of creating brand awareness and demand for their companies’ offerings. In **“How the Best CMOs are Digitally Personalizing the Brand Experience,”** Sunil Karkera, Sarah Kingsley, and Nisha Yohannan describe the five core capabilities of the best digital marketers. Among them: the ability to provide personalized and relevant information to prospects and customers throughout their experience with the company, integrated data systems that analyze customer interactions at every stage of the brand experience, automated marketing operations, and agile campaign teams.

Few executives are better positioned to help their companies navigate the complex landscape of digitally transfigured business models than the chief information officer, as Akhilesh Tiwari, Supratim Sen, and Rahul Saha write in **“The CIO as Digital Ecosystem Enabler.”** Many CIOs have championed technology-enabled business change over the past three decades. Now they are helping drive the digital transformation of the business, not just the IT function.

At digitally successful firms, the chief financial officer has emerged from the back office to play a key role. As Vikas Gopal explains in **“The New-Age CFO: Driver of Real-Time Business,”** a number of finance chiefs are helping develop next-generation business models. They are also embedding financial experts into key business functions and using data analytics to guide functional managers’ decisions. And they are making sure that technological innovation gets funded and generates returns.

## Learning from Ecosystem Pioneers



It’s easy to believe that the most successful companies of the last 20 years are the digital natives that have come out of Silicon Valley and other places with vibrant venture capital communities. While this certainly applies to firms like Amazon, Google, and Facebook, the born-digital companies are not the only success stories. As David Jordan writes in **“Pivotal Lessons from the Best Digital Renovators,”** a number of pre-Web era companies such as Best Buy, Walmart, Adobe, Intuit, and KLM have used digital technology to renovate their existing businesses, and with great results. Jordan shows what they have in common.

## **The Digital Metamorphosis of Three Industries: Life Insurance, Telecommunications, and Life Sciences**

This is a series of short articles on three sectors that have seen substantial changes this century in age-old approaches to doing business.

The first article, by Suresh Muthuswami and S Rajesh, **“A Digital Rebirth for Life Insurance, Annuities, and Pension Companies”**, explains how the shift of back-office systems to new cloud-based digital platforms is transforming how insurance and other financial products are administered and customers are handled.

The next article, **“The Rise of the Next-Generation Telco,”** looks at the vast digital opportunities for phone companies around the world to become more than just the basic infrastructure that enables digital communication. Kamal Bhadada and Shanky Viswanathan lay out four ways telcos can play: smart connectivity provider, smart products and service provider, value aggregator, and value creator.

The third article in this series is about the life sciences industry—the pharmaceutical, biotech, medical device, and medical products companies the world relies on to improve human health. In **“The Digital Revolution of Life Sciences Companies,”** Debashis Ghosh and Sanjeev Sachdeva discuss how IoT and other technologies enable these companies to track the health of customers throughout their treatment, and what life sciences companies must do to play profitably in a new health ecosystem replete with digital companies and digitally savvy health providers.

In this edition’s final article, I argue that the most important characteristic of leadership teams today is mindset—specifically, the degree to which they allow the historical resource constraints of capital, talent, time, and market access to narrow their thinking about new business opportunities in a digital ecosystem world. I explain how leaders at Amazon, Delta Airlines, Facebook, and other companies didn’t allow those constraints to *constrain their thinking* about new businesses and new fixes to age-old operational problems. You can read about that in **“Seeing Abundant Ecosystem Opportunities Amidst Scarce Resources.”**

# THE NEW ECOSYSTEM WORLD

**How to Navigate a World of  
Digital Ecosystems**

**Strategically Agile, Greatly Aligned,  
and Digitally Deep at the Top**

**Tackling Cyber Security  
in a World of Digital Ecosystems**

**Bringing Life to 'Things':  
A Framework for IoT**

# How to Navigate a World of Digital Ecosystems

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It has always been a best practice for industry leaders to keep a close eye on their direct competitors, and, more recently, a sharper eye on emerging digital upstarts. Recent business history is full of tales of incumbents losing market share (and, sometimes, their whole business) to more digitally savvy and agile competitors. Online subscription music services like Spotify (which launched just over 10 years ago) now account for 75% of U.S. music industry revenue, turning the recording industry on its head.<sup>1</sup> And there are now more subscribers to video streaming services worldwide (613 million) than subscribers to cable and satellite TV (with cord-cutting costing the cable companies 1.2 million subscribers in the third quarter of 2018 alone),<sup>2</sup> according to the Motion Picture Association of America.<sup>3</sup>

<sup>1</sup> RIAA 2018 Year-End Music Industry Revenue Report, <https://www.riaa.com/wp-content/uploads/2019/02/RIAA-2018-Year-End-Music-Industry-Revenue-Report.pdf>. Accessed July 29, 2019.

<sup>2</sup> Fortune, "Cable and Satellite TV Lost 1 Million Subscribers Because of Cord Cutting," November 14, 2018. <https://fortune.com/2018/11/14/cord-cutting-cable-satellite-subscribers/>. Accessed July 29, 2019.

<sup>3</sup> Venture Beat, "Global video streaming market is largely controlled by the usual suspects," March 30, 2019. <https://venturebeat.com/2019/03/30/global-video-streaming-market-is-largely-controlled-by-the-usual-suspects/>. Accessed July 29, 2019.

It used to make good business sense for industry captains to stay alert to risks and work hard to secure their industry positions.

## Your competition often does not emerge from within your sector.

Today, however, your competition often does not emerge from within your sector. Google, Facebook, and Amazon, for example, were not thought of as advertising companies when they started. However, as the traditional ad spend shifted inexorably from print to digital, Google and Facebook today dominate advertising, killing off many media incumbents in the process. Amazon now has nearly 7% of the U.S. digital ad market (and it's rapidly growing that share), while Google and Facebook control 60%.<sup>4</sup>

Google, Facebook, and Amazon did not emerge from inside the media and advertising tent; they observed from the outside and saw opportunity as

marginal costs for digital advertising rapidly approached zero. And, they leveraged their sophisticated digital platforms to connect with customers—anywhere, anytime—to disrupt the advertising industry's fundamentals. Where these new digital players saw abundance, incumbents, even with their enormous capital resources and competitive advantages, could not see beyond their constrained business models.

Today's Business 4.0™ world requires a mindset shift: from focusing on scarcity and constraints to harnessing the abundance provided through digital ecosystems, while realizing that the idea of guarding one's place within an industry or sector without crossing industry boundaries, interacting with suppliers, customers, and, yes, even competitors, can't be done. Today, businesses need to be driven by purpose. They must focus on exponential growth opportunities, not incremental growth. This means being aspirational, and not allowing the old walls separating business from business, and customer from business, get in the way (Figure 1).

<sup>4</sup> GeekWire, "Report: Amazon takes more digital advertising market share from Facebook-Google duopoly," February 20, 2019. <https://www.geekwire.com/2019/report-shows-amazon-taking-digital-advertising-market-share-google-facebook-duopoly/>. Accessed July 29, 2019.



## Scarcity Mindset

- Profit oriented
- Firm-centric with alliances and partners
- More efficient operating models
- Stable with linear growth
- Risk averse
- Conventional value chains
- Insular and protective of ideas and information
- Manage customer expectations
- Traditional vertical structures and management approach
- Limited resources and capabilities
- Reduced marginal cost
- Focus on digital automation/transformation



## Abundance Mindset

- Purpose and value oriented
- Ecosystem-focused and entrepreneurial
- New digitally-enabled business models
- Agile with exponential growth
- Risk empowered
- Ecosystem co-creation and value design
- Open and transparent flow of information
- Authentic, frictionless stakeholder experiences
- Horizontal, collaborative structures and management
- Abundant and diverse talent pool
- Near zero marginal cost
- Focus on digital disruption and innovation

**Incremental Growth** —————→ **Exponential Growth**

**Figure 1:** The Scarcity vs. the Abundance Mindset

## Some Established Companies Have Figured It Out

The leaders of established companies that have thrived in today’s digital landscape think very differently about their industries and their competitors. They are aspirational. They think about their business’s purpose, and about improving their customers’ lives.

For example, CVS Health CEO, Larry Melo, described his goal as making health care “more affordable and less expensive.”<sup>5</sup> To do that, CVS Health bought giant insurer Aetna in 2018 to help it provide more medical services to customers, in a more convenient manner. As Aetna President, Karen Lynch, said, the era of “episodic care... is being replaced by service where you live and shop. We’re the new front door for health care.”<sup>6</sup>

Companies like CVS Health are not modestly tweaking their business models, nor building walls, to defend their turf. They are looking holistically at their customers’ journey, their pain points, their needs and desires, and seeing how they improve the customer experience by leveraging the burgeoning digital ecosystems in which we increasingly all live.

<sup>5</sup> The New York Times, “CVS Is Said to Agree to Buy Aetna Reshaping Health Care Industry,” December 3, 2017. <https://www.nytimes.com/2017/12/03/business/dealbook/cvs-is-said-to-agree-to-buy-aetna-reshaping-health-care-industry.html>.

<sup>6</sup> Fortune, “CVS Wants to Make Your Drugstore Your Doctor,” May 17, 2019. <https://fortune.com/longform/cvs-aetna-health-care/>. Accessed July 29, 2019.

## Looking Through the Digital Ecosystem Lens



A digital ecosystem is a complex network of stakeholders that extends across industry

verticals. These stakeholders—producers, suppliers, customers, and platform orchestrators—connect through digital platforms and interact in ways that create value.

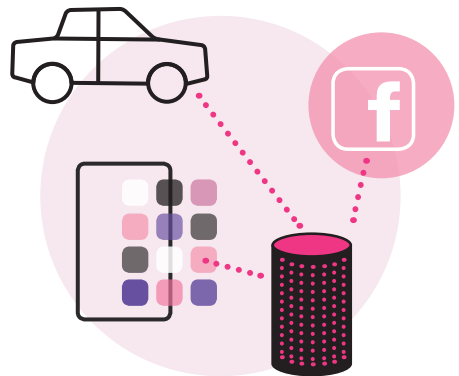
In a digital ecosystem, participants act collectively to create new markets, deliver new forms of value, and build new and more engaging customer experiences.

The fact that ecosystems cross industry borders is key. They are horizontal, not vertical, forming connections among participants without regard to industry or sector. This allows ecosystem players to capture more opportunities, and improve their collaboration skills, which

makes them more resilient and agile in the face of competitive market threats and fluctuations.

In a digital ecosystem, participants act collectively to create new markets, deliver new forms of value, and build new and more engaging customer experiences.

Uber, which leverages its platform business model to drive a mobility ecosystem, exemplifies the potential of the digital platform. Uber supports a network of on-demand transport and delivery services by connecting drivers, riders, and other stakeholders, while at the same time becoming a last-mile package delivery provider for ecosystem partners. To do this, Uber uses a number of technologies: smart phones, social media channels, mobile app stores,







personal digital assistants (such as Amazon's Alexa), payment service providers, geospatial services, and route optimization algorithms. And financial services partners enable transactions.

One need not be a digital native like Uber to leverage digital ecosystems. All one needs to do is change one's mindset. For example, John Deere has been manufacturing farming equipment for over 170 years. Today, however, it has become a platform provider. How did it pivot?

In the late 1990s, Deere recognized the dawning of precision agriculture, which used technology to lower farmers' costs, reduce water and pesticide use, and increase yield. The key technology in this revolution was GPS. Accordingly, Deere acquired a GPS company in 1999, embedding GPS capabilities into its equipment.

Leveraging its deep roots with farmers, Deere in 2012 launched MyJohnDeere, which is free to consumers who purchase

John Deere equipment. Then, following the path blazed by Apple, Deere opened its platform to third-party developers, sharing APIs, and thereby increasing the variety and value of services offered to customers on the Deere platform. Now, Deere farmers can access Internet of Things (IoT) data for predictive maintenance of their equipment, and receive weather, seed, pesticide usage, and other data through the platform.

Deere is thinking big, aspirationally. In 2017, it acquired Blue River Technology, a company that provides artificial intelligence (AI) for precision agriculture, further enhancing the value of the Deere platform.<sup>7</sup>

John Deere's platform, like all platforms, benefits from the network effect, becoming more valuable as it grows by adding participants and partners. The value created expands over time. Deere now offers asset insurance, with the platform helping it assess and mitigate its risk, while allowing all participants across the ecosystem to mitigate their own. That is an example of the resiliency advantage provided by digital platforms and ecosystems.

<sup>7</sup> Wired, "Why John Deere Just Spent \$305 Million on a Lettuce Farming Robot," September 6, 2017. <https://www.wired.com/story/why-john-deere-just-spent-dollar305-million-on-a-lettuce-farming-robot/>. Accessed July 30, 2019.

## How to Seize Opportunities in Digital Ecosystems:

# Seven Mindset Changes

To thrive in a digital ecosystem, top management must change its mindset and practices in seven fundamental ways.

### From profit-focused to purpose-focused.



Digital ecosystems provide great opportunities to deliver more value to customers than ever before, but only if business leaders can look beyond how they've historically conducted business. As JPMorgan Chase & Co.'s Chairman and CEO Jamie Dimon said, "We believe that in a hyper-competitive world (with competitors known and unknown), the best strategy... is to offer the customer more: something better, faster, or more efficiently."<sup>8</sup>

Focusing on the customer doesn't mean a traditional approach involving guesswork about customers and perhaps analysis of past purchases. Today, customer focus means deeply understanding customer behaviors and expectations, and rapidly adapting to those expectations as they change—which they always do. This requires more than historical data; it demands advanced technologies to retrieve insights from that data, and the ability to navigate across silos and sectors because customers have become utterly agnostic about brands, and verticals, and only look for seamless purchasing journeys, whether that requires two, three, or more businesses. That makes an ecosystem of producers, distributors, marketers, and connected customers the best response.

<sup>8</sup> JPMorgan Chase & Co., Annual Report 2018. <https://reports.jpmorganchase.com/investor-relations/2018/ar-ceo-letters.htm?a=1>. Accessed July 30, 2019.

## From risk-averse to risk-embracing.



Once upon a time, companies thought the way to mitigate the risk of competitors seizing market share was to optimize their offerings for their most profitable customers, thereby erecting sturdy competitive barriers. But in the digital age, huddling behind your corporate walls increases the risk that an upstart will disrupt your business. When Craigslist appeared, the newspaper industry's previous stronghold on classified advertising revenue was no longer unchallenged. In short order, newspapers, deprived of their classified advertising revenue and buffeted by emerging digital advertising venues, began shuttering in a death spiral that continues today.

Leaders in other industries have gotten the message. In CB Insights' 2019 State of Innovation Survey, 41% of strategy executives in multiple industries said their companies were either 'extremely' or 'very' at risk of disruption by emerging technologies.<sup>9</sup> The survey found that high-performing firms were twice as likely to say they seek risk rather than avoid it, and they were three times more likely to be first-movers compared to low performers.

Or, as Disney CEO Bob Iger has said, "The riskiest thing Disney can do is maintain the status quo."<sup>10</sup>

"The riskiest thing Disney can do is maintain the status quo."

<sup>9</sup> CB Insights, Research Briefs, July 17, 2019. [https://www.cbinsights.com/research/ceo-disruption/?utm\\_source=CB+Insights+Newsletter&utm\\_campaign=038dabee07-newsletter\\_general\\_Wed\\_20190717&utm\\_medium=email&utm\\_term=0\\_9dc0513989-038dabee07-87749473](https://www.cbinsights.com/research/ceo-disruption/?utm_source=CB+Insights+Newsletter&utm_campaign=038dabee07-newsletter_general_Wed_20190717&utm_medium=email&utm_term=0_9dc0513989-038dabee07-87749473). Accessed July 30, 2019.

<sup>10</sup> Fortune, "The Leadership Quality That Truly Separates Disney's Bob Iger From His Peers," April 4, 2016. <https://fortune.com/2016/04/04/the-leadership-quality-that-truly-separates-disneys-bob-iger-from-his-peers/>. Accessed July 30, 2019.

## From value chain master to ecosystem orchestrator.

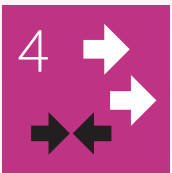


When your product is delivered digitally, dominating a supply chain is no longer a guarantee of market success. Today, mastery of the digital ecosystem is where the greatest business value lies.

Ecosystem orchestrators connect stakeholders, creating value for all ecosystem participants. For example, Hong Kong-based Ping An began as an insurance firm. Now its business includes banking, auto sales, health care, and more. Ping An's digital platform—a cloud-based infrastructure with AI, automation, analytics, and deep learning capabilities—is used by companies such as Lufax, a financial services firm with 37 million customers. Now, Ping An's credit services are used by 300 Chinese banks, all part of the ecosystem Ping An orchestrates.<sup>11</sup> Its Good Doctor service connects patients looking for physicians with physicians looking for patients—230 million of whom are on Ping An's platform. It shouldn't be surprising that Ping An's revenue increased from \$29 billion in 2010 to \$145 billion in 2017.<sup>12</sup>

But platform mastery doesn't mean the benefits all go to the platform orchestrator; all participants profit by capitalizing on the platform's capabilities, and the customers and businesses it attracts.

## From competition to coopetition.



Coopetition balances cooperation with competition, transforming the business landscape from a “winner-takes-all” model to one of opportunity for all. In digital ecosystems, players grow more dependent upon one another, and on the platform orchestrator/provider.

For example, it's almost impossible to imagine ecommerce today without PayPal. The online payment system plays a critical role in multiple digital ecosystems, and provides its financial services to buyers, sellers, and consumers alike. It wouldn't

<sup>11</sup> Ping An Annual Report 2017 ([http://www.pingan.com/app\\_upload/images/info/upload/fefe8a8e-fd10-4814-b7b2-aaecf814ff6d.pdf](http://www.pingan.com/app_upload/images/info/upload/fefe8a8e-fd10-4814-b7b2-aaecf814ff6d.pdf)). Accessed July 30, 2019.

<sup>12</sup> Ibid.

make sense for every business in the digital ecosystem to develop its own payment services to compete with PayPal, because the value PayPal provides is shared equally by all ecosystem players; there's no competitive advantage to be gained. This allows ecosystem players to compete in other, more value-added areas.

## From linear to exponential growth.



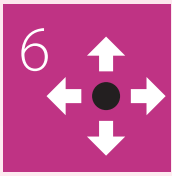
In the technology industry, it took Google 19 years to cross the \$100 billion revenue threshold. Founded in 1998, that happened in 2017.<sup>13</sup> (Today, it's a \$137 billion company.) In contrast, it took IBM 100 years to pass \$100 billion revenue.

To accommodate this kind of accelerated growth—enabled by the rapid pace of technological advancements and the interconnectedness of today's value chains—executives must prioritize managing for speed, responsiveness, and flexibility. Decisions have to be made faster; creativity and innovation must be the order of the day. This is a mindset shift from incremental improvement, the traditional, risk-averse approach to growth based on Industrial Age thinking where products came off assembly lines and management devised plans to maximize efficiency. But as the futurist Gerd Leonard argues, “Any company. . . that doesn't shift from planning to imagination” will have a hard time surviving.<sup>14</sup> Leonard adds that, “those [companies] that can see at least one, or two or three steps beyond the obvious will succeed, and that requires a creative approach.”

<sup>13</sup> CNN Business, “Google posts its first \$100 billion year,” February 1, 2018. <https://money.cnn.com/2018/02/01/technology/google-earnings/index.html>. Accessed July 31, 2019.

<sup>14</sup> Reimagining the Future, “An Interview with Futurist Gerd Leonhard,” January 14, 2015. <https://frankdiana.net/2015/01/14/an-interview-with-futurist-gerd-leonhard/>. Accessed July 31, 2019.

## From owning to sharing resources.

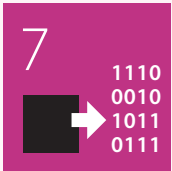


Vertical integration used to be a corporate goal because it granted control over costs and ensured compliance with company policies. However, it was also limiting. Today, in the ecosystem environment, horizontal integration grants almost unlimited access to resources and capabilities, as well as

customers. Ecosystem participants can leverage technologies and gain capabilities that were previously cost-prohibitive. Un- or under-monetized assets can gain value by linking to a digital ecosystem.

For example, Siemens Healthineers, a part of the Munich-based industrial giant, has used the cloud to build a vast data lake of clinical studies from imaging equipment, such as MRI machines, and has invited ecosystem partners to contribute and share resources. A new partner, Amra Medical, has developed technology to turn images from a whole-body MRI scan into precise, 3D-volumetric measurements to assess a patient's health status in only six minutes.<sup>15</sup> Without the ecosystem orchestrated by Siemens Healthineers, health care providers, and patients would not be able to leverage a new and promising tool.

## From physical assets to data assets.



Marriott International owns about 5,700 properties in more than 110 countries. Its hotels boast 1.1 million rooms for business travelers, vacationers, and others.<sup>16</sup> With all these assets, one would think it would be difficult, if not impossible, for a new competitor to catch up with a company that has been building

and acquiring these assets since 1927. One would be wrong.

Airbnb was launched a little over 10 years ago, in 2008. Today, without owning any rooms, the company lists more than six million places to stay in more than 100,000 cities. It claims that over 2 million people worldwide stay in an Airbnb room every night.<sup>17</sup>

<sup>15</sup> Siemens Healthineers, "Digitalizing healthcare," March 6, 2018. <https://www.siemens-healthineers.com/press-room/press-releases/pr-20180306009hc.html>. Accessed July 31, 2019.

<sup>16</sup> Marriott International, News Center, September 23, 2016. <https://news.marriott.com/2016/09/marriott-international-expanded-loyalty-benefits/>. Accessed July 31, 2019.

<sup>17</sup> Airbnb Newsroom, "Fast Facts." <https://press.airbnb.com/fast-facts/>. Accessed July 31, 2019.

By leveraging the shared economy made possible by digital interconnectedness, Airbnb in a fleetingly short time has become a disruptive, dominant force in the hospitality industry by leveraging data. It has deployed advanced technologies—analytics to make recommendations and match travelers with renters; ranking algorithms to test and improve those recommendations in an agile, iterative fashion, and natural language processing to analyze user sentiment, among others—while taking advantage of social media and recommendation sites.

The truth is that leading companies are able to create purposeful, forward-looking visions that support actions that will empower them to pursue a future engaged in digital ecosystems.

The days are over when a business's assets created a barrier to entry. Today, a firm's assets may, in fact, be a competitive burden as, like Marriott, they confront asset-light rivals operating at near-zero marginal costs.

Changing an established organization's mindset to embrace ecosystems is a steep challenge. The 2020 TCS CIO Study found that companies with large investments in physical assets, or nascent efforts to launch digital business initiatives, see more hurdles than benefits facing them. For example, 56% of industrial manufacturers in the study said they see only limited opportunities to further digitize their businesses.

It's understandable that these firms would envision little upside to digital business. But they overlook the opportunities that others clearly see. The future view changes dramatically for companies that have seen strong revenue gains this decade from their new digital business models. In the study, these companies are described as digital leaders—and 94% of them say they see a lot more to do, or believe they have only begun, in finding new digital opportunities.

Said another way, these responses match what we have seen. The truth is that leading companies are able to create purposeful, forward-looking visions that support actions that will empower them to pursue a future engaged in digital ecosystems.



## Next Steps

Start-ups, as Uber, Airbnb, and Amazon once were, have had the luxury of building businesses that incorporate digital ecosystems. That path is more difficult for established organizations. But that doesn't mean they necessarily will be shut out of Business 4.0.

Ford, for example, is attempting to reinvent itself as a platform orchestrator in the emerging mobility ecosystem, adjusting to a world in which cars are not owned but paid for on a usage basis, like SaaS.

In 2016, Ford acquired Chariot, a ride-share company.<sup>18</sup> This enabled Ford to begin learning about the mobility ecosystem and to test new business models. In 2018, Ford purchased Autonomic, a cloud computing platform for transportation systems, and TransLoc, another start-up, that helps manage urban transit systems.<sup>19</sup> These acquisitions are helping Ford become less a manufacturer of vehicles and more a software and platform company, readying itself to become a participant and an orchestrator in the new mobility ecosystem.

Ford is rethinking the fundamentals not only of its own business, but of business in general. And that's the challenge that faces all traditional businesses today.

<sup>18</sup> Business Insider, "Ford paid more than \$65 million for shuttle-van start-up Chariot," September 12, 2016. <https://www.businessinsider.com/ford-buys-chariot-65-million2016-9>. Accessed July 31, 2019.

<sup>19</sup> Fortune, "Ford Snaps Up Two More Start-Ups in Mobility Push," January 25, 2018. <https://fortune.com/2018/01/25/ford-snaps-up-two-more-startups-in-mobility-push/>. Accessed July 31, 2019.



Business leaders can begin this journey by asking themselves what about their businesses will either contribute to, or detract from, success in an ecosystem-driven world.

- Is the business insular, operated to manage in a risky environment of scarcity, or is it collaborative, embracing risk, and a mindset of abundance and opportunity?
- Does the business create and capture value through traditional vertically integrated supply chains, or does it co-create value with partners and customers?
- Is the organization focused on short-term profits and shareholder value, or is it purpose-driven, looking to enhance stakeholder experiences?
- Is the company hierarchical, with decisions made top-down, or is it flat and collaborative?

No business is all one thing or another. The key is to assess where your company is on a spectrum, from firm-centric to ecosystem-focused. Once you know where you are, you can begin the journey that will permit your company to join, profit from, and contribute value to the digital ecosystem future.

Today, a firm's assets may, in fact, be a competitive burden.

## Strategically Agile, Greatly Aligned, and Digitally Deep at the Top

### Author

**Nidhi Srivastava**

Global Head, Consulting Practice, Tata Consultancy Services

Eager to capitalize on burgeoning market opportunities, many companies are nonetheless struggling to get returns on investments in new digital products, services, and business models. It isn't for a lack of spending. Businesses worldwide will plough an estimated \$1.2 trillion this year into digital transformation initiatives, according to IDC, an 18% increase over the previous year.<sup>20</sup> According to Gartner, 82% of companies globally are investing in digital initiatives—up 20% from 2018.<sup>21</sup>

But many firms are likely to be disappointed with the results because only 25% of them get the technology underpinnings of their digital transformations right, according to a World Economic Forum report.<sup>22</sup>

<sup>20</sup> IDC, "Businesses Will Spend Nearly \$1.2 Trillion on Digital Transformation This Year," April 24, 2019, accessed July 25, 2019: <https://www.idc.com/getdoc.jsp?containerId=prUS45027419>.

<sup>21</sup> Gartner, "2019 CEO Survey: The Year of Challenged Growth," April 16, 2019, accessed July 25, 2019: <https://www.gartner.com/en/documents/3906929/2019-ceo-survey-the-year-of-challenged-growth>.

<sup>22</sup> World Economic Forum report with Bain & Company, "The Digital Enterprise: Moving from experimentation to transformation," September 2018, accessed July 25, 2019: [http://www3.weforum.org/docs/Media/47538\\_Digital%20Enterprise\\_Moving\\_Experimentation\\_Transformation\\_report\\_2018%20-%20final%20\(2\).pdf](http://www3.weforum.org/docs/Media/47538_Digital%20Enterprise_Moving_Experimentation_Transformation_report_2018%20-%20final%20(2).pdf).

TCS research this summer on digital initiatives uncovered similar trends. The TCS 2020 CIO Study, which asked CIOs at 1,010 global companies based in North America and Europe about their digitization efforts, found that more than a third (36%) have not made much progress; their initiatives are either in the pilot phase or limited to a few business units. And only 30% have scaled their digitization programs across the enterprise.

A few industries, such as industrial manufacturing and media, entertainment, and information services, are faring significantly worse than others. (See Figure 2: “Slow Progress on Digitization.”)

Industry	% of Digitization
All Industries	30%
Automotive	51%
HiTech	49%
Healthcare and Life Sciences	42%
Telecommunications Services	40%
Retail	40%
Banking and Financial Services	27%
Consumer Packaged Goods	27%
Insurance	26%
Travel, Transportation, and Hospitality	23%
Industrial Manufacturing	19%
Media, Entertainment, and Information Services	15%

**Figure 2:** Slow Progress on Digitization

*Respondents in the TCS CIO study who say their companies have enterprise-wide digitization and strong leadership in place with initiatives across multiple functions and lines of business.*

Clearly, digitally transforming a large company is not at all straightforward. For many firms, adopting a lean agile approach to such transformation—to develop new digital products and services through a fast-feedback loop, inspecting and adapting them in an iterative fashion, and then delivering new offerings with speed—remains a vision. So does the desire to create a lucrative new digital business model like the one that Uber developed in going from a concept in 2009 to nearly \$70 billion in value in only 10 years.<sup>23</sup>

If digital natives like Uber illustrate what is possible, LEGO Group shows how challenging it can be for established firms to transform. Its initial attempts to create digital

Ultimately, the success or lack thereof of a company's digital transformation falls on the shoulders of its leaders.

products—including an interactive division that developed online video games—nearly bankrupted the company in the mid-2000s.<sup>24</sup> But this decade, LEGO has bounced back, with 2018 revenue of \$5.4 billion and net profit margins of more than 22%.<sup>25</sup>

Ultimately, the success or lack thereof of a company's digital transformation falls on the shoulders of its leaders. The TCS CIO study shows how leadership can undermine digitization efforts.

<sup>23</sup> Yahoo Finance, Aug. 7, 2019. Accessed Aug. 7, 2019 <https://finance.yahoo.com/quote/UBER/>.

<sup>24</sup> Business Insider article, Feb. 10, 2014. Accessed Aug. 7, 2019. <https://www.businessinsider.com/how-lego-made-a-huge-turnaround-2014-2>.

<sup>25</sup> LEGO Group 2018 Annual Report. Accessed Aug. 7, 2019. <https://www.lego.com/en-us/aboutus/newsroom/2019/february/annual-results-2018>.

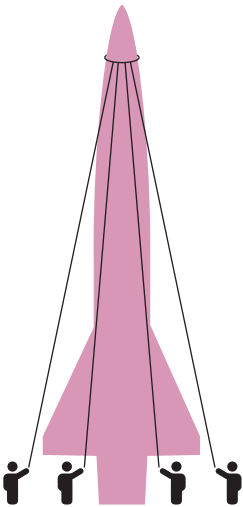
## Why Some Companies Struggle

In our research we found that, at many companies, leaders lack: a holistic digital vision, alignment on digital strategy, and knowledge about how digital technologies change the game.



For example:

- More than a third (36%) of top management teams see only limited opportunities to further digitize their business. This is especially true in industrial manufacturing (56%), insurance (44%), and consumer packaged goods companies (43%).
- In about one-fourth of companies the board, CEO, line of business heads, and functional leaders are not aligned with the CIO's vision of future opportunities.
- Many companies lack digital knowledge where it matters most: at the top. Senior leaders frequently only have a superficial understanding of the complexities around running digital businesses. Only about half (49%) of the board directors and top management team members at the companies we surveyed have deep digital expertise.
- Industrial manufacturing, CPG, and health care/life sciences firms tend to have the lowest percentage of board and top management team members with deep digital expertise.



A deeply informed, highly flexible (that is, agile) digital strategy is essential to digital transformation. Companies need leaders who understand that—and who can execute it.

## What You Need to Succeed: Experience, Vision, and Leadership



Our study compared what executives at the more digitally successful companies do differently than those at the least successful firms. We identified ‘digital leaders,’ the approximately 20% of companies with enterprise-wide digitization initiatives or new digital products, services, or business models, and which had increased revenue substantially from digital offerings between 2010 and 2018. At the other end of the spectrum, a similar percentage of ‘followers’ had limited digital offerings and far less revenue flowing from them.

The leaders share three characteristics: they create digital strategies that are informed by deep digital experience, top management is unified on a course of direction, and their CIO leads the way. (See Figure 3: “Leadership Drives Digital Innovation,” page 30.)

These leading companies are able to create deeply informed digital strategies because they have a much higher percentage of board members and top management teams with extensive experience in running digital operations or digital companies. We found that about 68% of the board members among the digital leaders had deep digital experience vs. 38% among followers. In addition, 65% of the leaders’ top management team members had deep digital experience compared with only 39% in followers’ companies.

Many times, that requires bringing in talent from outside. A case in point is Nestlé, which hired corporate social media guru Pete Blackshaw to be the company's global head of digital and social from 2011 to 2018.

Companies also need consensus at the top. The TCS CIO study found that leader companies had a much higher likelihood that the board, CIO, line of business heads, and functional heads agree on their company's future digital growth opportunities. Among the leaders, 85% of CEOs and 92% of line of business heads agree with the CIO's digital growth vision, compared with only 65% of CEOs and 68% of line of business heads among follower companies.

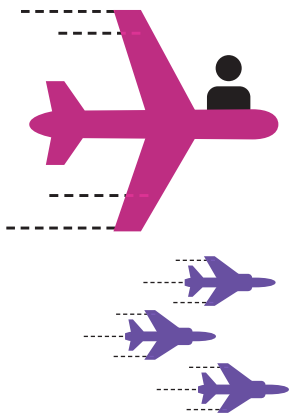
Instead of having separate business and digital strategies (a common practice over the past two decades), leaders have only one strategy: a digital strategy that covers the markets they serve, the digitally-enabled products and services they offer, and the digital processes they build or improve to

create demand and supply. At LEGO Group, for example, digitization eventually was given a central place in the company's strategy rather than engaging in a hodge-podge of separate initiatives.<sup>26</sup>

## Companies also need consensus at the top.

Once a company establishes its digital vision, it must communicate it clearly, concisely, and broadly to be executed effectively on its front lines and the middle ranks. Business strategies are built by the leaders and therefore, middle- and front-line ranks need clear direction to make the strategy work. If only five people at the top of a big company deeply understand the vision, decision-making further down the organizational ranks will be slow as middle managers struggle to figure out what should happen next, whereas operational teams run the risk of going off in different, often conflicting, directions.

<sup>26</sup> Op. cit., "Transforming the LEGO Group for the Digital Economy."



It's easy to view a large company as a large jumbo jet piloted by a CEO captain. But in the digital world, companies are not jumbo jets. They are composed of a swarm of smaller fighter jets that need to move quickly in the same direction. These fighter jets are the agile teams, each one trying to digitize a business activity. This provides the organizational agility that has enabled a company like Uber to evolve from a ride-hailing service to a transportation ecosystem player that also delivers meals and packages, in addition to rents bicycles and electric scooters. Some companies have 200-300 of these agile teams.

Accordingly, the company's destination must be clear. A vision statement such as, "We're building the best online-gaming company in the world," or, "The bank that lets you do all your banking anywhere, anytime, better and faster, from your digital device" gives teams a clear, common direction.

**Digital innovation requires consensus across the board and drive from the top. Leader CIOs are highly effective in driving consensus.**

CIOs in follower organizations are not as effective in driving across the board consensus, especially with CEOs

*Do you believe other key stakeholders within your organization agree with your vision of future digital-related growth opportunities?*

Stakeholders	Leaders	Followers
Board	86%	75%
CEO	86%	65%
Heads of lines of business	92%	73%
Functional heads	86%	68%

**Figure 3:** Leadership Drives Digital Innovation



Communication, collaboration, and engagement mechanisms such as quarterly offsites that include all team leaders will help keep the swarm of fighter jets in synch.

All business strategies must be flexible as the winds of the market inevitably change direction. Top management must be agile and able to reorient their teams in a new direction rapidly when necessary. In a digital world, conditions change far faster than they did in the last century.

Consider the \$6 billion financial software company Intuit. The company, which has changed its business model over the last decade, calls these adjustments 'strategy refreshes.' "We think of ourselves as a 34-year-old startup," says Intuit's chief innovation officer, Bharath Kadaba. That's why, he says, Intuit, unlike the other eight major software firms launched in the early 1980s, is still around today.<sup>27</sup>



## CIOs Lead the Way

It was once popular to say that the CIO role was becoming less important as IT moved to the cloud, and applications and computing power became commoditized. On the contrary, the role is gaining significant value. CIOs who think as strategic business leaders can, and should, take responsibility for defining and articulating the company's digital vision. And, at leading companies, they are more likely to do so.

In our CIO study, we found that such strategically minded CIOs spend more time on digital business transformation and innovation than on running the IT shop. In the leader companies, CIOs spent 63% of their time on digital business model innovation and only 37% on managing the IT infrastructure. In follower companies, the CIO's focus is reversed. Follower CIOs spent only 43% of their time on digital business model innovation and 57% on managing existing IT.

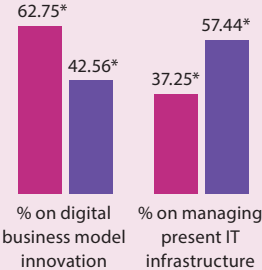
<sup>27</sup> Intuit, "Tech Talk: Building a Culture of Innovation at Intuit," February 6, 2019, accessed July 25, 2019: <https://www.intuit.com/blog/technology/tech-talk-building-a-culture-of-innovation-at-intuit/>.

Furthermore, in 73% of the digital leaders, the CIO was the driver of digital transformation. But CIOs led the way in only half of the follower companies.

**Striking difference in what leader CIOs do vs. follower CIOs**

CIOs in leader organizations mostly spend their time on digital business model innovation and focus on emerging and disruptive technologies. Whereas CIOs in follower organizations are still spending most of their time in managing IT infrastructure. More than 50% of follower CIOs’ time is spent on traditional IT infrastructure management.

**Where do CIOs spend their time?**



\*Summary of Mean

- Leaders
- Followers

**Role of CIO**

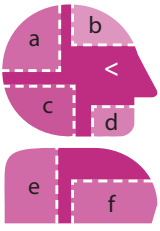
Leaders	Followers
Development of embedded systems in our company’s products and our places of doing business	Existing IT infrastructure/legacy information systems
Research on emerging technologies and their potential value to our company	Development of new information systems to support our existing business processes
Data security	Development of embedded systems in our company’s products and our places of doing business
Digital data and analytics	Research on emerging technologies and their potential value to our company
Existing IT infrastructure/legacy information systems	Digital data and analytics

*Which of the following activities do you oversee? (Multiple choice response question.)*

*Roughly what % of your time do you personally spend on digital business model innovation vs. managing the company’s present IT infrastructure?*

**Figure 4:** Leader vs. Follower CIOs

## The Characteristics of Effective Digital Executives



From our observations of leadership behavior, we also see that the executives of successful digital companies have an innovation-focused mindset. It is one with characteristics, including extreme customer orientation, curiosity, tolerance for risk, an unwavering belief in the impact of digital technology, and a collaborative approach to decision making.

These executives are more focused on customers than their competitors, because in a world of digital ecosystems they must often partner with competitors. When they think about customers, the digital leaders consider not only how and what they buy, but the emotional aspects of why and when they make their purchases.

For companies today, knowing as much as they can about their customers is “the key asset,” “not the product and services” they offer, says Harvard Business School professor Sunil Gupta.<sup>28</sup> “The No. 1 thing that has made us successful by far is obsessive, compulsive focus on the customer as opposed to the competitor,” Amazon CEO Jeff Bezos has said.<sup>29</sup>

Intuit is a prime example of a company with an ‘obsessive compulsive’ customer focus. One of the keys to its turnaround earlier this decade was recognizing its popular tax preparation software product (TurboTax) had to address the emotional problems of its customers. “Consumers spend 6 billion hours each year using software to prepare their income taxes; anything we can do to reduce that time will be a gift,” said founder Scott Cook.<sup>30</sup> “At the end of the process, most taxpayers are owed a refund—and for 70% of them, that refund is the single largest check they’ll receive during the year. In this context we began to think less about the pure

<sup>28</sup> Harvard Business Review, “If the Key to Business Success is Focus, Why Does Amazon Work?” May 21, 2019, accessed July 25, 2019: <https://hbr.org/podcast/2019/05/if-the-key-to-business-success-is-focus-why-does-amazon-work>.

<sup>29</sup> Business Insider, “Jeff Bezos said the ‘secret sauce’ to Amazon’s success is an ‘obsessive compulsive focus’ on customer over competitor,” September 15, 2018, accessed July 25, 2019: <https://www.businessinsider.com/amazon-jeff-bezos-success-customer-obsession-2018-9>.

<sup>30</sup> Medium, “How Turbo Tax Used Design and Emotion to Solve a Boring Problem and Dominate an \$11b Industry,” August 8, 2018. <https://medium.com/@hnshah/how-turbotax-used-design-and-emotion-to-solve-a-boring-problem-and-dominate-an-11b-industry-2ae6012a6d39>. Accessed July 25, 2019.

functionality of our software and more about the emotional payoff of reducing drudgery and speeding the way toward a big windfall.”

Executives of successful digital companies also learn to love risk while working to reduce it. At Intuit, Kadaba, the chief innovation officer, has 70 technologists dedicated to experimenting with ways to solve problems. Kadaba says the work of these people requires a “fearless mindset and an environment that’s not about success or failure, but rather learning.” It’s fine with him if only 30% of the ideas his group explores end up in Intuit products.

These executives won’t back down from their belief that digital technology will change their businesses dramatically, even in the face of short-term financial pressures. Bank of America, for example,

## Executives of successful digital companies also learn to love risk while working to reduce it.

faced disaster in 2009. A decade later, it posted a record profit of \$7.3 billion.<sup>31</sup> At the same time, it continued to pursue innovation, and has obtained more patents (45) related to blockchain technology than any company—even more than IBM.<sup>32</sup> “While we’ve not found large-scale opportunities, we want to be ahead of it. We want to be prepared,” Catherine Bessant, the bank’s chief technology officer, explained.

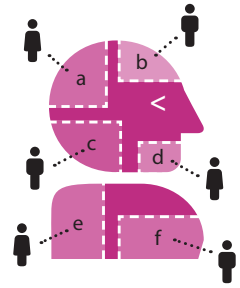
Digital leading companies also won’t rest on their laurels. In 2012, then-Intuit CEO Brad Smith concluded the company had grown complacent with its products and needed new ideas. He told his top management team to follow the CEOs of other product companies that Intuit admired. “Each of us followed a CEO and watched how

<sup>31</sup> CNN Business, “Bank of America rakes in record profits driven by strength from US households,” July 17, 2019. <https://www.cnn.com/2019/07/17/investing/bank-of-america-earnings-record-profit/index.html>. Accessed July 25, 2019.

<sup>32</sup> Fortune, “Here’s Why Bank of America Has Filed Nearly 50 Blockchain-Related Patents,” June 20, 2018. <https://fortune.com/2018/06/20/bank-of-america-blockchain-patent-why/>. Accessed July 25, 2019.

they made their decisions, how they engaged their teams, how much time they spent in products,” Smith said. “And we changed the way we lead inside the company.”<sup>33</sup>

As a result, the company revamped its flagship products, QuickBooks Online and TurboTax, as well as laid plans for mobile apps and other new products. Under Smith’s leadership from 2008-2018, Intuit’s stock value grew 588%.<sup>34</sup>



Lastly, successful digital companies favor a collaborative approach to decision making. Every member of the top management team has an important role to play in developing and leading a digital strategy. If the rest of the C-suite has to defer to the CEO on all issues, large and small, digital failure is nearly guaranteed. In the digital world, the leader is not a troop commander; she is a conductor who listens to the orchestra. That’s how beautiful digital music is made.

Active, engaged listening allows leaders to find the signals in the noise, the solid trends amid transitory market fluctuations. To improve their listening abilities, executives may need a little introspection to identify and develop the core skills they may lack.

<sup>33</sup> Fortune, “Intuit’s three-year plan for cloud success,” October 7, 2014, accessed July 25, 2019: <https://fortune.com/2014/10/07/intuit-plan-cloud/>.

<sup>34</sup> Fortune, “Exclusive Interview: Intuit Names New CEO as Brad Smith Steps Down After 11 Years,” August 23, 2018, accessed July 25, 2019: <https://fortune.com/2018/08/23/intuit-ceo-brad-smith-departs/>.

## The Way Forward

There are companies that we have worked with that embrace enterprise-wide agility. An organization that empowers individuals and teams, that enables collaboration to deliver ever-improving customer experiences, and creates value at scale. These are the behaviors of an agile enterprise. But it's still rare. In a 2019 TCS survey of 1,231 senior executives, only 9% of the respondents had adopted all of these behaviors.<sup>35</sup>

Companies that want to join these leaders, that want to accelerate their digital business efforts should focus on three areas:

1. Make sure you have enough digital expertise on your board and top management team. If not, get them up to speed fast.
2. Assess whether the members of your board, top management team, line of business heads, and functional leaders are aligned on the company's digital strategy for the next decade on issues such

as the proper allocation of talent and resources, the interests of your customers and other stakeholders, and the new alliances and partnerships the business wishes to pursue.

3. Develop the right mindset. For a digital business to succeed, it must root out any sign of complacency, create an environment that's obsessively customer-focused, and become more risk tolerant.

Executives have to understand and accept their limitations. They need to figure out what they need and bring in expertise they don't have or can't build in house. Finally, not only must they understand that digital technology is changing their business, they have to internalize the concept that it is their mission—their primary mission—to drive that change.

<sup>35</sup> TCS study, "Winning in a Business 4.0 World," March 2019, accessed August 6, 2019 at <https://www.business4.tcs.com/>.

# Tackling Cyber Security in a World of Digital Ecosystems

## Author

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Companies across the world realize they are operating in digital ecosystems, constellations of players that are erasing once-sacrosanct boundaries of age-old industries. They are relying on these ecosystems to both sell products and services and to buy them—and the transactions are with not only traditional allies but also potential competitors.

But, what too firms many aren't aware of is the rising risk of cyber attacks when they digitally connect their systems and data to those of other companies. While the answer is not to disconnect from these ecosystems, the risks of playing need to be understood and lowered considerably.

In the old 'physical' world in which companies interacted by making phone calls, sending invoices and payments through the mail, and conducting meetings in rooms, the risks of such collaboration were much smaller. There are limits to the number of customers you can reach, the number of people you can employ, the number of businesses you can partner with, the amount of information you can store, and the number of products and services that you can offer.

By contrast, in the digital world, there are no such limitations. In fact, it is a world of infinite possibility, with an abundance of capital, talent, capabilities, and businesses with which to partner.

To prosper in a world of digital ecosystems, companies will need to change not only the ways they interact, but they also must alter the security procedures they put in place to guard their systems, data (especially customer data), and digital infrastructure they hand over to the companies that manage public clouds.

## Moving Into Ecosystems: There's No Stepping Back



If you think the way to manage this risk is to stay out of the digital ecosystems that have formed in your sector, think again. Already, many leading companies are embracing ecosystems. Take Ping An. The world's largest insurer, this Chinese company, founded 31 years ago from state institutions, is morphing into something quite different by creating technology-driven businesses alongside its traditional financial services. It has become what we call 'an ecosystem orchestrator,' investing 1% of annual revenue—about \$1.5 billion—in building a technology platform. Using artificial intelligence, big data and analytics, and automated services, Ping An has used the platform to launch: financial services, an online car marketplace, and an online medical consultation service for Chinese patients. Who would have thought that a once-staid insurer, whose name translates as 'safety,' would be in the health clinic business?<sup>36</sup>

That kind of cross-over business is becoming the norm in the world of digital ecosystems. It is already starting to pay off. Ping An has created new sources of revenue and new sources of customers for its core insurance and banking

<sup>36</sup> Financial Times, "Ping An's hedge against future risks," November 10, 2018, accessed August 9, 2019: <https://www.ft.com/content/6db6ed90-d6b5-11e8-a854-33d6f82e62f8>.



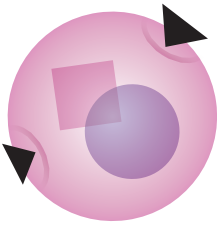
## Companies that put their digital capability at the heart of their enterprise are beginning to pull ahead of their traditional rivals.

businesses. In 2017, 40% of new financial services customers came from its ecosystem businesses.<sup>37</sup>

Other companies that put their digital capability at the heart of their enterprise are beginning to pull ahead of their traditional rivals. Our research on more than 1,000 North American and European companies shows that in 2018, the digital leaders attributed 63% of their revenue to their digital businesses or digital products and services—far higher than ‘follower’ companies, which only attributed 38% of their revenue to digital businesses or digital offerings.<sup>38</sup>

But there is a catch, and that catch is new cyber risks.

### Friend or Foe? The Risks of Joining a Digital Ecosystem



Ecosystems are not just networks of friends. They are networks that can include rivals, too.

Although companies have long had to collaborate with their competitors—the language of

‘frenemy’ is nothing new—the way they now have to collaborate is altogether different to the way they once had to in the pre-digital past.

These days, when two companies interact within an ecosystem—where several different organizations own and manage different parts of what is, by definition, an interoperable system—they are necessarily required to

<sup>37</sup> Ibid.

<sup>38</sup> Tata Consultancy Services, “TCS 2020 CIO Study: Digital Leadership for Business Transformation”. [https://sites.tcs.com/bts/wp-content/uploads/TCS\\_2020\\_CIO\\_Study\\_Preview\\_v5.pdf](https://sites.tcs.com/bts/wp-content/uploads/TCS_2020_CIO_Study_Preview_v5.pdf). Accessed August 9, 2019.

share some of their most important data. That's just a cold fact of collaborating in the digital sphere. But, as a result, they increase the likelihood that they could become the victim of cyber security attacks.

All companies collect data about their customers, and so long as they have an appropriate cyber security defense, they can meet their regulatory obligations and ensure the security of this data. But the challenge of doing this rises significantly when they participate in an ecosystem. In this digital environment, they are no longer fully in control.

They have to rely on the security guarantees of their partners—which might be suppliers of components, cloud services, customers, marketing, and many other goods and services—and, of course, they cannot independently ensure that.

There is evidence that companies are struggling to contain the emerging cyber security problem. In 2018,

according to the Identity Theft Resource Center, which tracks the incidence of scams, fraudulent activity and cyber theft, there were 1,244 breaches of data. The reported number of exposed consumer records containing sensitive, personally identifiable information jumped 126% to 446 million from 197 million in 2017.<sup>39</sup>

Such security breaches are likely to increase over the coming years, for two reasons. First, companies face a relentlessly moving target because the speed with which malware and other computer hacking technology is being developed is simply outpacing the speed with which they can develop adequate responses. Some 350,000 new malicious programs and potentially unwanted applications are registered by cyber security firms every day.<sup>40</sup> By the time companies have found a way to close a hole in their security wall, another hole opens up.

Second, different countries have different ways of responding to, investigating, and prosecuting cyber security incidents. In October 2015, for example, the European Court of

<sup>39</sup> CyberScout, "Consumers at Risk: 126% Increase in Exposed Consumer Data, 1.68 Billion Email Related." January 28, 2019. Accessed August 9, 2019. <https://www.idtheftcenter.org/consumers-at-risk-126-increase-in-exposed-consumer-data-1-68-billion-email-related-credentials/>.

<sup>40</sup> AVTest, "Malware". Accessed August 9, 2019. <https://www.av-test.org/en/statistics/malware/>

Justice struck down the ‘Safe Harbor’ data-transfer provision of the 1995 Data Protection Directive amid fears over U.S. surveillance. (The Safe Harbor rule had permitted companies outside the EU to store and process the data of Europeans.)

Realizing they were moving on divergent paths, the EU and U.S. worked furiously to strike a

compromise that would restart the vital flow of data across the Atlantic. The new deal—the EU-U.S. Privacy Shield—requires American companies wishing to import data from Europe to meet new obligations on processing personal data and guaranteeing individual rights. But the episode serves to illustrate that regulatory disunity further complicates risk management for corporate leaders.<sup>41</sup>

## How to Reduce Ecosystem-Related Cyber Security Risks



The risks of participating in digital ecosystems are very real. But they should not be feared. Indeed, we think the risks of not participating in an ecosystem are arguably greater. Companies that continue to view their customers, competitors, and business partners through the lens of a single industry will be far less able to recognize the new

types of customers, competitors and business partners with which they will need to interact as businesses increasingly go digital.

Given this, it is incumbent upon senior executives to address the cyber security risks head on. How can they do this?

From our experience, companies should consider taking several measures to strengthen their cyber security capabilities.

<sup>41</sup> World Economic Forum, “Global Agenda Council on Cyber Security,” April 2016. Accessed August 9, 2019. [http://www3.weforum.org/docs/GAC16\\_Cybersecurity\\_WhitePaper\\_.pdf](http://www3.weforum.org/docs/GAC16_Cybersecurity_WhitePaper_.pdf).

Before joining a digital ecosystem, they should carry out the same kind of due diligence review of potential partners—especially those considered competitors—that they conduct when making an M&A transaction. Since large companies began years ago allowing vendors to access their IT systems, they have performed vendor risk assessments. These assessments examine the vendor’s business practices and evaluate them for the risk they present to the company. Companies can extend that same principal to their ecosystem interactions: assess the risks associated with any ecosystem entity that is technically connected to a company, or shares data with it.

While they are reviewing their partners, companies should introduce a series of safeguards to facilitate the secure automated exchange of data with prospective partners. At the heart of any digital ecosystem is machine-to-machine communication—computers and digital sensors communicating with one another. This raises the bar for cyber security: Conventional passwords and two-factor authentication offer scant defense in a hyperconnected environment where artificial intelligence and machine learning allow commercial rivals with malevolent intentions to stay one step ahead.

Here are some protective steps that companies should take:<sup>42</sup>



- Build new gates that require the machines to present the right credentials—some form of a digital identifier—so that a machine can verify that another machine has access rights. Cryptography, in which automated parties exchange digital signatures to authenticate their interactions, is one way to do this.



- Ensure that every company asset—even the humble office printer—has its own authentication process. In other words, the traditional system, where a single administrator can access multiple devices on a corporate network, needs to be scrapped. This might sound like an extreme reaction, but the fact is that hackers make it their business to seek overlooked assets that provide a backdoor entrance to a company’s entire network.



<sup>42</sup> Thiagarajan, Satish, “Three Ways to Secure Your Automated Machines,” <https://sites.tcs.com/bts/three-ways-to-secure-your-automated-machines-blog/>. Accessed August 9, 2019.



- Turn the digital hackers' weapons on them by using artificial intelligence and machine learning to develop systems that analyze various threats—network intrusions, distributed denial-of-service attacks, viruses in emails, phishing scams—and identify patterns of behavior.

These measures will go a long way toward protecting a company. But business partners, clients, and customers will want to be reassured that the company has put in place well-designed controls that protect sensitive personal and commercial data.

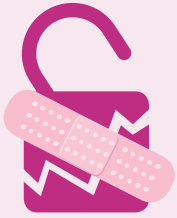
As such, senior executives should commission an external review of their company's non-financial reporting controls—the security, availability, processing integrity, confidentiality, and privacy of a system. Such a review—known as a Service Organization Control 2, or SOC 2, audit—provides a report on the description of the controls, attests that they are well designed and implemented at a specific point in time, and further attests that they are operationally effective over a minimum six-month period.<sup>43</sup>

With careful due diligence, appropriate protection, and an external audit that provides peace of mind, a company can go a long way to addressing the cyber challenges they face in digital ecosystems. But it remains a fact that, however high a company builds its security walls, it will almost certainly suffer some loss of sensitive data.

Digital ecosystems are here to stay, so it is imperative for companies to actively engage in them to create value for stakeholders.

<sup>43</sup> AICPA, n.d., <https://www.aicpa.org/interestareas/frc/assuranceadvisoryservices/serviceorganization-smanagement.html>. Accessed August 9, 2019.

For this reason, companies must develop a sophisticated post-attack response. There are three key elements to this:



1. An enhanced cyber forensics capability that can gather, preserve, and analyze digital assets in a way that is useful for any future legal proceedings
2. Well-developed business continuity plans
3. Pre-prepared plans for regaining user trust

## **All Ecosystems Go: Tackle Cyber Security and Turbo-Charge Your Company**

Digital ecosystems are here to stay, so it is imperative for companies to actively engage in them to create value for stakeholders.

But, of course, there are risks. An ecosystem is an interoperable system. Participation necessarily means giving up some control and relying on commercial partners to follow through on their commitments to be responsible in using data, systems, and other assets.

Fortunately, there are steps that companies can take to mitigate the risks. With constant vigilance, they can make it much more difficult for malevolent hackers to break through their security walls. Yes, they will need to make a significant investment of time and resources. But we are convinced that this investment will be more than repaid by the prize of participating in the ecosystem economy.

## Bringing Life To 'Things': A Framework for IoT

### Author

**Regu Ayyaswamy**

Vice President and Global Head, Internet of Things,  
Tata Consultancy Services

Amazon.com has about 50 of the most highly automated warehouses in the world, centers through which flow some of the 13 million items the company ships daily.<sup>44</sup> In these centers, goods come to warehouse workers via robots that pick the shelves, rather than the opposite. The robots—400 to 500 of them whirling around a 125,000-square-foot warehouse at a time—are equipped with visual sensors so they don't collide with each other or have boxes fall off.<sup>45</sup> The robots in one Amazon center have increased the number of items a worker can pick from 100 to 300 to 400 per hour.<sup>46</sup>

Automated warehouses are just the tip of the iceberg of how businesses, government agencies, and other institutions are using Internet of Things (IoT) technology. Digital sensors are now embedded in products ranging from aircraft engines

<sup>44</sup> The Verge, Jan. 2, 2018. Amazon shipped more than 5 billion items through its Prime program in 2017. Accessed Aug. 18, 2019. <https://www.theverge.com/2018/1/2/16841786/amazon-prime-2017-users-ship-five-billion>

<sup>45</sup> Wired magazine article, "Inside the Amazon Warehouse Where Human and Machines Become One," June 5, 2019. Accessed Aug. 13, 2019. <https://www.wired.com/story/amazon-warehouse-robots/>

<sup>46</sup> The New York Times, "Inside an Amazon Warehouse, Robots' Ways Rub off on Human," July 3, 2019. Accessed Aug. 12, 2019. <https://www.nytimes.com/2019/07/03/business/economy/amazon-warehouse-labor-robots.html>

and appliances to electric toothbrushes and traffic lights. (Cities will spend \$2 billion this year on ‘smart’ traffic lights that change based on traffic volumes.<sup>47</sup>)

However, with 14 billion ‘things’ already connected to the Internet<sup>48</sup> (nearly three times the number in 2015<sup>49</sup>) and another 11 billion expected by 2021, companies can easily lose their way with IoT initiatives. Their IoT strategies can quickly become tactical, fragmented, and misdirected, resulting in tens of millions of dollars spent but far less gained in return.

Companies need clear strategies to guide their IoT initiatives. The strategy development process should begin with a deep understanding of how IoT technology fundamentally changes the game: by bringing the company real-time insights on the performance of its products, processes, and people. We have seen four core sources of business value from IoT technology:

- **New digital business models**—by which product companies can charge for post-sale services that help customers maintain and make better use of those products (so-called ‘servitization’), as well as shift from ownership to subscription pricing.
- **Seamless customer experiences**—largely digital—that relieve buyers of the multitude of logistical and other headaches they often face in using a product or availing themselves to a service.
- **Optimized and responsive value chains**—i.e., production and distribution operations that detect and overcome internal bottlenecks and external conditions, making automatic adjustments that keep products moving or services flowing.
- **Enhance quality of life**—with safer operations by monitoring the condition of buildings, factories, products, and people.

<sup>47</sup> Juniper Research, May 20, 2019. Accessed Aug. 13, 2019. <https://www.juniperresearch.com/press/press-releases/smart-city-traffic-technology-revenues-double>

<sup>48</sup> Gartner, as cited in Network World article. Accessed Aug. 13, 2019. <https://www.networkworld.com/article/3322517/a-critical-look-at-gartners-top-10-iot-trends.html>

<sup>49</sup> Gartner, as cited in TCS 2015 IoT study. Accessed Aug. 13, 2019. <http://sites.tcs.com/internet-of-things/wp-content/uploads/Internet-of-Things-The-Complete-Reimaginative-Force.pdf>



Companies get the greatest value from IoT technologies when they view them as a new transformative force that, as we put it, ‘brings life to things.’

The ‘real’ world today, is a combination of digital and physical—it’s multi state, dynamic, and live. By adding sensor physical things and connecting to the digital ecosystem—they become responsive and closed loop—hence, can grow, evolve and adapt to the

## Companies need clear strategies to guide their IoT initiatives

dynamic context. IoT brings *Life to Things*. Thus, by combining physical context and digital intelligence—a synthesis of human and AI—customers can unlock the latent, unexplored and limitless possibilities, and extract exponential value.

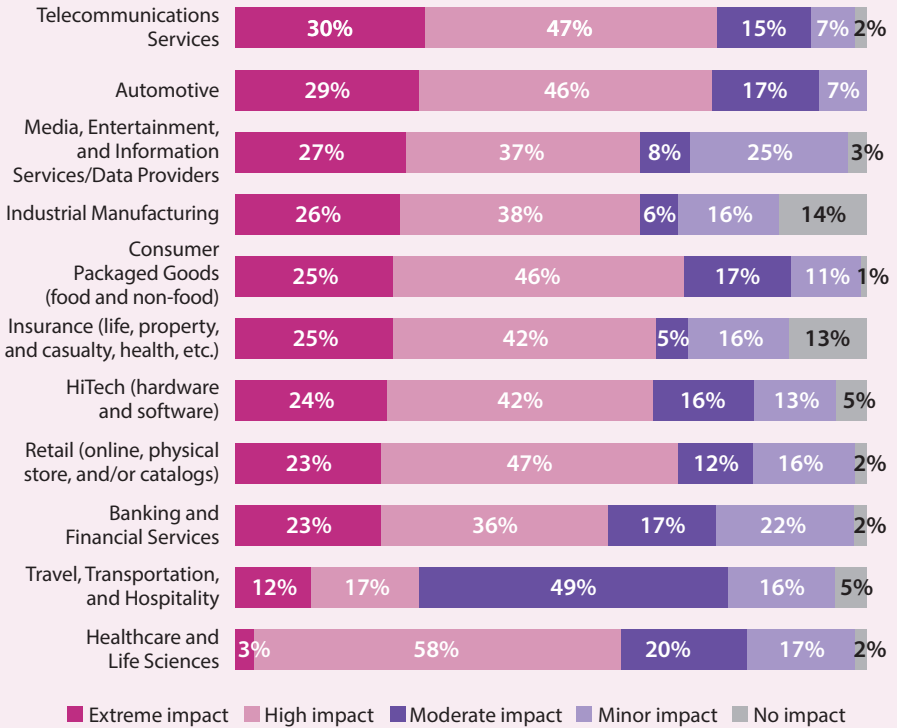
### A Hotbed of Activity Around Internet of Things

The billions of digital wireless sensors that are embedded in products, attached to building walls and factory lines, resident in things we wear (digital wristbands) and inside the devices we carry (mobile phones) are testimony that we’re living in an IoT age. They have already begun to change the way companies operate in every sector.

A TCS survey this summer on how more than 1,000 North American and European companies have been digitizing their businesses found just how crucial IoT technology has been.<sup>50</sup> Nearly two-thirds (64%) said digital wireless sensors have had an extreme or high impact on their sector’s digital transformation this decade. A higher percentage (68%) predicted that strong impact would

<sup>50</sup> TCS 2020 CIO Study. Accessed Aug. 17, 2019. <https://sites.tcs.com/bts/tcs-cio-study/>

## North American and European Companies: Impact of IoT Technology This Decade on the Digital Transformation of 11 Industries



**Figure 5:** Impact of IoT Technology on 11 Industries

continue into the next decade. Four industries reported the highest impact from IoT: telecommunications, automotive, retailing, and consumer packaged goods. (See Figure 5.)

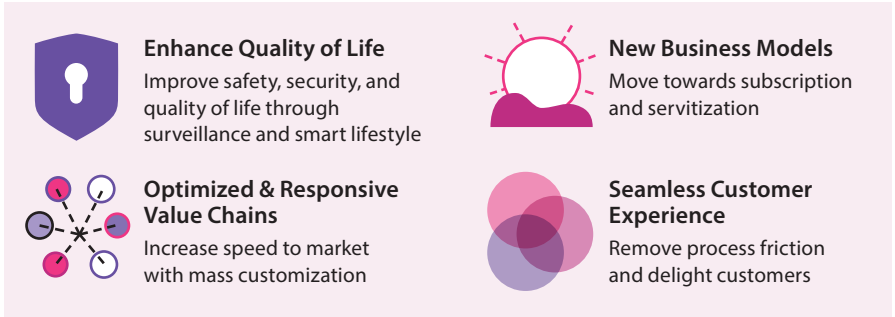
Yet, getting big returns on IoT technology is a challenge at many companies. In a TCS survey this spring with 516 marketing executives in North America and Europe, only

about one in five (22%) are using digital data from digital sensors in their products to personalize communications to customers in post-sale support.

Other studies also point to low overall usage of IoT technologies, and even lower returns. For example, a 2018 study by McKinsey found that less than 30% of companies with IoT initiatives had moved them past the pilot stage. And in 300 companies with large IoT programs that were long past the pilot stage, only a sixth generated improvements of at least 15% in lower cost and/or greater revenue.<sup>51</sup>

## Getting Major Returns on IoT Technology

From our vast experience, generating high returns on IoT investments requires a top-down strategy whose overarching goal is a specific (and large) improvement in the business—not technology gains. We believe companies that are on the path to getting exponential value from IoT are focusing their investments in four primary ways. Let's get into each one.



**Figure 6:** Four Primary Focuses of IoT Investments

<sup>51</sup> McKinsey article, January 2019. Accessed Aug. 18, 2019. <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/what-separates-leaders-from-laggards-in-the-internet-of-things>

## 1. Launching New Business Models



Companies such as Rolls-Royce PLC and Caterpillar have been early adopters of IoT. They have installed wireless sensors in their products: aircraft engines for Rolls-Royce, and construction equipment for Caterpillar.

Those technologies have enabled these and other manufacturers to monitor the performance of their products in the field, and thus alert customers when they need to be maintained, repaired, or replaced. For example, Rolls-Royce uses on-board sensors in its aircraft engines and satellite communications to collect performance data for airlines. The company that creates a ‘digital twin’—a computer-based replica of its engines—and uses the data from the real engine to replicate its performance in the virtual versions. The virtual engines then use artificial intelligence-based analytics to determine how well they are operating and predict when they will require maintenance.<sup>52</sup>

Caterpillar, a \$54 billion global manufacturer, counts 850,000 of its machines that are digitally connected through sensors and communications networks that receive data on their operating performance.<sup>53</sup> The company believes that tracking equipment performance through this digital capability will be key to doubling its service revenue, from \$14 billion in 2016 to \$28 billion by 2026.<sup>54</sup>

With IoT sensors in their products, these manufacturers can change their business models—from selling equipment that customers own, to renting that equipment to customers, who then can pay depending on how much they use the products. In the future, this new business model can evolve to become a networked ecosystem model, whereby certain other players in the ecosystem can get value from a manufacturer’s database.

<sup>52</sup> Rolls-Royce web page, accessed Aug. 18, 2019. <https://www.rolls-royce.com/products-and-services/civil-aerospace.aspx#/IntelligentEngine>

<sup>53</sup> Caterpillar investor presentation, accessed Aug. 18, 2019. <http://s7d2.scene7.com/is/content/Caterpillar/CM20190520-a44a6-7169d>

<sup>54</sup> Thomson Reuters transcript of a Caterpillar investor meeting, May 2, 2019. Accessed Aug. 19, 2019. <https://caterpillar.gcs-web.com/static-files/53563450-d7a8-412e-9349-5b378cd5c7da>

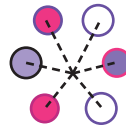
## 2. Creating Seamless Customer Experiences



IoT sensors give companies an unprecedented capability: the ability to monitor how their products (and their companies) are performing for customers throughout the customer lifecycle. Customers that want their products to be working continually in a frictionless manner, and with minimal downtime, view this capability as a great benefit. Caterpillar and Rolls-Royce know the performance of their digitally connected products in the field. Since the overall customer experience extends far beyond the purchase, this is a major capability.

In TCS' survey of 1,010 CIOs this summer, we found that the most successful companies in generating revenue from their digitally enabled products and services were more likely to view IoT as creating future business growth than were least digitally successful firms. Some 61% of the 'digital leaders' believe IoT is very important for growth vs. only 46% of the digital followers.

## 3. Optimizing Value Chains



Digital sensors embedded in products are not the only source of value from IoT technologies. When companies install such sensors in their manufacturing and distribution operations, remarkable improvements in cycle time, cost, quality, and shrinkage (i.e., products disappear due to theft, etc.) are possible.

IoT makes these supply chains more flexible—that is, able to automatically change themselves due to weather, transportation bottlenecks, and other disruptions to the flow of products from factory to customer.

Product shrinkage is a major goal of a number of IoT supply chain initiatives. For example, the global pharmaceutical sector has been implementing 'track-and-trace' programs to reduce the number of counterfeit drugs. Forrester expects such initiatives to be the biggest driver of IoT spending in the supply chain by 2023, a year in which it predicts that companies around the world will spend \$435 billion on IoT<sup>56</sup>. Researcher Gartner predicts that more than half of major global firms will have deployed IoT sensors, AI, and analytics in their supply chains by 2023.<sup>57</sup>

<sup>55</sup> International Industrial Vehicle Technology article, Nov 29, 2018. Accessed Aug. 21, 2019. <https://www.ivitinternational.com/news/technology/caterpillar-remote-services-improve-vehicle-effectiveness.html>

#### 4. Improving the Quality of Life



A growing number of companies have installed IoT sensors in their factories and distribution networks to improve safety and security. There's good reason for this. In the U.S., more than 410,000 injuries and 300 deaths occurred in factories in 2016<sup>58</sup>, while in the UK factories had 60,000 injuries and 19 deaths as a result of industrial accidents. As a result, workplace surveillance and safety have moved to the top of list of boardroom topics.

Companies are using smart technologies such as laser scanners and digital sensors in factories and warehouses to more safely operate robots and cranes, prevent collisions, and reduce other workplace accidents.

Some firms are using technology to monitor employees—i.e., truck drivers and machine operators—checking to make sure they aren't overtired.

Within IoT initiatives focused on safer operations are those focused on improving the health of customers, especially consumers. A great case in point is Procter & Gamble. The consumer packaged goods giant has been selling a digital electric toothbrush that tells consumers how well they're using the device, with sensors and AI embedded in it. P&G see such capabilities as vital to improving patients' dental hygiene—and keeping the company competitive in the \$5 billion 'brushing market'<sup>59</sup>.

The biggest benefits of IoT technology come when companies make their 'things' self-aware.

<sup>56</sup> Forrester data as cited in Supply Chain Dive website. Accessed Aug. 18, 2019. <https://www.supplychaindive.com/news/track-trace-supply-chain-iot-spending/551751/>

<sup>57</sup> Gartner web page, Dec. 17, 2018. Accessed Aug. 18, 2019. <https://www.gartner.com/smarterwithgartner/gartner-predicts-2019-for-supply-chain-operations/>

<sup>58</sup> U.S. Bureau of Labor Statistics, as reported in Plant Engineering article, Feb. 13, 2019. Accessed Aug. 18, 2019. <https://www.plantengineering.com/articles/the-human-factor-of-iot-in-safety/>

<sup>59</sup> P&G web page, accessed Aug. 12, 2019. <https://news.pg.com/press-release/pg-corporate-announcements/oral-bs-new-ai-brush-knows-more-about-brushing-styles-anyon>

## Extracting Exponential Value from IoT

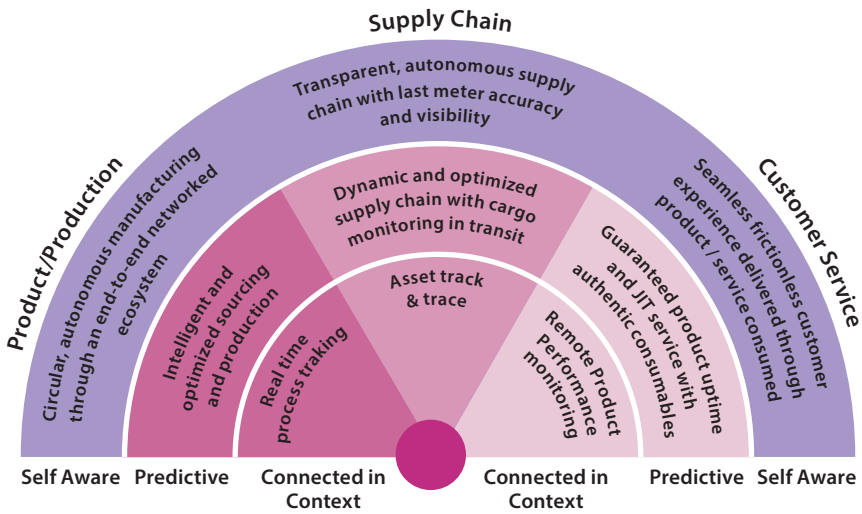
The four strategic paths to IoT value (mentioned above) have major impact on a company's products, production, distribution, and customer service operations. The benefits expand, based on the degree to which a company brings 'life to things'—i.e., how much digital intelligence it implants in those products, factories, distribution operations, and customer support operations. (See Figure 7.)

Let's start with the base level of value—a stage that we call using IoT to '**connect in context**.' By this, we mean installing or embedding digital sensors or other technologies into your products, factories, and supply chains so that you can track and trace them continuously and, thus, monitor their ongoing performance.

The next level of benefits come to companies that use the digital data their IoT technologies generate to do **predictive** analysis. The example of Rolls-Royce aircraft engines discussed earlier is a great example. Its 'digital twin' virtual engines are predicting when airlines need to perform maintenance.

But the biggest benefits of IoT technology come when companies make their 'things' **self-aware**. By this, we mean IoT-infused products or operations that can correct their own performance, sometimes without human intervention. Automobiles with sensors of vehicles in front of them and automatically brake are an excellent example. A warehouse (like that of Amazon) whose robots avoid crashing into other robots and people is another. So is an autonomous factory, whose automated assembly lines take on arduous and unsafe work, and leave the rest to factory workers and plant management.

This is truly about bringing life—human capabilities—to things. It is a path on which a company can achieve exponential value, where 'things' are brought to life and combine AI and human intelligence to make right decisions and optimize people, processes, and products.



**Figure 7:** Path to Exponential Value

How do you make sure your company is on the path of unlocking the huge hidden value of IoT in its value chain? Three overarching principles must be in place:

- Being boundary-less:** Simply embedding sensors in your products will give you only some of the digital capabilities you need to keep them in tip-top shape for customers. You'll also need supplier data, field repair data, and customer data, at a minimum. If the digital sensors in the tires of a truck flag low pressure and a pending flat, that truck maker will have to alert its closest dealer (and possibly the tire maker) that the driver will be there very soon for a repair or replacement. You'll also need to break down the data 'silos' in your company. Using the same example, the low-tire-pressure incident will force the truck maker to automatically check its finance and customer service records to see if the tire is still under warranty. All to say that lots of data is required to solve the customer problem that your IoT sensors have identified. Your operations cannot be constrained by internal or external organizational boundaries, other than regulations.



- **Being pervasive:** By this, we mean the data, the analysis of that data, and the actions that are triggered automatically all must happen quickly—even in real-time. All parties need to be able to make the right decisions on behalf of the customer. That, in turn, means they must trust that they all have the right information, and that it is available to the right stakeholders at the right time. This makes decision-making more democratic, and even moves some decisions to be made by the devices.
- **Being experience-rich:** The whole purpose of IoT technology is to dramatically improve the way a company makes, distributes, and supports its products—and tracks and improves how the product performs in the field. Customers don't buy tires, cars, construction equipment, or air compressors for the thrill of owning those products. They buy them to have better experiences: getting from point A to point B; digging a hole faster; or making a repair quickly. Uber is a classic example of a company that has made it effortless for people to find rides quickly and pay for them easily. It has taken the friction out of getting from point A to point B. Such experience-rich systems must have the ability to continually improve and offer customers a better experience the next time.

## A Perfect Time to Bring Life to Things

As we've illustrated with these examples, the time is now for companies to seize the bountiful opportunities of implanting digital intelligence in their products, production operations, and distribution channels. Companies that have done so and brought life to things with a clear, strategic path are becoming entities that their customers can't do without.

The framework in this article points the way companies need to gain substantial and ever-improving value from their IoT investments.

# THE C-SUITE'S CHALLENGES

**How the Best CMOs are Digitally  
Personalizing the Brand Experience**

**The CIO as Digital Ecosystem Enabler**

**The New-Age CFO:  
Driver of Real-Time Business**

# How the Best CMOs are Digitally Personalizing the Brand Experience

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More customers than ever—consumers and businesses—discover products and services through digital channels. They are introduced to the brand and its products, purchase online, get online support, and make additional after-sale purchases through digital channels.

Yet, too few companies have reorganized themselves effectively enough to respond to these digital-first customers. Not nearly enough of their marketing departments are set up to offer consistently excellent, authentic, and digitally personalized brand experiences, both before and after they become customers, while preserving privacy.

In fact, from an extensive TCS study of marketing practices at more than 500 large North American and European companies, we estimate that only about one in 25 marketing

departments are highly effective at creating digitally personalized content for customers throughout the brand experience. This is despite the fact that the average company we surveyed spends 3.7% of revenue on marketing, with 38 companies each spending more than \$1 billion a year.

We see this as a major lost opportunity. The 4% of the 516 marketing organizations we surveyed that *do* personalize communications for customer journeys throughout the brand experience have created significant advantages for their companies. Their marketing is far more effective, and far more likely to generate revenue and retain customer loyalty.

We believe this small minority of marketers provide hugely valuable lessons for all marketers. They demonstrate how marketing departments need to be organized and operated for the foreseeable future.

At the very least, they make a powerful case that the time is now for marketing to go far beyond its traditional role of creating brand awareness and getting prospects to buy—and to build—digital capabilities that allow them to personalize communications for each and every customer, across the entire brand experience.

These were among the biggest findings in TCS' Chief Marketing Officer study, which we conducted this spring. In this article, we will discuss what we see as the most important findings. We will especially focus on what we have learned from the 4% of the companies in our research base that are far ahead of the game in digital marketing.

Furthermore, we explain how these marketers are using digital technology to *emotionally appeal to*—not just satisfy—customers throughout the brand experience. From numerous examples, we'll demonstrate how they are doing it through highly relevant and personalized communications that get customers to buy and positively engage.

## Most Customers Want to Interact Digitally with Companies



The evidence that a growing number of customers favor digital interactions with the companies they do business with is overwhelming. For example, even when customers visit stores, nearly six in 10 use their digital devices to compare prices and read reviews, according to eMarketer. More Americans now get their news from social media sites than from print newspapers, says Pew Research Center.<sup>60</sup>

The rise of online shaving-product sellers like Dollar Shave Club and Harry's has reduced reigning champion Gillette's share of the \$3 billion U.S. men's market from 70% a decade ago to 50% by 2018 despite Gillette price cuts, says market researcher Euromonitor.<sup>61</sup> Even business-to-business (B2B) purchases are increasingly digital. As an example, Amazon Business, an online B2B marketplace, has seen its business increase ten-fold since 2015, to \$10 billion in revenue in 2018<sup>62</sup>.

Customers' desire to begin their search for products and services has now reached products many thought needed to be physically seen before purchase. For instance, eMarketer projected U.S. online sales of furniture and home décor would top \$50 billion in 2018, the fastest-growing sector in retail ecommerce<sup>63</sup>. Online furniture giant Wayfair's revenue last year (\$6.7 billion) rose 44% from the prior year. For many customers, Wayfair's user experience beats going to furniture stores: the selection is greater, it's easier to find what you want, you can review recommendations, and using Wayfair's smartphone app you can picture the furniture in your home.<sup>64</sup>

<sup>60</sup> Pew Research Center, Dec. 10, 2018. Accessed July 24, 2019. <https://www.pewresearch.org/fact-tank/2018/12/10/social-media-outpaces-print-newspapers-in-the-u-s-as-a-news-source/>

<sup>61</sup> CNBC report, Sept. 26, 2018. Accessed July 24, 2019. <https://www.cnbc.com/2018/09/26/startups-shook-up-the-sleepy-razor-market-whats-next.html>

<sup>62</sup> Amazon Business web page, Sept. 11, 2018. Accessed July 24, 2019. <https://www.amazonbusinessblog.com/amazon-business-connects-millions-of-business-customers-and-sellers-worldwide>

<sup>63</sup> eMarketer, June 15, 2018. Accessed July 24, 2019. <https://www.emarketer.com/content/consumers-are-warming-up-to-purchasing-furniture-online>

<sup>64</sup> Wayfair press release, Dec. 6, 2016. Accessed July 24, 2019. <https://investor.wayfair.com/investor-relations/press-releases/press-releases-details/2016/Wayfair-Mobile-App-Lets-Shoppers-Visualize-Furniture-and-Dcor-in-Their-Homes-before-They-Buy/default.aspx>

## Few Marketers Digitally Personalize Communications Throughout the Brand Experience

Despite wanting to engage through digital channels, not enough customers are getting consistently compelling digital brand experiences. A key reason, we found, is that most marketing departments are focused on attracting new customers—not creating digitally personalized communications with them *after* they become customers.

To determine this, we asked CMOs about their marketing organization’s involvement—especially in digitally personalized communications—in four stages of the brand experience:

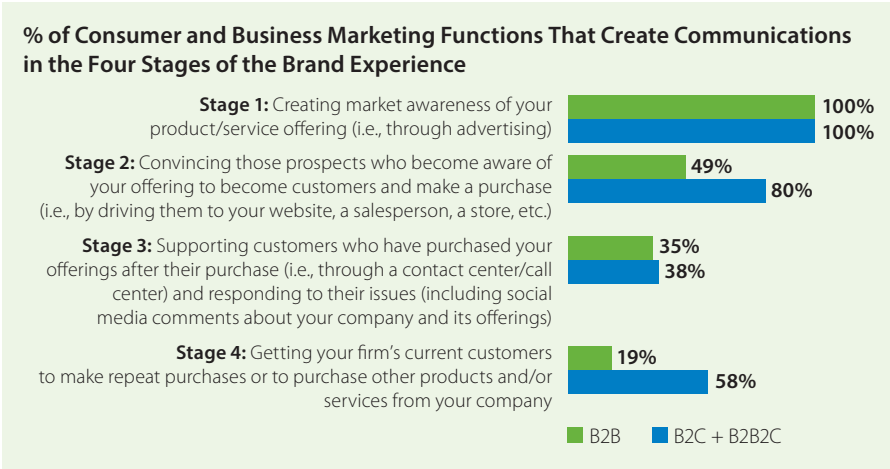
- **Stage 1:** Awareness creation
- **Stage 2:** Sales
- **Stage 3:** Customer support after the purchase
- **Stage 4:** Customer retention, cross-selling and upselling

The majority of marketers are involved in Stages 1 and 2, but not Stages 3 and 4. (See Figure 8.) In fact, we found that while every marketing team produces communications to build awareness of their products and services, only 72% are involved in sales, 37% in customer support, and 47% in retention, cross-selling, and upselling.



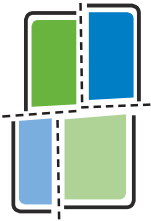
**Figure 8:** The Four Stages of the Brand Experience

The lack of engagement across all stages of the brand experience was even more pronounced for B2B companies. While 80% of business-to-consumer (B2C) marketers play a role in shaping sales communications, only 49% of B2B marketers do so. Likewise, 58% of B2C marketers contribute to retention, cross-selling, and upselling, versus only 19% of B2B companies. For customer support, B2C marketing teams showed a slight edge in participation: 38% versus 35% B2B. (See Figure 9.)



**Figure 9:** How Marketing Shows Up in the Brand Experience

### The Problem: A Lack of Brand Oversight



The biggest reason most companies fail to deliver a digitally personalized and compelling brand experience throughout the entire experience is that they are simply not organized to do so. The vast majority of companies create communications to prospects and customers with a fragmented approach, with different departments working independently on their parts of the brand experience. In general, our study found that marketing tends to run Stage 1, sales runs Stage 2, customer service handles Stage 3, and marketing and sales share Stage 4.

The traditional way these departments have been structured is now a major roadblock to digital success.

But it isn't the only one. So is the cost of collecting and managing data, which is often beyond the budget of any one department. Collecting, maintaining, and leveraging huge amounts of data on customers is expensive. As the marketing technology head of a bank's credit-card division pointed out, "The systems and licensing data management platform are not an incremental expense. You need the software, and the tools to support it. You must be able to process the data smartly, and if you are looking to do third-party data matching, that's not a cheap service." Other major expenses include vendors and of course data scientists: "The very good ones, who understand campaign strategy as well as data modelling, are not cheap," he said. Individually, none of these expenses "will necessarily break the bank. But you have to commit to all of them to get the leverage. So, it's an expensive proposition altogether."

Another challenge in building such a personalized brand experience machine is the way most companies collect customer data: without an integrated end-to-end digital experience in mind. Fragmented operating departments build fragmented data systems, intended to address their own needs rather than supporting a unified brand experience.

As a result, companies struggle to integrate data from sales, marketing, service, finance, and other systems, and customers contend with piecemeal communications from different parts of the companies they do business with.

Of course, personalization depends on data, and the best systems are useless without customer permission to use data. With the advent of Europe's General Data Protection Regulation (GDPR) and California's Consumer Privacy Act (CCPA), customers' growing reluctance to share their data further makes it difficult to provide a personalized end-to-end brand experience.

That said, customers tend to be more willing to grant permission for companies to use their data if they



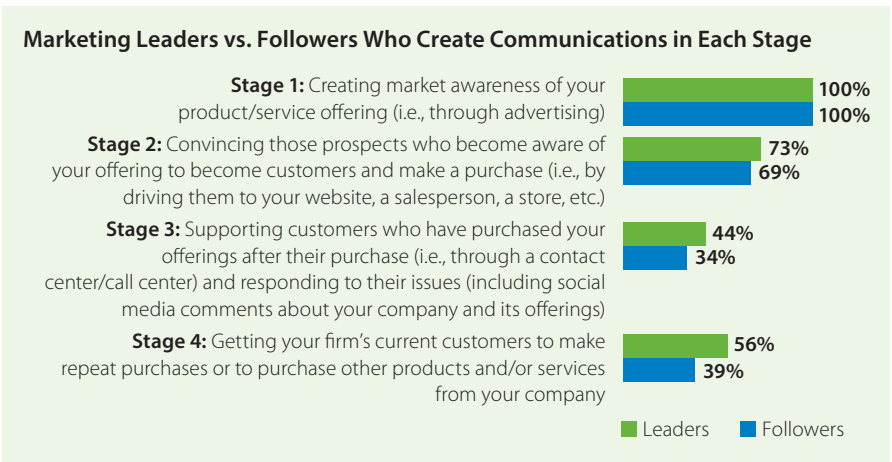
get something valuable in return, such as discounts or rewards, or an authentic, delightful experience. Surprisingly, only 45% of the companies we surveyed have customer loyalty programs, although this varied widely by sector. While 92% of retailers and 78% of financial services firms offer them, only 2% of industrial manufacturers and none of the media/entertainment/information firms do.

## The Solution: Put Marketing in the Center of the Entire Brand Experience



To understand what the best marketers do differently than the rest, and how they digitally personalize the brand experience, we analyzed the survey responses of 16% of our 516 surveys. These 85 marketers were those that said they had a strong impact on metrics such as revenue and customer retention—an impact that was measurable and accurate. We deemed these marketers as ‘leaders.’ We also identified ‘followers’—95 marketers who told us that marketing in their companies had a weak impact on key metrics, and whose accuracy they couldn’t vouch for.

We found that marketing leaders were more likely than followers to create communications in all four stages of the brand experience. (See Figure 10.) The differences between marketing leaders and followers was greatest in Stage 4:



**Figure 10:** Communication in the Four Stages of the Brand Experience

Another key difference between leaders and followers is that leaders are more likely to possess data that customers willingly give up, for example via loyalty programs. More than half of leaders (54%) have loyalty programs, compared with only 41% of followers. Leaders were also more aggressive in using such data. Some 44% of them use analytics to understand behavior in Stage 3 (customer service), compared with 26% of followers. Likewise, 54% of leaders use analytics in Stage 4 (retention, cross-selling, and upselling) vs. 38% of followers.

Yet only about a quarter of these marketing leaders created communications for prospects and customers in all four stages of the brand experience. We believe the practices of these 23 CMOs—the elite digital marketers, or if you will, the leaders of the leaders in our study—deserve even greater scrutiny. The way we see it, they provide many CMOs with a bird’s-eye view of what marketing functions are going to look like over the next decade.

The way we like to put it, these marketers will not only focus on using digital technology to keep customers satisfied; they’ll maintain an online

relationship with customers that provides incremental value. That value, most of all, takes the form of helping them choose, use, and get more out of the products and services they buy—with such support especially coming at moments when customers need the most help.

All this takes substantial amounts of digital customer data, unification of that data, cloud computing prowess to process and use it in real time, and savvy uses of artificial intelligence and other predictive technologies to deliver personalized experiences when customers need it.

Marketers that can do this throughout the brand experience won’t just keep customers satisfied; they’ll keep customers delightfully engaged. As the CMO of a large travel services company told us, “Marketing must be integrated with all four stages to succeed. Due to the evolving role of marketing, more and more functions are increasingly under the marketing umbrella.”

Let’s explore how these elite marketers are doing that today.

## Who Are These Elite Digital Marketers, and What Do They Differently?



Who are these elite digital marketers? Most are in B2C companies (61%), while 30% have a fairly even mix of B2B and B2C revenue.

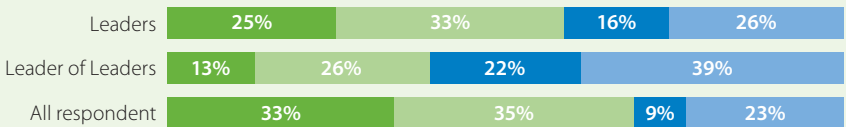
One is a pure B2B company, and one is B2B2C. About a quarter (26%) are retailers or consumer packaged goods companies; 22% are telcos; and 35% are in financial services (including banking and insurance).

Seventy percent are based in the U.S.; 22% are in the UK, Netherlands, or Germany, and 9% are in Canada. Sixty-one percent had revenue between \$5 billion and \$10 billion, and 57% had a marketing budget of at least \$500 million.

One of the biggest differences between these elite digital marketers and the rest of the CMOs we surveyed was where they believe they should spend their resources on digital personalization: on prospects or existing customers. Their answer: the customers their firms already have.

The majority of the elite marketers (61%) believe that between now and 2020 they should focus their digital personalization on Stage 3 (supporting existing customers) and Stage 4 (retaining, cross-selling, and upselling to them). Only 42% of leaders and 32% of all survey participants said the same thing. (See Figure 11.)

### Marketing Leaders vs. Followers Who Create Communications in Each Stage



- **Stage 1:** Creating initial awareness of our offerings
- **Stage 2:** Convincing customers who become aware of our offerings to purchase them
- **Stage 3:** Responding to customers queries on social media and providing post-sale customer support
- **Stage 4:** Getting existing customers to make repeat purchases or new purchases

**Figure 11:** Where the Best Marketers are Focusing on the Brand Experience

What do the elite marketers do differently in each of the four stages? Put another way, how do they keep customers mesmerized—pleased and even dazzled by the information, support, and capabilities that they get, especially after they become customers. We found that they are using digital technologies in at least six ways: to surprise customers with unexpected help; delight them with greater value; enlighten them with useful information; prepare them for the unexpected; reassure them by proactively addressing concerns; and unburden them by streamlining tasks using advanced automation. (See Figure 12.)

Figure 12 summarized these approaches, provides examples, and discusses their impacts. We found these marketers are going beyond the norm in attracting and keeping customers.

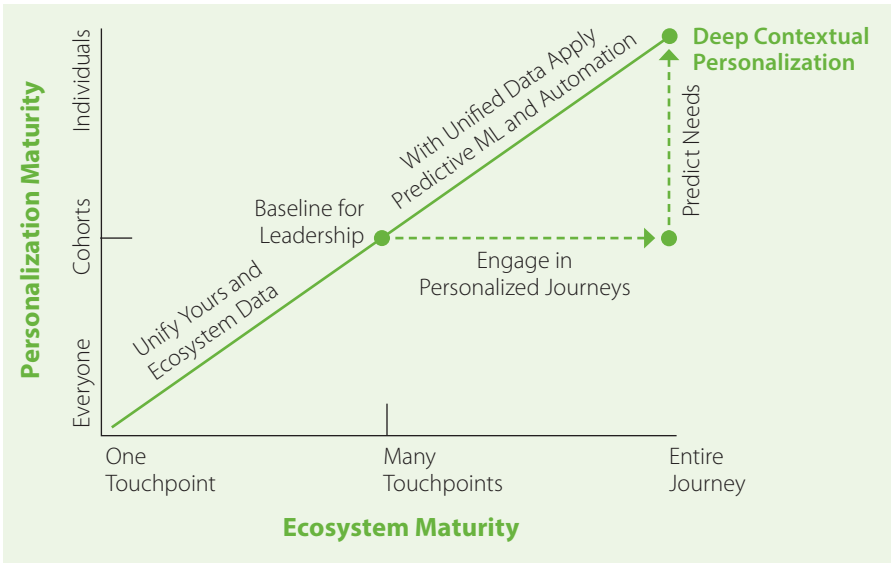
These six ways illustrate how the best digital marketers that we surveyed are using the technology to attract and convert more customers, as well as to keep them loyal and buying more. What they do is turn the marketing function on its head, both in its ability to:

- **Scale up the personalization of communications** to tens of thousands, or even millions of customers. This truly moves the old-world of mass marketing of common messages to the new world of individualized messages.

## Six Ways Digital Technology Can Keep Customers Mesmerized

Elements	When	How	Impact	Examples
<b>Surprise them...</b> with unexpected help	Stage 2, 3, 4	Sensors, software, and social media analytics that track when customers struggle	Greater customer satisfaction	Sephora uses Bluetooth-enabled sensor beacons to guide customers through the store and offer promotions.
<b>Delight them...</b> with greater value and customized options	Stage 2, 3, 4	Video and personalized interfaces that show how to use or operate a product	Better, more extensive use of offerings, ease purchase decisions	Warby Parker's app uses face mapping and AR to let people virtually try on its glasses
<b>Enlighten them...</b> with useful information	Stages 1, 2, 3, 4	Articles, tutorials, videos, real-time Q&As	Solves problems, convinces people they need your product	Beauty-product seller Glossier hosts a blog to educate customers about makeup.  Apple offers instructional videos to help customers get more from its products.
<b>Prepare them...</b> for the unexpected	Stage 4	Apps and sensors that help users manage risks	Trust and reliance boosts loyalty	A pharma company is launching digital-sensor implants to report livestock health issues.  Apple Watch—'part guardian, part guru'—helps users manage health conditions.
<b>Reassure them...</b> by proactively addressing concerns	Stage 3, 4	Messaging that informs during moments of tension and crises	Demonstrates that the brand understands customer concerns	An asset management firm develops personalized videos from money managers during market upheaval.
<b>Unburden them...</b> by streamlining tasks and advanced automation	Stage 2, 3, 4	Apps, sensors, blockchain, and cloud services that simplify life	Mesmerizes the customer by automating routine tasks	Disney's MagicBand digital bracelet handles payments and other logistics at Disney World.  Neiman Marcus' Snap Find Shop app lets users take a picture of shoes or a handbag and find similar items on the company's website.

**Figure 12:** How the Best Marketers Use Technology to Attract and Keep Customers



**Figure 13:** The Journey of Intelligent Orchestration of Customers

- **Extend market’s scope** from a few touchpoints (commonly in Stage 1 or 2) to the entire customer journey, the full brand experience which begins when a customer learns about a company and ends when that customer no longer does business with that company. (See Figure 13.)

The core capabilities required to do that are not built in a day, week, or month. It’s why companies that build them gain a significant edge in attracting and keeping customers. Let’s explore what those capabilities are next.

## Five Core Capabilities Behind the Best Digital Marketers

What underpins the ability of these elite marketers to mesmerize prospects and customers with digital technology? We see five core capabilities:

**1. Integrated systems that collect data** (in marketing, sales, support, finance, etc.) on customer interactions in all four stages of the brand experience. For followers, this is frequently a problem. One senior marketing executive for an insurance company indicated that his team does not have access to the sales department's customer database. Instead, they receive spreadsheets from sales about who to target with new promotions, but these arrive months late.

**2. The ability to provide digitally personalized and highly relevant information** to prospects and customers throughout their brand experience with the company. It's far more important to these elite marketers to provide helpful information to customers in each of the four stages than it is offer special deals and prices. In our view, their thinking is this: "The more that we help prospects make better buying decisions and get more value

from our offerings after the purchase, the more they will buy from us." We know from the way CMOs answered our question about which types of communications will be most important to personalize by 2020. In all four stages, a far higher percentage of elite digital marketers said it was useful product/service information than said it was messaging about special deals. The entire survey population tended to see these two types of information as equally important in each of the four stages.

**3. Customer loyalty programs.** Some 78% of elite marketers have them, vs. 54% of leaders and 45% of all respondents. That said, not all loyalty programs are effective. They work best when they go far beyond offering points for additional purchases, and extend customer benefits via other partners. For example, Australian retailer Woolworths' loyalty program

partners with Qantas, amusement parks, and other entities. This has boosted satisfaction and retention. Loyalty programs must also be personalized so that they are relevant to the company's customers. A customer who doesn't travel abroad should not get offers for foreign travel.

**4. Extreme amounts of marketing automation.** The elite marketers have automated far more of their marketing operations than the rest of the survey population. 60% of their marketing-tech infrastructure is currently cloud-based—a critical requirement for automation—versus 51% for all surveys. By 2020, they project 80% will be cloud-based compared to 70% for all respondents. A higher portion of elite marketers

(83%) value artificial intelligence (AI), machine learning (ML), and big data/ analytics skills for marketing today and in the future. Automating a greater portion of marketing operations frees up marketers to spend more time on creative pursuits, such as creating new campaign ideas, producing better messaging, and the like.

**5. Agile campaign teams.** Outside of IT, marketing has been among the first adopters of agile, project-based teams. 87% of the elite marketers we surveyed use agile to run marketing campaigns, compared to 64% for all respondents. About half (52%) of the elite marketers' agile teams discuss making adjustments to live marketing campaigns at least once a day; only 31% of all respondents do the same.

CMOs need to more deeply understand how to manage the technology, and they should partner with the CIO to do so.



## Next Steps: Winning the Digital Marketing Challenge

So how can CMOs build the capabilities mentioned above so they can offer mesmerizing brand experiences that attract, retain, and continually provide more customer value? Regardless of where a company is on this journey, several essential steps can help promote progress.

First, the marketing team must redefine its mission. Instead of focusing on creating awareness and driving prospects to make purchases, the team must commit itself to engaging across all aspects of the brand experiences. It must provide leadership and produce communications to attract, keep, and continually satisfy profitable customers for life, by providing an engaging brand experience.

The marketing team must also restructure to get closer to sales and support functions. In companies where it's become crucial to constantly connect with the customer throughout the brand experience, the walls between marketing, sales, and support must come down. Marketing leaders need to be influential throughout the brand experience, although there are different approaches to making this happen. Some companies are expanding the CMOs' remit. In others, CMO positions are being replaced by "chief growth" or "chief revenue" or "chief commercial" officers who oversee marketing and sales. Hyatt Hotels eliminated its CMO position in early 2019 and replaced it with a chief commercial officer reporting to the CEO. The CCO runs sales, marketing, customer service, loyalty programs, and more<sup>65</sup>.

CMOs must also become deeply familiar with digital technology. Earlier this decade, Gartner predicted the CMO would spend more on technology than the CIO by 2017. That has happened. However, CMOs need to more deeply understand how to manage the technology, and they should partner with the CIO to do so.

CMOs should also work closely with company technologists to simplify the increasingly complex tangle of marketing, sales, and support technologies. The typical CMO that we know has dozens marketing tools and hasn't tied them

<sup>65</sup> AdAge article, July 15, 2019. Accessed July 24, 2019. <https://adage.com/article/cmo-strategy/why-more-brands-are-ditching-cmo-position/2183166>

together. Simplification of marketing's technology stack of technologies has to be the CMO's priority.

Finally, if marketing is to become more involved across all four stages of the brand experience, it is essential to make sure they dedicate much more technology to supporting Stages 3 and 4. That's what the elite marketers do, and that requires CMOs to be measured not just on metrics in Stage 1 and 2 (awareness and leads) but also metrics in Stage 3 and 4 (i.e., retention, satisfaction, customer expansion, and loyalty).

## **A Brave New World for Marketing**

Marketers must exercise leadership and work rapidly with their counterparts in other customer-facing functions (sales, service, etc.) to organize how the company communicates digitally and individually with customers throughout the brand experience. They must do this to reach their target market both before and after they become customers.

Companies that use digital technology to create personalized and superior brand experiences will make it difficult for customers to switch brands. Further, the more that customers trust their brands, the more they'll interact, and the more data they'll provide on what they need. This virtuous cycle will in turn build a brand that is irreplaceable to customers and nearly invincible to competitors.

Companies that use digital technology to create personalized and superior brand experiences will make it difficult for customers to switch brands.

## The CIO as Digital Ecosystem Enabler

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Few executives are better positioned to help their companies navigate the complex landscape of digitally transfigured business models than the chief information officer. After all, many CIOs have championed successive waves of technology-enabled business change over the last three decades.

CIOs were a force behind the business re-engineering movement in the 1990s, and they initiated the shift to enterprise software that followed. Now they are helping drive the digital transformation of whole businesses, and new agile ways of working. By shifting IT infrastructure to public cloud computing vendors, CIOs are making IT more flexible, affordable, and powerful. And many have introduced analytics, artificial intelligence (AI), machine learning, and advanced automation to enable new, more personalized customer experiences and higher employee productivity.

TCS' 2020 CIO Study of 1,010 companies confirms, in fact, that CIOs are playing key roles in their companies' digital transformations. A large majority of CIOs (75%) have helped develop their firm's digital transformation strategy<sup>66</sup>.

But having an IT leader at the strategy table is no longer enough. It won't ensure that companies will succeed in a world where digital ecosystems are erasing traditional industry boundaries. CIOs must also help their companies sort through the opportunities and threats that abound in the digital ecosystems in which they belong.

In every industry, one-to-one relationships with suppliers, distributors, and customers have morphed into a web of interactions: orchestrators that offer platforms of services (such as Uber, which connects drivers and passengers, and facilitates grocery and package deliveries); producers that deliver a product or service on multiple platforms (such as PayPal); and consumers (firms or individuals who buy or use a product or service).

Companies can play multiple roles in a digital ecosystem. For example, Amazon offers cloud services to the public as an orchestrator and uses its cloud platform as a producer to deliver its video streaming service<sup>67</sup>.

As companies look beyond their existing partner and customer relationships to participate in digital ecosystems, they face threats and opportunities. CIOs must be aligned with other company leaders on digital strategy and collaborate strongly with them. Those who are aligned can help identify new digital business models that fit with the company's strategy; spot threats from both traditional rivals and partners, and digital upstarts; and pinpoint opportunities to work with non-traditional partners.

CIOs can help by connecting their companies' digital transformation initiatives to their ecosystem strategy.

<sup>66</sup> TCS, "How CIOs Are Helping Their Companies Navigate the Digital Ecosystem," accessed August 13, 2019 at: [https://sites.tcs.com/bts/wp-content/uploads/TCS\\_2020\\_CIO\\_Study\\_Key-Findings\\_General-Release\\_REV-FIN-2.pdf](https://sites.tcs.com/bts/wp-content/uploads/TCS_2020_CIO_Study_Key-Findings_General-Release_REV-FIN-2.pdf).

<sup>67</sup> TCS Perspectives, "Defining Your Digital Ecosystem: The First Step in a Machine-First Transformation," March 2019.

## First Up: Look Outward



To participate in digital ecosystems, a company has to do more than digitally transform itself. CIOs can help by connecting their companies' digital transformation initiatives to their ecosystem strategy. Along the way, CIOs must help the top management team navigate the critical but hazardous landscape of external digital partners.

While alliances and partnerships are critical for companies to flourish in a digital ecosystem, our study found that CIOs aren't greatly involved in cultivating them. Only 21% of CIOs play roles in developing alliances and partnerships. In contrast, about half (51%) of the corporate strategy officers are doing this work.

In addition, the CIOs we surveyed are rarely involved in budgeting for digital transformation initiatives. Only 18% play a part in making decisions on allocating corporate resources for digital transformation. That role is more likely to fall to the CEO (35%) or the CFO (29%).

And yet, the top management team and board of directors who are making digital alliances and deciding how much to spend on digital initiatives often lack deep experience with digital business models. CIOs said that only about half (49%) of their companies' top leadership team has deep experience with digital business. That leaves many firms without a lot of digital savvy at the top.

But with their digital expertise, and by interweaving their communications about their companies' path from digital transformation to ecosystem engagement, CIOs can be instrumental in helping the C-suite and board think about the opportunities in a world of digital ecosystems.

## What CIOs Bring to the Table



From our experience, creating an effective ecosystem strategy begins with gaining top management consensus that much traditional business wisdom is now outdated. The most important conventional wisdom to reject is that companies must compete fiercely with others for the same resources, talent, and customer segments. Rather, collaboration among ecosystem participants amplifies the collective value they can gain by sharing computing resources, data, and talent.

How do CIOs forge such consensus? By bringing their knowledge of successful digital transformations to discussions with their C-suite colleagues. The TCS CIO Study identified a subset of ‘digital leaders’ forever delayed—22% of respondents that have enterprise-wide digitization initiatives with strong leadership in place, have established digitally-enabled business and operating models, products and services, and have increased revenue substantially from their digital offerings during the past decade. Among these companies, 86% of respondents in the study said their CEOs supported their digital vision.

The study also identified ‘followers’—22% of companies whose digital initiatives are in the pilot phase or limited to a few business units. They report weak success at increasing revenue from their digital efforts this decade. In these companies, only 65% of their CIOs said their CEOs agree with their digital vision.

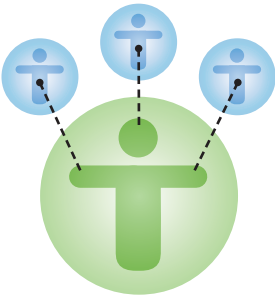
In addition to playing the role of consensus builder of a digital strategy, CIOs can also bring knowledge about agile ways of working to the conversation. The practice of bringing teams with diverse knowledge and skills together to rapidly create, test, and refine new products, services, business processes, and business models is key to digital transformation.

CIOs can also bring their organizational change management experience to the table as an essential aspect of establishing such agile approaches.

When aligned with business strategy, and supported by a robust and flexible technology infrastructure, agile work

processes enable a company to be more responsive to customer needs. Because it emphasizes constant experimentation and incremental improvement, an agile approach is perfect for testing ecosystem relationships with new customers, partners, and suppliers.

## The CIO as Ecosystem Enabler



When a company's leaders agree on their digital ecosystem strategy and how to execute it, CIOs can bring another wellspring of knowledge to the table: technology-based platforms. The technology platforms underpinning today's ecosystems provide more efficient ways to connect customers with the products and services they want, cutting out the middleman both upstream and downstream. CIOs

can help to enable these connections across ecosystem partners.

CIOs can be essential to scouting for business partners and maintaining relationships with those that become crucial. The CIO of a leading financial technology firm knew the company had to strike key relationships with ecosystem partners. This CIO convened internal stakeholders, external partners, and vendors to identify ways they could gain from working together in a digital ecosystem. The CIO also readied the organization's IT foundation, enabling the company to use a cloud

infrastructure to create a collaborative business platform that provides advanced analytics and decision-making tools for participants. The result: a frictionless platform for suppliers and ecosystem partners to collaborate.

The example above summarizes the steps that CIOs can take to help their companies participate in digital ecosystems: find partners, evaluate

ideas for partnering, and deploy the needed infrastructure and applications. All this must focus on creating future capabilities, whatever they might be, rather than a set of specific products or services. Platform participants will determine how to benefit from it, which may change over time.



Here's the way this worked at a major information services firm. The CIO had a complex job to identify prospective partners for a new digital ecosystem that the company had to participate in. The following practices turned out to be valuable:

- **Starting from a strong IT foundation.** To take advantage of the digital ecosystem, a company first has to ensure its existing core applications are modernized.
- **Assessing available data resources.** The CIO and other business leaders analyzed the company's existing large data sources to identify areas where the digital ecosystem could be useful.
- **Taking ideas from anywhere.** Ideas about how to capitalize on technology are no longer the exclusive domain of IT. In fact, enterprise innovation groups get bombarded with proposals from other internal teams. Innovations can also be inspired by competitors, or by companies in other industries, provided CIOs stay abreast of market trends.
- **Creating a lightweight vetting process.** The traditional vetting process is often time-consuming, and many ideas are scrapped before they are properly considered. An ecosystem-friendly evaluation process should require minimal effort to identify ideas with maximum potential benefit for simplifying, harmonizing, and rationalizing business processes.
- **Generating small, quick wins.** Companies that use agile approaches to create new digital products, services, and business processes find they no longer have to seek big, 'silver bullet' innovations. Small projects that create positive results quickly (or dispel unworkable ideas before they consume too many resources) enable CIOs to maximize the time and budget allocated for digital ecosystem experimentation.



When a company joins a digital ecosystem, it may participate as an orchestrator, producer, or consumer. It's very possible that it could benefit from playing all three roles, provided it makes the needed investments in infrastructure and software. As for earlier waves of automation, CIOs have a critical role in helping their companies create the platforms for hosting ecosystem activities. They can also be instrumental in setting up the systems to produce goods and services that ecosystem partners, and the company itself, will buy.



The CIO of a leading UK telecommunications provider worked with his C-suite colleagues to inject ecosystem thinking into their business strategy. The CIO helped to define automation initiatives that were essential to executing the strategy including:

- Redesigning the firm's cloud-based integration architecture to support open standards so that key suppliers could connect to it.
- Automating customer-management processes with clearly defined business service-level and operational-level agreements. Device provision, security, and payments were also candidates for automation.
- Restructuring internal supply and vendor management functions by defining the parameters for cybersecurity, legal, and partnerships.
- Shifting to an agile way of working and a DevOps approach to software development. This required automating much more of the software development process.

This example shows how CIOs can lead efforts to build the ecosystem platforms that support new capabilities and future growth.

When a company joins a digital ecosystem, it may participate as an orchestrator, producer, or consumer.

## Putting Ideas Into Action

A number of CIOs have taken the actions we describe above and have become key players in their company's digital ecosystem strategy. One of them is Atticus Tysen at Intuit. He is leading a digital transformation. A few years ago, the company experimented with its popular TurboTax software to ask an expert a question via videoconference during tax-filing season or to sign up and get an expert to help them complete the process. The project led to the launch of TurboTax Live.

The IT organization contributed more than its technology expertise; it also applied its knowledge of how to schedule agents<sup>68</sup>. "The modern-day CIO needs to be able to teach and influence their C-suite peers on how to understand new technologies and how the CIO can best enable the business to thrive and succeed", Tysen wrote in a recent blog post. "Through strong collaboration with business partners, CIOs can help to transform themselves to be strategic business partners to ultimately provide delightful technology-driven customer experiences<sup>69</sup>."

At Sun Life Financial, CIO Mark Saunders has led a transformation that turned the IT function from a backwater to an agile innovation engine. For example, agile work processes facilitated the launch of products like Ella, an AI-enabled customer service agent that by 2018 had been used by 1.6 million of its Canadian customers<sup>70</sup>.

<sup>68</sup> CMO.com, CIOs: The New 'Chief Enablers' Of Digital Transformation, April 8, 2019. Accessed August 7, 2019, <https://www.cmo.com/features/articles/2019/4/3/cios-the-new-chief-enablers-of-digital-transformation.html#gs.qszc80>

<sup>69</sup> CMO.com, The CIO's Big Job in the Next Data-Driven Era, March 25 2019. Accessed August 7, 2019, <https://www.cmo.com/opinion/articles/2019/3/21/intuit-atticus-tysen-on-the-role-of-cios.html#gs.qsxobb>

<sup>70</sup> IT World Canada, Canadian CIO of the Year [Private Sector] Mark Saunders, December 4, 2018, Accessed August 7, 2019. <https://youtu.be/VSE6PzY3dPw>

Sun Life was an early adopter of mobile apps and the smart home assistants, Alexa and Google Home, to provide services for consumers of its financial and insurance products. The company uses advanced analytics and automated services to remind consumers how to take advantage of the company's products and put their money to work<sup>71</sup>. "At Sun Life, our purpose is to help our clients achieve lifetime financial security and lead healthier lives," says Saunders. "Technology is a huge part of enabling our purpose and how we interact and support our clients with the products and services that we provide."<sup>72</sup>

## Participating in digital ecosystems has become a requirement—not an option—for every company and CIOs must play a crucial role.

Participating in digital ecosystems has become a requirement—not an option—for every company and CIOs must play a crucial role. Those that have done so have become key players in digital transformations, many of which have elevated their companies during a time of complex challenges and change.

<sup>71</sup> CMO.com, CIOs: The New 'Chief Enablers' Of Digital Transformation, April 8, 2019. Accessed August 7, 2019, <https://www.cmo.com/features/articles/2019/4/3/cios-the-new-chief-enablers-of-digital-transformation.html#gs.qszc80>

<sup>72</sup> IT World Canada, Canadian CIO of the Year [Private Sector] Mark Saunders, December 4, 2018, Accessed August 7, 2019. <https://youtu.be/VSE6PzY3dPw>.

## The New-Age CFO: Driver of Real-Time Business

### Author

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It's enough to stir every chief financial officer in their sleep. Big companies have spent immense sums this decade to digitally re-engineer their businesses—a projected \$1.2 trillion this year alone, according to one estimate. Like a nuclear arms race, the investments are expected to soar to an average \$1.5 trillion annually over the next four years<sup>73</sup>. That spending has not only kept some CFOs awake; it has turned many into key players in digital initiatives—executives who must diligently weigh competing and sizable demands on corporate funds.

However, there's an equally important reason for CFOs to be at the core of their companies' digital overhauls. It's that their department possesses financial and other information essential to running a business in real-time. The data that courses through the finance department—if digitized and analyzed with artificial intelligence—can help business leaders know daily or weekly which areas of the business need more capital and which need less to keep the company on track. What's

<sup>73</sup> International Data Corp., web page, April 24, 2019. Accessed Aug. 12, 2019. <https://www.idc.com/getdoc.jsp?containerId=prUS45027419>

more, that data can help that company detect and respond rapidly to changes inside and outside their companies.

This is a very different role for CFOs. It is about making them drivers of real-

time businesses. CFOs who wish to step up the challenge will need to take up the charge of front-to-back office transformation. Some may need to start with a back-office digital overhaul to demonstrate their digital chops.

## Real-Time Business Has Come to Finance

For years, finance departments in most big companies were a back-office function focused on controlling enterprise costs, while running an efficient department. However, the accelerating pace of business has forced many CFOs to digitally and markedly improve key finance processes.

One is the cash conversation cycle—the days it takes to turn inventory into cash from customers who purchase it. Another is financial closing, the month-end closing of the books. A benchmarking study of 2,300 organizations last year found the top 25% closed the books in less than half the time (4.8 days) of the worst 25%.<sup>74</sup>

And a third key process that many finance organizations are rethinking is forecasting and planning. This, of course, includes budgeting and capital allocation. This is a much longer-cycle process that requires business lines and functions to submit annual budget requests, and then for finance chiefs and their staffs to sort through them. A new wave of finance planning and analysis solutions (FP&A) promises to help CFOs get a better grip on their companies' short- and long-term capital as well as other resource needs.

Many CFOs have overseen major improvements in these and other finance activities. But from now through the next decade, a CFOs work will need to have an even greater impact on their companies. A key reason is that their businesses are increasingly operating in digital ecosystems—marketplaces in which digitally savvy competitors have swooped in from outside the industry's boundaries. These companies—

<sup>74</sup> APCQ study, as reported in CFO.com. Accessed Aug. 10, 2019. <https://www.cfo.com/financial-reporting-2/2018/03/metric-month-cycle-time-monthly-close/>

for example, Spotify and Apple in music, Facebook and Google in newspaper and magazine publishing, and Amazon in retailing, cloud computing services, digital advertising, and (most recently) package delivery—have changed the game, cost-wise, cycle-time wise, and customer experience-wise.

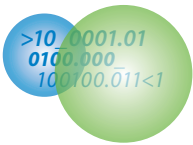
Consider marketing and customer service. Social media has accelerated the time it takes for problematic products and services to be publicized. Reputational damage can spread in minutes around the world to millions of customers/prospects when a key online influencer impugns a company's actions or motives. Marketing must be able to respond much faster.

Product development cycle times are shrinking fast in every industry, from aircraft engine manufacturing to appliances. Rolls-Royce aircraft engine embarked on a digital transformation initiative with the goal of reducing time to market by 50%.

Supply chains have become more digitized, in part to become more 'flexible' and streamlined, and in part to reduce 'shrinkage' from theft and other causes.

But this is not enough. There's a much bigger digital game to play here for CFOs. It's to help their companies stave off online competitors that could make a business model obsolete.

## When the Digital Ecosystem Lets Digital Competition In



We all know how online retailers like Amazon have turned the economics of store-based retailing upside down; how digitally connected transportation service companies like Uber and Lyft have taken share from many taxi businesses; and how music, newspaper, and magazine empires have been dismantled by online media such as Google, Facebook, Spotify, and Apple.

But many other businesses are now under attack beyond the obvious ones. The global insurance industry is a case in point. Selling many insurance products today doesn't require a human touch. (Neither does delivering consumer banking services.) For

example, car insurance can easily be sold today through car manufacturers. They should have an inside edge: knowing exactly how well (or not) customers actually drive. It is no surprise that Tesla Inc. launched its own insurance program earlier this year, asserting it would provide a lower-cost option to customers with good driving records.<sup>75</sup>

The old distribution network won't save the insurance industry. Only better service, competitive rates, and better marketing will. That's a lesson that the record stores, newspaper, and magazine publishers, in addition to many book retailers have already learned. Online distribution makes it easy to deliver digital products to customers; insurance, news, music and banking services are, in fact, digital products.

Few executives are better equipped than CFOs to help top management think through the short- and long-term financial implications of the new business models that are coming into

play when industry boundaries vanish and digital ecosystems become the new structure. In fact, TCS research this summer on how more than 1,000 North American and European companies have organized for digital transformation this decade found CFOs were key in driving budgeting decisions in these initiatives. In 29% of the companies, CFOs helped drive budgeting for digital transformation, second only to CEOs (who played a budgeting role in 35% of the companies we surveyed).

Still, not enough CFOs are helping drive digital strategy development, this year's survey found. Only 10% were—a much lower percentage than CIOs (75%), production heads (53%), R&D chiefs (40%), and CEOs (28%).

How can CFOs play a much bigger role in digital transformation—now and over the next decade? By ushering in what I call front-to-back enterprise transformation. Those who do so will play a key part in turning their companies into real-time businesses.

<sup>75</sup> *Wall Street Journal*, May 7, 2019 article. Accessed Aug. 9, 2019. <https://www.wsj.com/articles/tesla-plans-to-sell-owners-cheaper-car-insurance-11557221400>

## Front-to-Back Enterprise Transformation: The Basics

From TCS experience, CFOs who have been key players in their companies' digital overhauls stand out in three ways: they are extensively involved in developing next-generation business models; they embed finance professionals in key business functions and use data and analytics to help functional managers make better decisions; and they ensure technological innovation gets sufficient funding. Let's look at each one.

### 1. Developing next-gen business models.



Everyone knows that media companies like Disney and HBO have to transform themselves for the world of streaming video. Digital business model innovation is also rampant in financial services. Consider Apple's new credit card (to be administered by investment bank Goldman Sachs). For both companies, the consumer credit card is a whole new venture.<sup>76</sup> Many CFOs are playing crucial roles in such business model innovation. In a 2018 TCS survey of 689 senior finance officers in U.S. and European companies, 44% said a key way for them to drive revenue growth is getting extensively involved in new business model development.<sup>77</sup> The CFO of Koch Industries, a privately held, \$110 billion company, is a prime example.<sup>78</sup> "The future is an exciting challenge for us, one that we readily accept," said Steve Feilmeier. "We're intentionally paranoid about every business we're in. We think that the future will dramatically change every business and no one is exempt." As an example, he cited the company's Georgia-Pacific unit, which makes bathroom tissues and towels. Feilmeier said there is a \$60 billion market to service office and other building bathrooms, of which more than 25% of goes to labor. Much of that, he believes, could be "eliminated or redeployed to higher value-added tasks. We must be willing to cannibalize ourselves, because if we don't innovate ourselves out of a job, someone else definitely will." All to say, CFOs can be instrumental to business model disruption.

<sup>76</sup> Wall Street Journal article, Feb. 21, 2019. Accessed Aug. 12, 2019. <https://www.wsj.com/articles/apple-goldman-sachs-team-up-on-credit-card-paired-with-iphone-11550750400>

<sup>77</sup> TCS.com web page with CFO study. Accessed Aug. 6, 2019. <https://sites.tcs.com/bts/cfo-consulting-digital-transformation-research-lp/>

<sup>78</sup> Forbes article by Robert Reiss, April 24, 2017. Accessed Aug. 12, 2019. <https://www.forbes.com/sites/robertreiss/2017/04/24/how-industry-leading-cfos-utilize-digital-to-drive-growth/#7799994a29c6>



## 2. Embedding finance in key business areas and business decisions.



When their firms compete against digitally savvy startups, CFOs in established companies

are at a distinct disadvantage: Early-stage companies don't have 'siloes' that exclude finance people from participating in pricing, marketing, and other consequential decisions. A key move to become more agile is placing finance professionals in functional areas: marketing, sales, pricing, product development, among several. One firm (Everest Group) refers to such people as 'agile ninjas.' Using analytics, these finance pros can then help functional managers make consequential and ongoing decisions on growth investments such as marketing campaigns, pricing decisions, new product development, and strategic partnerships. But they can't just be number-crunchers. They need the personal traits and skills to spur innovation in marketing, sales, R&D, and other functions in which they

are deployed. These include empathy, communication, and instructive questioning. Finance pros adept at data and analytics could help every business function make better decisions. Consider the marketing function. This would be a major change from most current marketing budgeting approval processes, in which marketing's request for an annual budget is scrutinized once every 12 months. Deeply embedding finance professionals who are highly trained in making analytics-based decisions is a best practice at a growing number of companies, particularly in digital businesses (which revolve around using digital data to make daily, and sometimes hourly or more frequent, changes in their websites). One caution: Finance professionals need to bring customer-centric (not just financial) metrics to these business functions. Customer experience measures such as Net Promoter Score and time to market are as important as traditional finance metrics like cash flow, capital adequacy, and expense ratios.

### 3. Funding tech innovation (especially in financial planning and analytics solutions).



Because they're charged with keeping tight financial controls, CFOs play a key role in ensuring that their company makes prudent investments in technology. TCS research on digital transformation and ecosystems

found that in the most digitally successful companies this decade, CFOs have played a key role in establishing the budgets for these initiatives. CFOs should establish an enterprise budget for company digital transformation.

**(See "How to Turn Finance Into an Internal VC for Digital Innovation.")** Then they should adopt a venture capital

model to making investments: create cross-functional teams charged with developing minimum viable products or digital processes, which are then tested with real customers and refined based on their feedback. Those that 'stick' should get additional funding; those that don't, shouldn't. This will help get cross-functional buy-in. Funding is a key success factor; 45% of 200 executives at companies surveyed by Everest Group didn't implement their digital initiatives because of insufficient funding.<sup>79</sup> Ensuring the right level of investments go to key digital initiatives is crucial, and not just for current initiatives. CFOs must also play a longer-term game with tech investments. That's why they need to implement FP&A solutions that can help their organizations sketch out various digital ecosystem scenarios, plot out competitive moves, and shed light on the tech investments (both money and time) necessary to remain vibrant companies.

<sup>79</sup> Everest Group 2019 publication, "Reimagining the Enterprise Operating Model." [https://sites.tcs.com/bts/wp-content/uploads/Everest-Group\\_TCS\\_Reimagining-the-Enterprise-Operations-Model.pdf](https://sites.tcs.com/bts/wp-content/uploads/Everest-Group_TCS_Reimagining-the-Enterprise-Operations-Model.pdf). Accessed August 12, 2019.

# How to Turn Finance Into an Internal VC for Digital Innovation

CFOs should consider the adopting practices of venture capital firms to fund internal digital innovation.

1. The first step would be creating a portfolio of digital transformation projects.
2. The second would be pooling capital across the company—divisions, product lines, and functions—to help seed cross-functional interest and potential digital breakthroughs (products and processes).
3. The third step would be to group talent, knowledge, data, and other resources that had been working in different corners of the organization. Having a nucleus of employees with digital and domain expertise who work together as a unified team (whether physically together or operating remotely) can markedly accelerate digital projects. (The beneficiaries of those projects would, of course, be the business functions, product groups, and business units that provided funding.)
4. In the fourth step, the digital team would conduct rapid prototyping of new digital products and processes. The key is to test them quickly with customers, iterate them just as quickly, and generate new revenue early. That money can help the internal venture group begin earning a return on its investment.

Steered by the finance function, such as internal funding, a digital innovation model is designed to allow entrepreneurial energy, capital, and experimentation to flourish within a large organization.

Turning the Finance Function Into an Internal Venture Capital Group			
<b>1. Investment Portfolio</b> Create an Investment Portfolio of transformation projects that would impact the overall enterprise	<b>2. Pool Capital</b> Break siloes and pool capital across the entire organization to get investment across business units	<b>3. Aggregate Resources</b> Aggregate previously underutilized resources (capital, talent, knowledge, data, etc.) and previously distributed and untapped demand within the organization	<b>4. Rapidly Prototype</b> Allow funding for rapid prototyping of solutions that benefit customers across the business

**Transform the enterprise.** New funding model encourages enterprise need for transformation and growth

**Figure 14:** How To Turn Finance Into An Internal Venture Capital Group

## Driving a Real-Time Business

CFOs who can deploy their finance professionals in the three domains will get a leg up on driving their companies to operate as real-time businesses. What does this mean? A real-time business is an enterprise that can access up-to-the-minute data on its operating and financial performance and act rapidly on it in order to be more responsive to customers, employees, channel partners, suppliers, and other key stakeholders.

There's an important phrase in this definition: 'act rapidly.' This requires automating activities that can be automated so they can operate at the speed with which business must be conducted today. 'Act rapidly' also cannot be done through legacy enterprise systems alone. While they are essential, companies must supplement them with newer digital technologies that capture data in new places.

The best place to start with building a real-time business is the finance function itself. It's the adage of "Trim the bushes in your own garden first before you take on the town." Use what we refer to as a Machine-First™ model to transform key finance processes such as cash management, closing the books, and financial planning and analysis.

Then take it to the enterprise, but make sure the mandate comes from the top of the organization: the CEO and the board. The CFO alone can't make a company a real-time enterprise. It requires a mandate that forces business functions to go along. It must also be positioned as business—not tech—transformation, otherwise leaders of marketing, sales, R&D, and other functions will see it as automating the work routines they do today, rather than rethinking them altogether.

Importantly, it also requires changing company culture, which is the most difficult challenge. Getting people (with the assistance of AI and other technologies) to make decisions in hours or even minutes that used to take weeks can be jarring. And the skills, beliefs, and behaviors of finance people need to be upgraded as well. People management and communication skills become paramount, not just financial analysis and a facility with numbers.

A real-time business is an enterprise that can access up-to-the-minute data on its operating and financial performance and act rapidly on it in order to be more responsive to customers, employees, channel partners, suppliers, and other key stakeholders.

The new world of digital ecosystems and digital transformation presents every CFO with great new opportunities: to have unprecedented impact on their companies and their careers. Those who have risen to the challenge this decade have helped their companies make big strides in becoming real-time enterprises.

# LEARNING FROM ECOSYSTEM PIONEERS

**Pivotal Lessons from the Best Digital Renovators**

**The Digital Metamorphosis of Three Industries**

*A Digital Rebirth for Life Insurance,  
Annuities, and Pension Companies*

*The Rise of the Next-Generation Telco*

*The Digital Revolution of Life  
Sciences Companies*

# Pivotal Lessons from the Best Digital Renovators

## Author

### Dave Jordan

Global Head, Consulting and Services Integration,  
Tata Consultancy Services

Facebook, Google, Uber, and Airbnb: These born-digital companies were collectively worth more than \$1.4 trillion this August,<sup>80</sup> an astonishing sign of how digital innovators have created enormous wealth by upending business models and taking market share from many traditional enterprises that once dominated the global economy.

Yet it would be a mistake to believe that every digital dominator was born digital, funded by the Silicon Valley cabal of venture capitalists who themselves have become extraordinarily rich. On the contrary, some traditional companies have used digital technology to renovate their existing businesses. In doing so, they have become powerful competitors in the new economy.

In contrast to the born-digital innovators, we refer to these companies as 'digital renovators.' They include Best Buy, Walmart, Adobe, Intuit, Apple, KLM, and Delta Airlines.

<sup>80</sup> Google was worth \$787 billion, Facebook \$554 billion, and Uber \$71 billion on Aug. 1, based on their stock prices. Airbnb was worth \$35 billion based on its acquisition of another company in March 2019, according to a Recode article, March 19, 2019. Accessed Aug. 1, 2019. <https://www.vox.com/2019/3/19/18272274/airbnb-valuation-common-stock-hoteltonight>

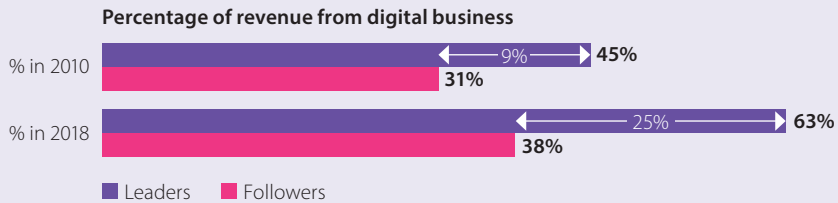
Some of them (like Best Buy and Walmart) have merged their ‘bricks’ and ‘clicks’ to give shoppers the best of a physical and virtual customer experience. Others (such as Adobe and Intuit) have brought to the cloud the software they once shipped on disks, and in doing so have become more embedded in their customers’ businesses. And airlines like KLM and Delta have used digital technology to reduce airplane maintenance problems and make booking and navigating through airports a simpler experience. Meanwhile, companies like Apple have used their expertise in designing computers to create small digital devices and digital online services that many of us can’t do without.

Their success raises the question: Why have they thrived in the new era of digital innovation while many other long-established companies have been humbled or even destroyed? A new TCS study on digital ecosystems and digital business (surveying 1,010 chief information officers in North America and Europe) sheds new light on this important question.

These insights came after we identified ‘digital leaders’ and ‘digital followers’ among the companies surveyed. In 2018, the leaders generate a higher portion of revenue (63%) from their digital businesses and digital offerings than did followers (38%). (See Figure 15.) This 25-percentage-point gap is not

**Gap is Widening—Leader Organizations Continue to Generate Higher Revenue From Digital Businesses**

In 2018, leader organizations had 63% of their revenue attributed to digital businesses while the followers indicate 38% of their revenue is attributed to digital business.



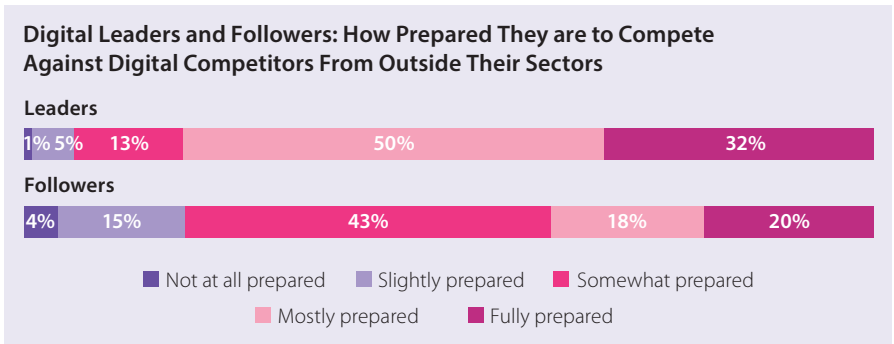
*Approximately what % of total company revenue did these digital businesses, products and/or services represent back in 2010, and what percentage did they represent last year?*

**Figure 15:** Revenue from Digital Business



only substantial—it represents a dramatic increase from 2010, when we found only a 14-percentage-point gap between the leaders and followers.

The digital leaders—most of them the digital renovators that we talk about—are quite different than the rest of the pack in other ways. One is how prepared they are to compete against digital competitors from outside their sector. About four out of five (82%) digital leaders believe they are mostly or fully prepared for the attackers from outside their sectors—more than twice the percentage of followers (38%) who feel the same way. Only 20% of all CIOs surveyed felt their companies are fully prepared. (See Figure 16.) Media, consumer packaged goods, and travel companies were the least likely to feel fully prepared to meet the digital onslaught.



**Figure 16:** Preparedness to Compete Against Digital Competitors From Outside Their Sector

**This article identifies six key success factors of companies established before the Web that have succeeded in digital transformation.**

## Six Ways That Digital Renovators Have Remained Relevant

What sets digital renovators apart from their rivals that have struggled in the last two decades? Why have they been able to adapt so well to this world of digital ecosystems and digital business?

From studying the successes of the digital renovators, we see six factors that have underpinned their revival and, in some cases, survival. Strikingly, these factors are more closely related to classic matters of leadership and management than to digital technology itself.

### **1. They put the customer at the heart of their digital transformation program.**



Digital renovators concentrate their investments and their most effective people on customer-focused capabilities. Beyond these core employees, they dedicate significant energy to upgrading and upskilling talent to improve, directly and indirectly, the quality of the customer experience.

After all, large legacy companies tend to have more seasoned employees than digital startups, so why not transform that into a competitive advantage? Renovators also upgrade their business models with the goal of using digital capabilities to improve the customer experience.

Best Buy serves as a prime example. CEO Hubert Joly arrived at the company in 2012, when it was en route to a \$1.2 billion loss in its fiscal year 2012.<sup>81</sup> In his first months, he visited stores and even worked in one for a week. Based on what he learned, he led executives to improve the customer experience, including investing heavily in employee training and overhauling an inventory system that provided incorrect information on whether a product was in stock.

Software upgrades improved logistics, enabling a massive expansion of same-day delivery. To better serve customers and ensure that they purchased at Best Buy rather than Amazon, he implemented a successful price-matching program, initially viewed as a

risky move by Wall Street. Recognizing that its stores and knowledgeable employees gave Best Buy a better chance to connect with customers than Amazon could, he launched an in-home advisory program to help them identify electronics appropriate for their lifestyle, and encouraged its advisers to build relationships rather than try to quickly close sales.

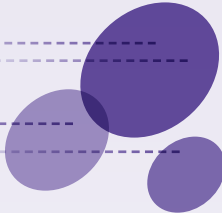
The result: Best Buy's financial results have been remarkable, with the company netting more than \$5.7 billion in cumulative profits since its fiscal 2015 year.<sup>82</sup> Its online sales have grown significantly, to about 16% of revenue. By the latest fiscal year, it had hit its financial targets two years early, and its share price grew more than four-fold since Joly took over in 2012.<sup>83</sup> (He stepped down as CEO this June.)

<sup>81</sup> Fiscal year ended March 3, 2012. From Best Buy's 10K filing for 2012, p. 61. Accessed Aug. 1, 2019. <https://www.sec.gov/Archives/edgar/data/764478/000076447813000014/bby-2013x10kt.htm#sA97A074035424C4938E47AAECA5AC4F5>

<sup>82</sup> MarketWatch data on Best Buy. Accessed Aug. 1, 2019, <https://www.marketwatch.com/investing/stock/bby/financials>

<sup>83</sup> CNBC, June 19, 2019. Accessed Aug. 1, 2019. <https://www.cnbc.com/2019/06/19/former-best-buy-ceo-hubert-joly-defied-expectations-at-best-buy.html>

## 2. They are faster to identify key assets to compete in a digital world.



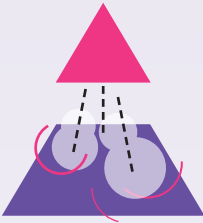
Innovation, of course, is frequently faster and more successful at smaller, nimbler companies than at large legacy businesses. The digital renovators that we studied made acquisitions of these innovative startups a key part of their strategy.

Consider Walmart, a company that has built its enormous success on mastering supply chain processes. It has unparalleled brick-and-mortar retailing expertise and purchasing scale. It is a keen negotiator and excels at logistics. E-commerce, however, was not in its DNA, and it was struggling to gain traction against rival retailing behemoth Amazon. In 2016, Walmart's online revenue (\$14 billion) was about one-seventh Amazon's (\$99 billion).<sup>84</sup> So that year, Walmart spent \$3.3 billion to buy Jet.com, at the time a 2-year-old online retailing upstart.

Jet.com had been launched by Marc Lore, the serially successful digital entrepreneur behind such sites as Diapers.com, Wag.com, and Soap.com, all of which Amazon had purchased in 2011. Jet.com and Lore's leadership have helped provide the talent and technology Walmart needed for its e-commerce business to reach lift-off. Walmart added millions of products to its website, and increased e-commerce sales 40% in 2018.

<sup>84</sup> Business Insider, accessed Aug. 1, 2019. <http://www.businessinsider.fr/us/walmart-is-buying-jetcom-2016-8>

### 3. Top managers have the necessary digital expertise, engagement, and incentives to succeed.

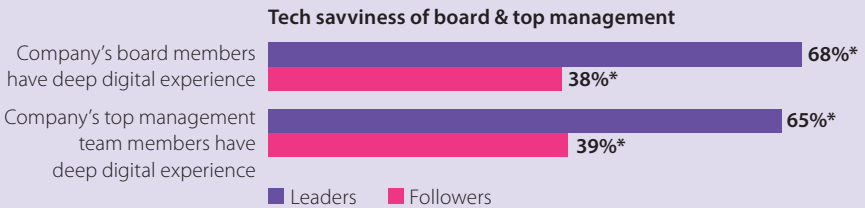


The TCS CIO study found that the most successful digital renovators over the past decade are far more likely to feature strong tech expertise on their board and top management team than the less successful follower companies. In the digital leaders, an average 68% of board directors and 65% of top management team members have deep digital experience. In contrast, only an average 38% of board members and 39% of top management team executives have extensive digital backgrounds at the digital followers. (See Figure 17.)

Digital renovators make sure that their boards and top executives have deep digital experience. Best Buy's Joly saved the company from suffering the fate of Circuit City (which failed to adapt to competition from Amazon and Walmart, and filed for bankruptcy in 2008).<sup>85</sup> Microsoft CEO Satya Nadella's turnaround of Microsoft since 2014 provides a similar story. He has been transforming the firm from a desktop

#### Board and Top Management at leader organizations have deep digital experience

Leaders are almost 1.5x-2x likely to have tech savvy board and top management than followers.



\*Summary of Mean

*Roughly what percentage of your company's board members have deep digital experience—"deep" defined as having been an executive and/or a board member of a company with digital products, services, e-commerce or other digital processes?*

*Roughly what percentage of your company's top management team members have deep digital experience—"deep" defined as having been an executive at a company with digital products, services, e-commerce or other digital processes?*

**Figure 17:** Digital Experience at Leader Organizations

<sup>85</sup> Time magazine, Nov. 11, 2008, accessed Aug. 1, 2019. <http://content.time.com/time/business/article/0,8599,1858079,00.html>

computer software and gaming device company to a business software, gaming, and cloud services firm. Nadella had run Microsoft’s cloud and enterprise software business before becoming CEO.

But deep digital experience at the top is not enough. A company’s board and top executives must be in sync on the same digital strategy. The TCS CIO study found that top management at digital-leader companies were more likely to be aligned around the new direction. Strikingly, at leader companies, CIOs were 21 percentage points more likely to be on the same page as their

CEOs around digital innovation than followers, according to our survey. We found a similar trend with the board, lines of business heads, and functional leaders. (See Figure 18.)

Getting such tight alignment requires top executives to ‘walk the talk’ and show continuing interest in the digital transformation program. The CEO must kick off the program, lead the steering committee, actively engage in all critical decisions, and ensure follow through. This proactivity is crucial to countering the drift that takes place when senior leaders switch their attention to other things.

**Digital innovation requires consensus across the board and drive from top. Leader CIOs are highly effective in driving consensus**

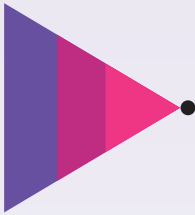
CIOs in follower organizations are not as effective in driving across the board consensus, especially with CEOs.

*Do you believe other key stakeholders within your organization agree with your vision of future digital-related growth opportunities?*

Stakeholders	Leaders	Followers
Board	86%	75%
CEO	86%	65%
Heads of lines of business	92%	73%
Functional heads	86%	68%

**Figure 18:** Leadership Drives Digital Innovation

## 4. With their digital transformations, they narrow their focus.



By narrowing their focus, companies invest resources in activities that differentiate themselves and can solve more of their core customers' needs. This typically involves improving customer-focused capabilities and practicing 'differential management,' where the best and brightest are switched to the most critical tasks. It also entails finding new revenue streams in adjoining sectors and targeting breakthrough products and services, rather than simply attempting to get more juice out of the current ones. Ultimately, this narrowing of focus leads to business expansion. (See Figure 19.)

A great example of this is Intuit, which has reinvented itself numerous times since launching Quicken in the early 1980s. In recent years, faced with competition

### Future growth will come from creating breakthrough products and services through innovation—follower CIOs don't see it that way

Glaring differences in how CIOs of leader organizations sees innovation and new product & services to be the driver of future growth whereas CIOs of follower organization still believes growth will continue to come from incremental gains through existing customers.

However, both leader and follower CIOs agree that focusing on current customer will be crucial.

Leaders	Followers
Creating breakthrough products and services through game changing innovations	Focusing on current customers, continually gaining more knowledge on them to keep improving our products and services
Focusing on current customers, continually gaining more knowledge on them to keep improving our products and services	Improving the customer experience to help customers purchase, use and buy more of our products and services
Identifying new revenue streams in adjoining sectors	Being superior at creating demand for our products and services—i.e., being the best at marketing and sales

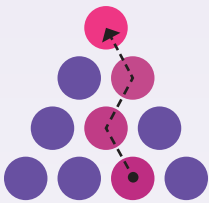
*What do you think will drive your company's future growth over the next decade?  
Please use a scale of 1-5, 1 is not at all and 5 is to a large extent.*

**Figure 19:** Top 3 Future Growth Driver

from behemoth-backed entrants like Microsoft Money and free startup alternatives like ZohoBooks, Intuit has largely abandoned shrink-wrapped accounting applications that long drove its success in favor of cloud-based software as a service.<sup>86</sup>

Most recently, Intuit launched an open online platform for small businesses. The result: Intuit remains on *Fortune* magazine's 'Future 50' list of businesses with the best prospects for long-term growth, decades after many of its original competitors have failed.<sup>87</sup>

## 5. They drive early successes to reduce organizational resistance.



Digital transformations are hard, disruptive, and lengthy, typically involving multi-year transitions. As such, digital renovators target early successes to build momentum and keep employees motivated.

North Carolina public utility Duke Energy decided it needed to harness artificial intelligence, data analytics, and automated digital processes to contend with utility deregulation and new competition. A source of digital innovation has been its finance function. A key goal was to free employees from menial tasks and enable them to do more meaningful, forward-looking work, according to CFO Steve Young.<sup>88</sup>

He recognized that getting managers to embrace change would be difficult. So he began with a 'lighthouse' project to demonstrate the efforts were worthwhile. "We started in finance, with a few software robotics that now perform bank reconciliations, account reconciliations and financial-statement compilations," he told *The Wall Street Journal*. "A lot of those tasks were done quickly. So, I could say: 'Hey, we're doing it here in finance. You need to start doing it in your department.'"

<sup>86</sup> Gigabit magazine, Mar. 25, 2019. Accessed Aug. 12, 2019. <https://www.gigabitmagazine.com/cloud-computing/what-intuit-gets-right-about-digital-transformation>

<sup>87</sup> *Fortune* magazine, accessed Aug. 1, 2019. <https://fortune.com/future-50/intuit/>

<sup>88</sup> Wall Street Journal interview in May 2019 with Duke Energy CFO Steve Young, accessed Aug. 1, 2019. <https://www.wsj.com/articles/how-automation-is-changing-the-workplace-at-duke-energy-11557799260>



## 6. They are obsessive about understanding the competitive landscape.



Many companies going through a digital transformation make the mistake of turning inward. They become so focused on their projects that they lose track of what competitors are doing.

The most successful digital renovators realize the pace of change is so fast that they cannot take their eye off what's going in the digital ecosystem. They're ready to adjust their strategy, or even pivot when needed.

The digital leaders are especially focused on digital companies than they are on the established firms with which they've competed against for years. (See Figure 20.) When we asked the leaders who their most formidable competition would be between today and 2025, 37% pointed to digital companies already in business and 39% said digital companies that haven't yet been born but will be here over the next six years. Less than a quarter (24%) said they are most worried about the competitors they've dealt with for years.

### Digital Leaders vs. Followers: Between Now and 2025, Who Top Management Believes Will Be Their Most Formidable Competition

#### Leaders



#### Followers



- Established companies we've competed with for years
- Companies established as digital companies
- New digital companies that aren't yet here but will be by 2025
- Other

**Figure 20:** Digital Leaders vs. Followers

That is in stark contrast to the digital followers. Nearly half (49%) have their eyes trained on established companies. Less than a fifth are focused on established digital companies, and about a third are most concerned about new digital competitors that will crop up by 2025.

The competitive focus of a global chemical company illustrates this well. In comparing their digital strategy to those of other companies, top management was far more interested in learning from Silicon Valley startups than from other chemical firms.

## **Following in the Steps of the Best Renovators**

Companies that want to emulate the successes of firms like Best Buy, Intuit, Duke Energy, and Walmart should start by examining the customer experiences they are delivering and ways that digital technology could transform them.

As our study showed, the digital revenue gap between traditional organizations that have become digital leaders and those that are digital followers has grown substantially in less than a decade. We expect this trend to continue, or even accelerate as leading businesses increasingly capitalize on technologies such as the Internet of things, artificial intelligence, and blockchain.

The stories of these and other digital renovators should give every longstanding company strong hope that they can compete in this new era of rapidly shifting, digitally savvy competition. Digital success is not the exclusive preserve of born-digital companies—at least, it isn't for firms that can reinvent themselves smartly but quickly for a world of digital ecosystems.

# The Digital Metamorphosis of Three Industries

## A Digital Rebirth for Life Insurance, Annuities, and Pension Companies

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Digital technology is reshaping every corner of the \$5 trillion global insurance sector,<sup>89</sup> bringing innovation to how insurers assess risk, market and sell, and administer their products. However, the limitations of legacy

systems, complex and unwieldy operating environments, and concerns about the risks and costs of digital transformation have impeded the industry's ability to take advantage of these new and emerging capabilities.

That's not to say there haven't been some significant successes. For example, U.S. auto insurers with direct online channels to customers have steadily increased their market share since 2009, from 20% to 30% today.<sup>90</sup> However, some of the biggest challenges to digital transformation—and also some of the greatest opportunities—are found among life insurers, annuity, and pension providers.

<sup>89</sup> Market size in 2017 in US dollars in premiums, according to a 2019 McKinsey report. Accessed Aug. 21, 2019. <https://www.mckinsey.com/industries/financial-services/our-insights/2019-global-insurance-trends-and-forecasts>

<sup>90</sup> S&P and William Blair data, as cited by CB Insights newsletter, Aug. 5, 2019.

From our digital strategy work with dozens of major companies in this arena and helping manage the policies they administer and the technology infrastructure that supports them, we believe the sector is ripe for much greater digital transformation. These companies agree. A study that TCS conducted

## The insurance companies predicted the most important driver of their growth over the next decade would be using digital technology to create greater demand

this year on digital transformation at more than 1,000 North American and European companies (including 122 insurance firms) makes that case. The insurance companies predicted the most important driver of their

growth over the next decade would be using digital technology to create greater demand—i.e., to get better at digital marketing and sales. Nearly as important is creating a strong customer experience, especially online<sup>91</sup>.

The opportunities for life insurers to use digital technology to improve engagement, increase revenues, and reduce costs are plentiful. But so is investors' pressure. Life insurers and annuities providers in mature markets (North America, the UK, Europe, and Japan) have increased revenue only an average of 1-2% annually in recent years. That's in stark contrast to the 12% to 15% growth in the developing markets of Asia and Latin America. In fact, the majority of multiline insurers and 44% of life insurers had negative economic profit between 2012 and 2016, according to a McKinsey analysis. That means earnings were less than the cost of capital.<sup>92</sup>

Legacy technology is responsible for some of that. So is a lack of new customer-facing and productivity-

<sup>91</sup> TCS 2020 CIO Study. Accessed Aug. 27, 2019. <https://sites.tcs.com/bts/tcs-cio-study/>

<sup>92</sup> McKinsey insurance report 2018. Accessed Aug. 20, 2019. <https://www.mckinsey.com/~/media/mckinsey/Industries/Financial%20Services/Our%20Insights/Where%20the%20life%20insurance%20industry%20can%20go%20from%20here/Life-insurance-and-annuities-state-of-the-industry-2018>

enhancing technology investments at crucial times. The impact: Expense ratios have barely budged during a time in which investment returns have been small.

But a number of large life insurance companies have tackled the huge expense of administering policies, in

order to shift investments that will help them engage in customer journeys. They have turned their enterprises into hotbeds of digital transformation—overhauls that have reduced costs dramatically, improved the customer experience, and freed up capital to fuel product expansion and facilitate mergers and acquisitions.

## The New Digital Opportunities for Life Insurers



What are these life insurers doing differently? They're rethinking how they operate. That begins with viewing their new operating model as one that must connect in a digital ecosystem with other players' crucial roles. Their rethink is also about bringing innovation to their products and how they create demand for them.

Digital transformation remains at the heart of all this. The experience of dealing with a life insurance company is a moment of truth in the customer experience. Simple changes—new addresses, new beneficiaries, to name just two—can take days. Responding to simple questions (“What will be the value of my policy in 12 months with a 3% inflation rate?”) can take longer. And so can resolving the ultimate ‘moment of truth’ in life insurance: the payout following a death claim.

Compared with the instant answers they can get from typing into a search engine, consumers would say most life insurers answer their questions at a snail’s pace. But there is a good reason why those insurers are often slow: complexity. This is due

to legacy systems, legacy processes, and hard-to-understand products. Many legacy systems are 30 years or older, written in ancient programming languages such as Assembler or Cobol. They can be patched, but they can't easily be re-engineered to be a foundation of new digital services such as making changes to addresses from the Web or a mobile app. At the same time, insurers' reliance on batch processes can mean it takes days to make simple policy changes.

Despite all this, life insurers that achieve digital transformation are gaining new revenue-generating capabilities, markedly improving the customer experience, and reducing costs. They're accomplishing this through three common actions:

- **Getting their administrative IT infrastructure in order and on a digital platform.** This is crucial to reducing complexity and creating an engaging, simple customer experience. These digital platforms must enable these companies to offer

a personalized, multichannel, and near real-time customer experience. Several large insurers have also optimized the platform by shifting their back offices to third-party administrators (including TCS). By residing on the cloud, these digital platforms make it easy for other business units—and external business partners—to tap into them.

- **Mastering data management and analytics.**

The digital leaders among the insurance companies we studied were far more likely to believe their analytics capabilities in leveraging customer data were ahead of competitors'. Some 63% of the digital leaders believed those capabilities were superior vs. only 28% for the digital 'followers'. The digital platform is key to optimizing data and analytics capabilities.

- **Leveraging a wider range of business partners through digital ecosystems.** It's the cloud-based digital operating model, with its standard interfaces and ways to connect business partners, that enable a life insurer to plug into a wider network of data and other business services providers.

## The Payoff: Faster and More Efficient Growth

We've seen the benefits to life insurance companies that operate in those three ways to be significant.

The first benefit is a greater ability to add new product lines, especially through acquisitions. That means new revenue. Life insurers that can make and integrate acquisitions effectively have a key advantage. The best life insurance companies are three times more likely than the industry as a whole to have turned M&A into a standardized process, according to McKinsey research<sup>93</sup>. We believe part of that standard process is a digital platform and cloud-based infrastructure with common ways of organizing customers, policy, and other key information. One insurance company that we know is in the process of converting 450 applications to six. It is also putting all policyholder data, which had been in 50 different databases, in one place. All this simplification will help the company efficiently administer the additional revenue from acquired or newly launched product lines. That will boost profitability, not just revenue expansion.

Life insurers that can make and integrate acquisitions effectively have a key advantage.

Additionally, the insurer's top management has been able to shift resources and investments away from back-office duties such as institutionalizing compliance processes (including data privacy requirements relating to where customer data is housed) to initiatives that are increasing customer demand and loyalty. That leads to the second big benefit we've seen for life insurers that digitize successfully: slicker customer touch points. Money freed up from administration can be spent on a more robust, multi-channel digital customer experience. Such self-service websites

<sup>93</sup> McKinsey 2018 global study on the life insurance and annuities industries. Accessed Aug. 21, 2019. <https://www.mckinsey.com/~media/mckinsey/Industries/Financial%20Services/Our%20Insights/Where%20the%20life%20insurance%20industry%20can%20go%20from%20here/Life-insurance-and-annuities-state-of-the-industry-2018>

and mobile apps can give customers instant responses to easy-to-answer questions and quickly handle transactions that used to require an agent or customer service rep to resolve.

The third most common benefit we've seen is more predictable IT and operations spending. Digital platforms that enable insurers to participate in cross-industry digital ecosystems also provide more transparency into future IT expenses. Turning closed book administration and other operations over to third-party administrators also reduces the risk of technology and operations obsolescence, and turns a fixed capital expense into a variable cost. Partnering with an organization whose digital platform is cloud-based and built to integrate easily into the broad digital ecosystem puts insurers and pension firms ahead of the game.

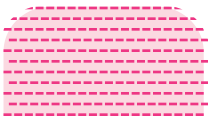
Another major benefit is the ability to bundle multiple offerings and customize them to customers' specific needs. Insurers that have organized data by their customers' total relationship with them, not just by product line, are able to work with employers to more easily bundle employee benefits packages. They include health insurance, workers' compensation, group life insurance, investments, and fitness program discounts—all of which can make their offerings more attractive and relevant. For example, 85% of health insurers believe patients would give them access to their tracking devices (smartphones, fitness wristbands, etc.) if they received price breaks, advice, and other value in return<sup>94</sup>.

<sup>94</sup> Research 2 Guidance study, accessed Aug. 20, 2019. <https://research2guidance.com/mhealth-app-market-2016-top-10-changes-and-reasons-to-be-optimistic-for-the-years-to-come/>



## What's Required to Move Fast: Digitally Savvy Leaders

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These, and other benefits, await life insurance, pension providers, annuity, and retirement services firms that see digital transformation—and participating in digital ecosystems—as their future. From TCS' research on digital transformation, companies that have more digital experience at the top—executives who are in sync about the company's digital strategy—are faster to seize on these opportunities.

At the digitally leading insurance companies that we studied, an average 63% of their top management teams and 59% of their board members had deep digital experience. Those percentages in the digital follower insurers was much lower: 37% of their management teams and 38% of their board directors, on average, had deep digital experience<sup>95</sup>.

What's more, the most digitally successful insurers had tighter alignment among top management on their digital direction. In these firms, more than 90% said their boards, line of business heads, and functional chiefs were in sync with the CIO on their company's digital vision, and 82% said the CEO was also on board. Among the digital followers, only 70% of CEOs, 80% of boards, 60% of line of business heads and 58% of functional heads were aligned with the CIO's digital vision.

From this year through the next decade, company leaders in this industry have consequential digital decisions to make. They have plenty of best practices to study in this and other sectors to find the right path. Those that elevate operational simplicity and customer experience, overhaul and put their administrative systems on a powerful digital platform, ramp up their customer analytics skills, and tap the wider digital ecosystem for other capabilities that they need are positioned to pull ahead of the pack over the next decade.

<sup>95</sup> TCS 2020 CIO Study, accessed Aug. 27, 2019. <https://sites.tcs.com/bts/tcs-cio-study/>

## The Digital Metamorphosis of Three Industries

### The Rise of the Next-Generation Telco

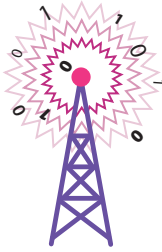
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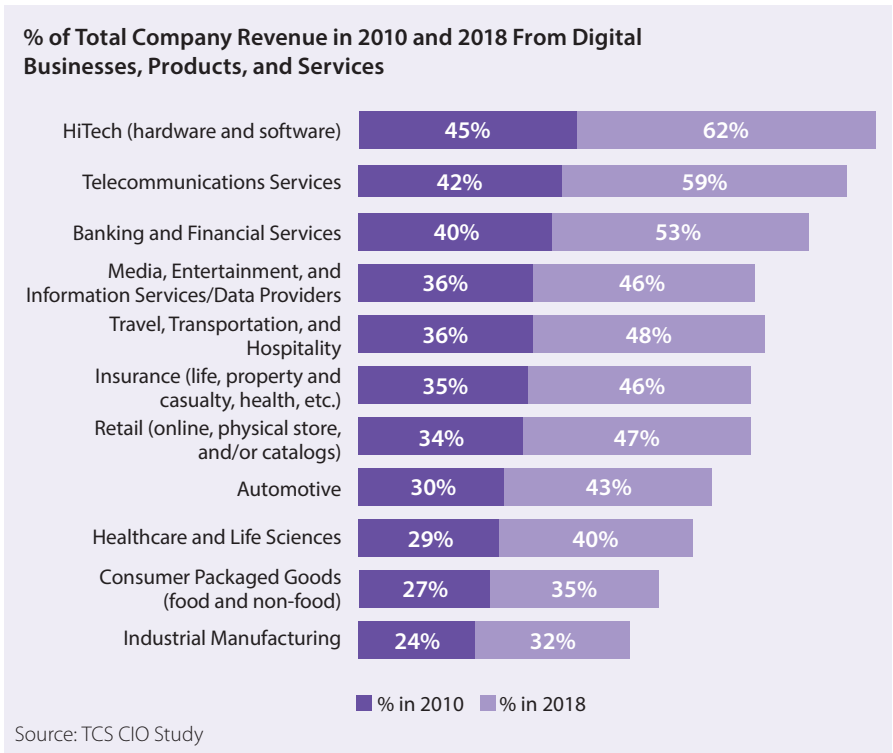


The \$6 trillion global telecommunications industry has been buffeted by digital technology over this decade. For wireless providers, average revenue per user (a key indicator) fell 34% globally between 2006 and 2017,<sup>96</sup> in spite of trillions of dollars of investments in network infrastructure around the globe. Said another way: Telcos' ability to harvest profits from their infrastructure spending is fading. The core services they provide—wireless telephony, Internet connectivity, data—are commodities that no longer generate strong returns.

Having recognized this, communication service providers are adapting. Digital products and services have become a major revenue source this decade, according to a new TCS survey

<sup>96</sup> PwC report, based in part on data from TeleGeography, published 2018. Accessed Aug. 20, 2019. <https://www.strategyand.pwc.com/media/file/Grasping-at-differentiated-straws-v2.pdf>

of executives at 60 European and North American telcos. These firms, part of a broader survey of 1,010 IT executives in 11 industries, are sizable: 80% had revenue of \$1 billion or more and 23% topped \$20 billion. Their revenue from digital businesses, products, and services is going up: from 45% on average in 2010 to 59% in 2018. As Figure 21 shows, the telecommunications industry by this measure ranked second among the 11 sectors we studied.



**Figure 21:** Revenues from Digital Business by Industry, Growth in This Decade

## The latest generation network will unleash new applications of digital technology—services that can connect and improve the way people and companies operate.

CSP leaders know they now compete in a digital ecosystem with a widening array of competitors. The entertainment industry can use a CSP's pipes to create a new business model. Technology firms can build customer pleasing apps that help consumers navigate, shop, and buy. And all industries can use CSP services to develop new customer experiences, from B2C advertising to B2B logistics.

But at the same time CSPs face clear challenges and rising competition, the digital ecosystems in which they operate present a plethora of opportunities. CSPs have a strong set of core capabilities—providing connectivity and collecting massive amounts of data on the performance of their networks.

The key differentiation for telcos is their ability to steer and manage network traffic in real-time, cognizant of end consumer's digital service context, so that the end customer experience is assured. This requires telcos to derive insights on customer experience in the digital ecosystem, be it whilst using home automation services or enjoying immersive reality entertainment services, and anticipate the demands they place on the network. Data from customer devices, channels, and network platforms plays a pivotal role in helping telcos derive insights and drive AI-led anticipatory actions.

From this and other data, telcos have the capability to create a bevy of lucrative new products and services. However, it will require a cultural change from top to bottom for many

of them—starting with understanding what business they are really in. “In the past 20 years, we as an industry have actually made a huge pivot from being 95% in a vertical industry dominating communications businesses to being a horizontal business that is the underlying platform for almost anything that society now and especially in the future needs,” says Christoffer von Schantz, senior vice president, strategy and M&A, at the Finnish telco DNA.<sup>97</sup>

To seize the opportunities, telcos need to view their investments in 5G networks not solely for the speed and performance they offer customers, but also as a chance to offer services beyond voice, data, and video. The latest generation network will unleash new applications of digital technology—services that can connect and improve the way people and companies operate. Telcos need to make their play in such fields because if they don’t, others are likely to encroach—from Apple, Facebook, Netflix, and Google, to new digital disruptors.

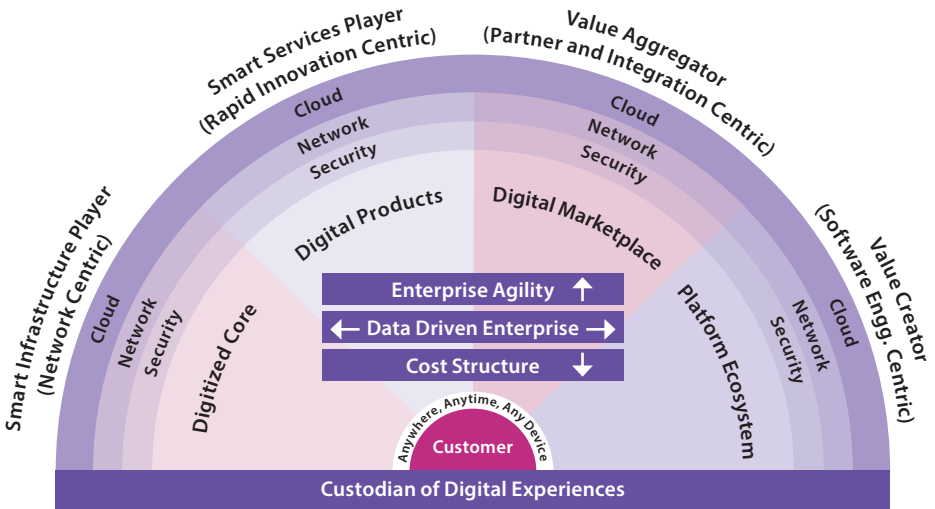
<sup>97</sup> Harvard Business Review Analytic Services sponsored by TCS, “Making the Smart Call: Telcos Plot Their Digital Future,” 2019, accessed August 14, 2019. <https://www.tcs.com/making-the-smart-call-telcos-plot-their-digital-future-from-hbr-tcs>.

## Four Strategies to Compete

Telecommunication firms can't control every element of the digital ecosystems in which they play. These ecosystems generate value because multiple companies participate in them. They require relinquishing some control to enter, and for all stakeholders to gain.

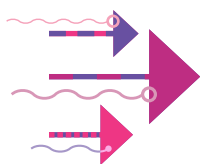
CSPs can use their core capabilities in high-speed connectivity, data, and video to establish themselves as what we call 'custodians of digital experiences'. They can use these capabilities to provide digital marketplace products and services and move beyond being solely connectivity providers.

Specifically, we see four strategies that CSPs can take:



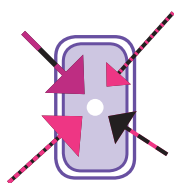
Source: TCS CMI Industry Advisory Research

**Figure 22:** The Four Strategic Choices for CSPs to become Custodians of Digital Experiences



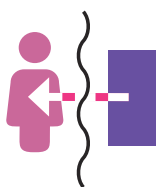
**Smart connectivity provider.** These communications companies would leverage advanced software and communications networks to provide ultra-fast internet services. Having software-driven networks that use AI, predictive analytics, and more automation allows these companies to provide better networks. The goal: to

create self-healing networks that automatically anticipate and take action to prevent network congestion and security breaches without human intervention. Says an executive at one multinational telco: “The dream is to get rid of the person who has to press the button to switch the traffic or to send a (a person) out to repair a line when it’s down.”



**Smart services and products provider.** In this role, CSPs would sell services to enterprise customers that take advantage of connectivity, Internet of Things, and business applications.

For example, Comcast’s Smart Office service performs physical surveillance of offices. For the consumer market, telcos have many opportunities as well. Comcast has developed a digital dashboard (Xfinity xFi) that personalizes the consumer’s experience and helps her manage her Wi-Fi network and connected home services. BT has been selling wi-fi home security cameras for several years in its UK market, capitalizing on its trusted and well-recognized brand<sup>98</sup>.

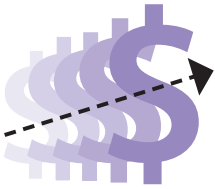


**Value aggregator.** Here, a telco would be a middleman between consumers and companies that provide content and services in digital marketplaces. Excelling at this strategy requires a superior digital customer experience through hyper-personalization, omnichannel integration, and service innovation.

<sup>98</sup> Forbes article, Aug. 5, 2019. Accessed Aug. 20, 2019. <https://www.forbes.com/sites/marksparrow/2019/08/05/bts-home-security-cam-is-easy-to-set-up-but-needs-more-resolution/#7d3e6a61178b>

AT&T, for example, has a service for health care providers to consult with patients via video chats. Rogers Communications (Canada) and Telefonica (Germany) have launched initiatives in digital banking services.

The keys for CSPs pursuing this strategy: Making these services work for customers, rather than the CSP focusing on managing its own products. Forming and managing digital partnerships with other companies—and excelling at these relationships—will differentiate one CSP from another.



**Value creator.** CSPs pursuing this strategy develop digital services platforms that they can sell to other channels. Here, a telco becomes a software-centric (rather than network-centric) firm. Japanese telco NTT Docomo, for example, is developing a carrier billing and payment system. Saudi Telecom is targeting financial services, media, and enterprise IT services with a digital wallet service called STC Pay. The company is also launching its media service (called OTT), and building a new IT platform to support a new metro transportation system in Riyadh.

## The Importance of Mastering One Strategy

CSPs face a big choice as they decide how to advance from purveyors of commodity-level pipelines to providing more valuable products and services enabled by digital technologies and data analytics. We believe the key is to select one of the four strategies above—and master it.

Any of these strategies are likely to require cultural change that breaks functional silos and builds innovation capabilities. Telco leaders know they must move quickly



## Any of these strategies are likely to require cultural change that breaks functional silos and builds innovation capabilities.

to implement these changes because of the competitive environment. Thirty-two percent of telcos in North America and Europe said they see their most formidable competition between now and 2025 to be digital-native firms, according to a TCS survey of CIOs. And 45% expect their toughest competitors to be new digital companies that aren't here yet, but will be by 2025. Only 23% said they see their stiffest challenges coming from established rivals.

Companies in any industry pursuing an ecosystem strategy also must be aware of their strengths. Telcos have one in the huge amounts of digital data, generated continually by their networks. Consider the location data that telcos could harness, with customer's permission, to

create new information services. A telco could use its data and network expertise to help marketers personalize offerings to customers depending on whether they're at work (i.e., offering coupons for a nearby lunch restaurant) or out with family (i.e., cinema vouchers for all).

From our research with CIOs, telcos recognize the opportunity. Sixty-one percent said top management thinks about digital opportunities in ecosystem terms among a group of companies whose digital initiatives were more advanced than average, 61% of these 'digital leaders' who worked at telcos said they capitalize on customer data better than their competitors. And they're listening: Among the most important types of data for the future of their business is how customers view them and what they are interested in

buying. Some 80% of telcos said mining customer data to improve products and services will be a key growth driver.

At the same time, our research shows that telco leaders have opportunities to do more by analyzing customer data. A TCS survey of 516 chief marketing officers in North America and Europe, including 33 from telcos, found that only a minority are taking full advantage of their rich data sources. Only 42% use geo-location data to personalize brand awareness marketing messages and only 40% use this data

to personalize messages in post-sale customer support. Additionally, half use geo-location in up-selling and cross-selling customers.

Clearly there's an opportunity here. Those telcos that succeed in digital ecosystems will be using these, and other data sources, to develop new products and services, as well as determine how to build their platforms for growth. The telco executives in our CMO research recognize this. By the end of 2020, 64% of them believe it will be of critical, or high, importance to use data and analytics based on customers' geo-location to provide a superior brand experience.

# The Digital Metamorphosis of Three Industries

## The Digital Revolution of Life Sciences Companies

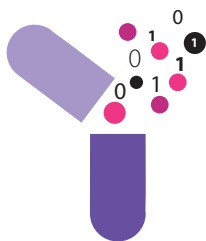
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Digital technology is altering the DNA of the global life sciences sector. Artificial intelligence, digital sensors, cloud computing, advanced analytics, and other advanced technologies have ushered in a flock of digitally

savvy companies. At the same time, leading life sciences companies have been capitalizing on the rapid maturation of these technologies and scientific advancements in personal genomics, cell and gene therapy, as well as other areas. They are changing the rules about how drugs are discovered, developed, and manufactured, supply chains are tracked, clinical trials are conducted, and patients are recruited and monitored.

Yet this digital transformation is just beginning. Pharmaceutical and medical device companies have abundant opportunities in the still-emerging digital ecosystem of health care. From TCS' experience with dozens of life sciences companies, and our recent research on digital strategies in this and 10 other industries, we believe the most successful life sciences firms will be those that work effectively with their ecosystem partners to launch breakthrough therapies and devices, and digitally monitor and improve the health of patients who are using them.

## The Digital Invasion of Health Care

Digital companies have long viewed the \$8 trillion<sup>99</sup> global healthcare market as ripe with opportunity. Smart watches with fitness trackers and wellness apps, as well as wearables with health monitors, are among the kinds of devices that these digital companies are developing for health-conscious consumers. Personalized medicine is a whole other arena with large opportunities with rapid advancements in genomics and artificial intelligence, and an explosion of personal health data on which to study the progress of diseases, therapies, and their impact.

As well, the pharma and med tech enterprise's supply chain is becoming a center of digital innovation, with additive manufacturing and digital tracking of drugs through distribution, from the factory to the pharmacy.

Many leading life sciences companies have recognized the arrival of big digital companies as an opportunity, not just a threat. For example, Novartis, Sanofi, and Pfizer are among those that are collaborating with Verily, a Google

<sup>99</sup> PwC report, based in part on data from TeleGeography, published 2018. Accessed Aug. 20, 2019. <https://www.strategyand.pwc.com/media/file/Grasping-at-differentiated-straws-v2.pdf>

sister company, to speed up and improve clinical trials, a segment which is predicted to be worth \$70 billion in 2026<sup>100</sup>. And investors such as Novartis have gotten behind ‘smart pills’ made by digital start-ups like Proteus—medicines with sensors that let doctors know whether patients are taking their therapies and in the right doses<sup>101</sup>.

More broadly, several pharmaceutical companies—led by Novartis, Johnson & Johnson, Novo Nordisk, Eli Lilly, and Merck—have been investing in a variety of joint ventures with companies that specialize in e-commerce, drug delivery, computer chips, and hospital data. These companies have made 413 investments in 28 industries since 2015<sup>102</sup>.

Many leading life sciences companies have recognized the arrival of big digital companies as an opportunity, not just a threat.

The promise of these and other ecosystem partnerships is to bring transformative digital innovations. This ecosystem also gives life sciences companies access to abundant clinical, molecular, and other data to improve drug repurposing, regulatory intelligence, drug efficacy and effectiveness, and other key capabilities.

One big opportunity is in the business of collecting and processing big pools of patient data to gain insights about potential drugs and treatments that make them safer, more effective, and more efficient. Another is the development of operational ‘digital twins’—as an example, digital replicas of a pharma manufacturing operations for optimizing manufacturing process outcomes.

A third, and perhaps most exotic, breakthrough is sought with 3-D printing, which is no longer from the realm of science fiction. Already,

<sup>100</sup> Grand View Research, as cited by an article in CNBC, accessed Aug. 16, 2019. <https://www.cnbc.com/2019/05/20/alphabet-verily-doing-clinical-trials-with-novartis-sanofi-pfizer.html>

<sup>101</sup> Business Insider article, Jan. 19, 2019. Accessed Aug. 22, 2019. <https://www.businessinsider.com/digital-smart-pill-drug-sensor-company-expands-cancer-proteus-2019-1>

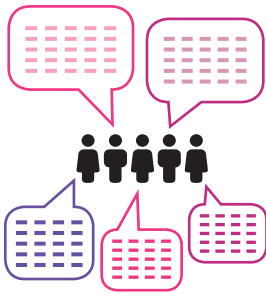
<sup>102</sup> CB Insights, accessed Aug. 17, 2019. <https://www.cbinsights.com/research/report/what-are-neoantigen-vaccines-personalized-cancer-treatment/>

physicians have replaced a child's vertebrae with a 3D-printed bone<sup>103</sup> and given the victim of a head trauma a 3D-printed titanium skull<sup>104</sup>. Scientists are now exploring the possibility of fabricating organs such as the heart<sup>105</sup>.

The collaborations are forming the basis for an emerging series of digital ecosystems which facilitate the convergence of life sciences companies

and healthcare providers such as hospitals. The impact is already being seen in personalized medicines. In 2018, 42% of drugs approved in the U.S. were personalized medicines, up from 34% in 2017<sup>106</sup>.

But our research suggests some life sciences companies have yet to broadly seize the opportunities presented by the new wave of digital innovation.



## Lessons from Digital Leaders in Life Sciences

This summer, TCS surveyed more than 1,000 CIOs in 11 industries including life sciences, in North America and Europe. While only 3% of the life sciences companies (pharma, biotech, medical device, and medical products) said their companies had new digital businesses, digital products and services, or new digital operating models to date, three quarters believe there are vast new digital opportunities to pursue over the next decade<sup>107</sup>. The question is how?

Some insights to this question can be gained by comparing the more digitally successful life sciences companies with the rest. From our survey, we found these companies differed in several important ways.

<sup>103</sup> CBS News site, accessed Aug. 18, 2019. <https://www.cbsnews.com/news/3d-printed-vertebra-used-in-spine-surgery/>

<sup>104</sup> Business Insider, accessed Aug. 17 2018. <https://www.businessinsider.com/3d-printed-titanium-skull-in-chinese-man-2014-9?r=US&IR=T>

<sup>105</sup> Financial Times, accessed Aug. 16, 2019. <https://www.ft.com/content/67fbc0c-6c05-11e9-80c7-60ee53e6681d>

<sup>106</sup> Personalized Medicine Coalition, accessed Aug. 18, 2019. [http://www.personalizedmedicinecoalition.org/Userfiles/PMC-Corporate/file/PM\\_at\\_FDA\\_A\\_Progress\\_and\\_Outlook\\_Report.pdf](http://www.personalizedmedicinecoalition.org/Userfiles/PMC-Corporate/file/PM_at_FDA_A_Progress_and_Outlook_Report.pdf)

<sup>107</sup> TCS 2020 CIO study, accessed Aug. 17, 2019. <https://sites.tcs.com/bts/tcs-cio-study/>

One of the most striking differences was that digitally leading life sciences companies had a much greater percentage of top executives and board members with deep digital experience. We found that 69% of board members and 58% of top executives at the digital leaders possessed deep digital experience, compared with an average 23% of board members and 39% of the top management teams at the least digitally advanced life sciences companies<sup>108</sup>.

## Digitally leading life sciences companies had a much greater percentage of top executives and board members with deep digital experience.

Sometimes adding digital experience requires reaching outside the industry. Some life sciences companies have hired digital leaders from retail, high tech, and other more digitally advanced sectors.

Another difference between the leader and follower companies is how they viewed opportunities to mine the large and growing amount of health data: patient information, hospital records, real-time numbers on the performance of different drugs and treatments, as well as vital physiological and genomic information. Such real-

<sup>108</sup> Ibid

world data is abundant, and growing more so by the day. Life sciences companies that are best at harvesting this data have significant growth opportunities.

By accessing vast quantities of data with the help of AI and other technologies, pharmaceutical companies not only expect to shorten the cycle of clinical trials, they also want to quicken the pace of drug discovery. According to research published in the *Journal of Health Economics*, it costs an average of €1.9bn and 13 years to bring a drug to market<sup>109</sup>. But a consortium of 10 companies (including Johnson & Johnson, AstraZeneca, and GSK) have come together to share priceless data through a secure, blockchain-based system that allows

Their hope is that by predicting how molecules will work, the AI-driven collaboration will accelerate the slow and costly process of discovering new drugs.

their drug discovery machine-learning algorithms to search each other's data without uncovering commercial secrets. Their hope is that by predicting how molecules will work, the AI-driven collaboration will accelerate the slow and costly process of discovering new drugs<sup>110</sup>.

<sup>109</sup> Financial Times article, June 4, 2019. Accessed Aug. 18, 2019. <https://www.ft.com/content/ef7be832-86d0-11e9-a028-86cea8523dc2>

<sup>110</sup> Financial Times, June 4, 2019. Accessed Aug. 18, 2019. <https://www.ft.com/content/ef7be832-86d0-11e9-a028-86cea8523dc2>



## **The Digital Revolution of Health Care Has Just Begun**

Leading life sciences companies have recognized that the digital revolution presents vast opportunities to shift from being pure product manufacturers to also being service companies to health care providers. They are busily on-boarding top executives from leading digital companies, or from industries with high levels of digital adoption. And they are collaborating with established and start-up digital companies, as well as seeing the benefits of participating in broader health ecosystems.

At the start of the digital revolution, life sciences companies were in an enviable position, buoyed by healthy profit margins that seemed to be protected from the winds of change. Now, things have changed. The time has come for them to develop digital capabilities, make investments that are necessary to harness the abundance of data, and connect into the fast-evolving health care digital ecosystems that promise to dramatically raise the quality of care.

# CONCLUSION

The background is a solid light blue color. It is decorated with several overlapping circles of various sizes and shades of blue, ranging from a very light, almost white blue to a deep, dark blue. The circles are scattered across the page, with some appearing as soft, out-of-focus blurs and others as sharper, more defined shapes. The overall effect is a clean, modern, and abstract aesthetic.

# Seeing Abundant Ecosystem Opportunities Amidst Scarce Resources

## **Author**

**By Krishnan Ramanujam**

President, Business and Technology Services, Tata Consultancy Services

The most successful businesses of the past made the best use of capital, talent, time, attention, and other scarce resources to deliver superior customer value. The most successful ones of the future, too, will use these scarce resources judiciously. However, they will not let their thinking be hemmed in by these real resource constraints. Instead, their leaders will change the rules of the game.

Consider the example of Amazon.com. In the early 1990s, before Amazon's launch, general merchandise retail chains believed they had to match Walmart's super-efficient supply chain and purchasing clout to rival its everyday low pricing, product assortment, and product availability. Lacking sufficient capital, talent, time, and other resources, many retailers tried, only to give up and fold.

But in competing against Walmart, Amazon played a different game. It began by taking orders only online in 1995, for items that most general merchandise chains lacked depth in

assortment (books), and eventually by having limitless products available (the 'shelf space' of its website is infinitely expandable).

Amazon changed the rules. It played a different retail game. By taking orders on its website, it showed it didn't need stores to get customers. Access to customers was no longer scarce, and not limited by the capital required to spread stores across the country. In fact, customer access was abundant (through the Web). So was shelf space; it was infinite. Amazon eventually added other products to its book line, becoming 'the everything store,' as Brad Stone referred to it in his biography on the company<sup>111</sup>. And in its early years Amazon even minimized inventory. After a customer ordered a book on Amazon's website, the company would receive it from the publisher or another entity, and then put it in its building before sending it to that customer. Thus, at first, Amazon did not have to make huge investments in warehouses. Those would come later.

Companies such as Amazon, Google, and Facebook changed the game about how companies in an industry could operate in a digital world. They did so by believing their opportunities were abundant, and that the traditional constraints of capital, talent, and time would be less important—if they changed the rules of competition and tapped into the digital ecosystems that have been emerging rapidly since the turn of the century.

<sup>111</sup> "The Everything Store," by Brad Stone, published by Little Brown. Accessed Aug. 21, 2019. <https://www.littlebrown.com/titles/brad-stone/the-everything-store/9780316219259/>

These companies didn't allow those scarce resources to narrow their thinking about what customers truly valued and how they could deliver that value. Facebook and Google, for example, believed they could dominate the world of online advertising—even without the publishing, broadcasting, and other expensive content that the media world thought was necessary to capture consumers' 'eyeballs' and marketers' ads. For Facebook and Google, the users of their services would provide the content—for free.

The need to spend heavily on media content to attract advertisers was the old media playbook. In the new digital media playbook that Google, Facebook, and other online powerhouses have written, spending scarce capital on creating content was no longer relevant in the new media digital ecosystem. That capital could go elsewhere.

## Digital Ecosystems Are Where the Opportunities Can Be Found



Amazon, Facebook, and Google took advantage of a digital ecosystem backbone that emerged in the early 1990s—the World Wide Web. Without the web, these companies wouldn't exist. Every large company today has similar opportunities to redefine how they create value for customers, and for which customers they create that value. The opportunities to build

blockbuster enterprises are abundant.

But, those companies must think about their opportunities in the new context of digital ecosystems. If they don't actively participate in these digital ecosystems, they won't be able to identify and pursue these abundant opportunities.

To be sure, the resources of capital, talent, time, and attention are still scarce resources. That hasn't changed. There is only so much capital a company can consume before its balance sheet starts weakening. There is only so much talent to go around, especially in now-essential areas for which the supply of expertise greatly trails demand. (Count data science and artificial intelligence in as especially talent-constrained labor markets.) Leaders of every company

have limited bandwidth to focus their time and attention. As Peter Drucker once said, "Time is the scarcest resource, and unless it is managed nothing else can be managed."

But leaders of established companies can get around those constraints by playing differently—by tapping into the digital ecosystems in which they play. Some, like Delta Air Lines, are already doing it. Its story is highly instructive.

## How Delta Has Tapped into the Aviation Digital Ecosystem



Delta is the world's second-largest airline by revenue (\$44 billion). The Atlanta-based company spends about \$500 million of its \$5 billion annual R&D budget on digital innovation<sup>112</sup>. Flight cancellations—particularly those that are manageable (due to maintenance issues) rather than weather-related—damage customer satisfaction, airlines' reputations, and profits.

After it bought Northwest Airlines in 2008, Delta quickly began seeing a marked increase in flight cancellations from aircraft problems. That spawned customer dissatisfaction. By 2010, Delta had 6,000 flight cancellations due to maintenance problems. Aircrafts that need new parts and must be grounded cost airlines huge amounts of revenue and profit. Trying to solve the aircraft maintenance problem used to require drawing on the scarce resources of capital and infrastructure for market access (i.e., parts warehouses and distribution).

<sup>112</sup> Interview with Delta Air Lines CO Ed Bastian, The Code Conference, June 28, 2019. Accessed July 24, 2019. <https://www.vox.com/recode/2019/6/28/18864117/delta-ed-bastian-kara-swisher-jason-del-rey-interview-code-conference-flying-airport-unions-planes>

By 2018, that data (and the analytics software that sees patterns in it) had reduced Delta flight cancellations by 99%—to 60.

Delta began creating an internal digital ecosystem of aircraft maintenance to solve the problem. Since then it has been using engine data (generated by digital sensors) to better predict when those engines would need work. By 2018, that data (and the analytics software that sees patterns in it) had reduced Delta flight cancellations by 99%—to 60. “No airline in the world can talk to that in terms of those types of numbers,” said CEO Ed Bastian<sup>113</sup>. As Bastian says, “Digital changes the game entirely.” The airline’s annual profits grew six-fold between 2014 and 2018 (to \$3.9 billion), and revenue increased 10%. And Delta’s stock price has nearly doubled in just the last two years<sup>114</sup>.

But Delta isn’t done. It expanded its digital ecosystem in 2018 by becoming the first major U.S. airline to invest in aircraft manufacturer Airbus’ digital ecosystem for tracking aircraft performance (Skywise)<sup>115</sup>.

Delta sees abundant opportunities for improving aircraft availability and, thus, customer satisfaction. It also sees ways to tap other digital ecosystems and ecosystem partners to make it easier for passengers to navigate through airport terminals with far less hassle, and to coordinate other aspects of the travelers’ journey. “We are at a revitalization of the industry,” Bastian said. “Our goal is to make travel something that customers don’t have to endure, but something that is magical<sup>116</sup>.”

<sup>113</sup> Interview with Delta Air Lines CO Ed Bastian, The Code Conference, June 28, 2019. Accessed July 24, 2019. <https://www.vox.com/recode/2019/6/28/18864117/delta-ed-bastian-kara-swisher-jason-del-rey-interview-code-conference-flying-airport-unions-planes>

<sup>114</sup> MarketWatch statistics. Accessed July 31, 2019. <https://www.marketwatch.com/investing/stock/dal/financials>

<sup>115</sup> Delta Air Lines web page, Oct. 15, 2018. Accessed Aug. 20, 2019. <https://news.delta.com/delta-seeks-100-percent-reliability-predictive-maintenance-technology>

<sup>116</sup> Forbes, Jan. 20, 2019. Accessed Aug. 20, 2019. <https://www.forbes.com/sites/shephyken/2019/01/20/delta-were-ready-when-you-are/#5d7b2a6853e6>

## Digital Leaders Think Very Differently About the Future



From their business decisions and their public discussions with shareholders, the press and investment analysts, leaders like Delta CEO Bastian, Facebook CEO Jeff Zuckerberg, and Amazon CEO Jeff Bezos appear to view business in a digital world very differently than many of their peers. They look for inventive ways to work around historical resource constraints.

They embrace digital data, analytics, and the digital ecosystem of players that can collaborate to provide competitive advantage.

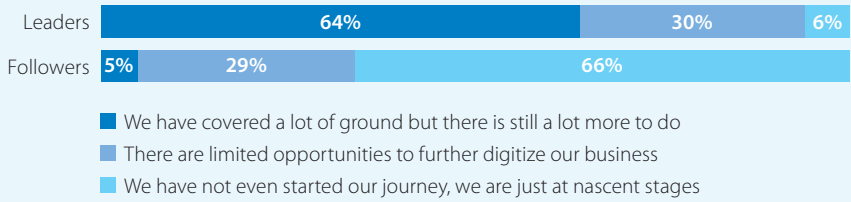
New TCS research shows that leaders of the more digitally successful companies this decade are far more likely than the least digitally successful firms to see their digital business opportunities over the next decade as abundant. The most digitally successful companies of the more than 1,000 surveyed have lots to brag about. Nearly two-thirds (63%) of their 2018 revenue was from digital businesses, products, or services. In contrast, the digital followers said 38% of their revenue last year was from those sources.

In fact, the digital leaders' optimism about the next decade's digital future is virtually the opposite of the followers' mindset. Some 94% of the digital leaders said either that although their companies had achieved substantial digital success, there was still room to do much more—or that they felt they were still at the beginning stages of their digital transformation, despite accomplishing so much this decade.

The digital followers, by contrast, appear to be constrained by believing that capital, talent, market access, and other scarce resources are squarely in their way. In two-thirds (66%) of them, top management sees limited opportunities to further digitize their businesses. In only 29% did executives view their companies to be at a nascent state of digital change.



### Digital Leaders vs. Digital Followers: How They View Future Opportunities to Digitize the Business



**Figure 23:** Leadership Views on Digitizing Business

Only 6% of the digital leaders believe their future digitize opportunities are limited vs. 66% of digital followers. Those are immensely different mindsets about the digital future at the top of these companies.

The vast digital business opportunities of the next decade are available to leaders who believe the abundance of data, computing power, and market access they can get by tapping into digital ecosystems can overcome

any deficiencies in capital, talent, and market infrastructure. These leaders also know their companies need to fully connect with other players in the digital ecosystems that will reshape their businesses over the next decade.

Little will stop these leaders from creating the next decade's Amazon, Google, and Facebook. It will be exciting to watch, and help, these leaders change the game.

## About Perspectives

*Perspectives* is Tata Consultancy Services' management journal. Since 2009, *Perspectives* has provided the best and most practical thinking of TCS experts—consultants who have helped many of world's most successful companies solve key business challenges. The journal also publishes interviews with leading authorities on business, management, and economics, as well as case studies on companies at the leading edge.

In addition to the authors, this edition is the product of numerous TCS contributors:

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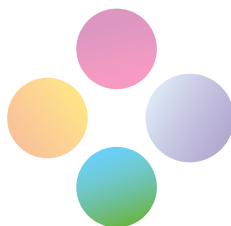
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