

Digital Directions: A perspective on the impact of digital technologies.

Your digital world. Realized.



Building a better
working world



Microsoft

Executive summary

Trying to make sense of the onset of the digital economy and how to navigate its uncertainties and opportunities challenges every leader, and the task is only getting harder as technologies such as artificial intelligence, internet of things (IoT) and blockchain sweep into everyday business decisions. They will change not only how businesses create value and operate, as well as the customer experiences they are delivering, but also what it means to be a worker in the 21st century.

Being digital will create additional responsibilities for business leaders, stakeholders, shareholders and even for society at large. For shareholders, the ability of a digital enterprise to experiment and innovate will not only create new opportunities for economic growth but also raise expectations placed on management to deliver. For society, the enterprise is no longer allowed to act in isolation from the surrounding community. What companies do and how they do it in the digital realm affects everything from the environment to social movements.

Digital technologies seem acutely poised to impact how business gets done, and they will touch almost every function in the company over the next three or four years: strategy, workplace, customer, operations, and risk management.

Working together, EY and Microsoft teams can help companies overcome the challenges related to "being digital" and apply the experience and technologies that can help them capitalize on digital's promise – more quickly and with less risk.



DIGITAL COMPANIES THINK DIFFERENTLY.

Chapter 1: Strategy, Realized

Many firms are **doing** digital versus **being** digital, that is, they use technology to fix isolated problems rather than as part of an overall strategy. Even as companies continue to ask themselves what the best way is to invest in a digital strategy, we think they must ask a completely different question: “Is our strategy fit for a digital world?” Here is the fundamental concept. **Digital companies think differently.** They have a different mindset for approaching problems, for example seeking collaborations across the organization and with alliances and ecosystem relationships. They innovate like start-ups – building, testing and deploying all in the service of failing fast and iterating forward. They know how to scale.

They focus on customers, not product; they think a lot about experiences; they innovate and experiment. Because time to market is so crucial for success, it requires new organizational capabilities around innovation, creativity, rapid prototyping, testing, data analysis and a digital foundation, to name a few.

Chapter 2: Workplace, Reimagined

The next three years will be formative for workplace transformations driving an experience that leverages digital technologies in three areas: accelerating organizational change, empowering seamless virtual team collaboration and unlocking workforce productivity. Industries most likely to be touched are health care, transportation and financial services, but the impact will be felt across all sectors.

With the creation of the digital workplace comes new responsibilities. These include:

- ▶ Obligations to stakeholders, such as automating intelligently and diligent corporate social reporting.
- ▶ Duties to employees, like teaching them skills to succeed and helping them rethink their career development.
- ▶ Responsibilities to society, which means support for the gig economy and using digital technology to improve working conditions around the world.

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Many organizations look upon digital transition as a risk. The bigger risk is not acting and being left behind your competitors and not meeting expectations from ever-demanding customers.

Jim Little, Global Microsoft Alliance Leader, EY

Chapter 3: Customers, Understood

The next few years will prove crucial if companies want to create impactful experiences that attract and delight their customers. To do so, organizations have to make significant advances in two areas.

First, they need to be much more aggressive about deploying advanced technologies throughout the organization, not just using them to solve departmental problems. Intelligent automation, for example, can improve customer service by dramatically shortening wait times on service calls by integrating every customer interaction. Second, traditional organizational structures need to be redrawn from top to bottom with the customer at the center of the hub.

Several trends around the customer experience are dominating. Personalization, a product of data mining, is seen by many as the next big marketing trend; proactive marketing will use location technology to trigger offers; and consumer privacy will benefit by the arrival of blockchain-based identity management systems that will empower consumers to directly authorize with whom they will share personal data.

Chapter 4: Operations, Reinvented

Businesses of all types are starting to seize on digital tools and techniques to automate operational processes, leverage IoT and machine learning to increase quality and productivity, and capture insights that fuel process improvement and cost savings.

Digital operations at scale create better returns for stakeholders through cost efficiencies, products that respond quickly to consumer demand, and that empower a better workplace by shifting mundane tasks to robots and high-value assignments to human experts.

As powerful as these potential payoffs will be, highest-level benefits will come when operations is recognized as a driver of competitive advantage rather than as a lever to lower costs.

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Continued transformation and growth for customers is made possible with great Microsoft partners, like EY, who extend co-innovation by leveraging the full stack of Microsoft technologies to establish competitive differentiation.

Gavriella Schuster, Corporate Vice President, One Commercial Partner, Microsoft

Chapter 5: Risk, Redefined

Risk management and cyber have traditionally been about **keeping bad things from happening**. In digital, the focus shifts to risk management as a way to **identify opportunity**. Companies that fully understand their risk profile, both risk as a threat and as a prelude to growth, will be best positioned to reward their customers and stakeholders and to help create trust and a better working world.

The big takeaway about managing risk is that the most significant threat comes from ourselves. It's the risk of failing to act, of not responding to the disruption that is changing the nature of competition and competitive advantage. Leading risk functions are those that provide leadership with the confidence to take the steps needed to embrace change in a way that builds and maintains stakeholder trust.

The winners will act on risk as an opportunity, and they will win the battle for the trust of their stakeholders. As companies learn to be smarter about the bets they place, they will continue to grow even though the world changes around them.

Conclusion

In our review of the domains most likely to be impacted by digital winds over the next few years, four technologies surface that have the potential to drive the most impact on business in the shorter run: cloud, IoT, artificial intelligence and blockchain. We have several recommendations for immediate action:

1. **Map the future:** Identify where you are located on your digital journey, plot where you want to get to, determine the execution road map, and drive support from stakeholders.
2. **Ecosystems matter:** Technological complexity and disruptive forces mean companies can no longer go it alone. Find trusted partners to collaborate along the transformation and then build a strategy around your ecosystem, including alliances, where all partners can build unique value for customers.
3. **Be confident:** Don't be afraid of the future. Step into it, one foot at a time. Be the disrupter, not the disrupted.

Foreword

The technology industry loves an era. There was the mainframe era followed by the minicomputer era followed by the PC revolution. We experienced the epochs of networked computers, cloud computing, e-commerce and the IoT. Today, we simply call the era we are in “digital.”



What does it mean to be a digital enterprise? How does the enterprise behave differently when it follows a digital strategy? How do stakeholders benefit? Is society better for being in a digital economy? The ramifications of digital are so encompassing that they feel like they have been dropped on top of us like an unstoppable force without much in the way of a user's manual.

And that's why we adopt the view from inside a tornado as a primary metaphor in the opening pages of this new publication co-created by EY and Microsoft teams, Digital directions: A perspective on the impact of digital technologies.

This document represents the collective insights of EY and Microsoft alliance leaders. The alliance combines deep business and industry EY insights with scalable, enterprise cloud platform and digital technologies from Microsoft to create innovative and proven solutions that help accelerate clients' digital transformation, minimize risk and create new business value faster.

The goal of Digital Directions is twofold. First, we want to identify the technologies that are most likely to have an immediate impact on business over the next three to five years. And second, we will offer educated insights on how those technologies could change the way business is conducted.

Each chapter will reflect how digital technologies are helping us build a better working world, improving customer, employee and stakeholder experiences while also increasing the bottom line for shareholders.

In this Transformative Age, leading companies continuously innovate and successfully transform faster than their peers. EY and Microsoft teams are creating new value propositions to help clients outpace their peers, with managed risk.

Together we bring new, unique value that helps clients achieve transformational outcomes and be more agile, more innovative and better equipped to respond to disruptive change. Organizations that choose to go it alone risk falling behind. We believe that Digital Directions will be an important tool to help clients successfully navigate their digital transformation journeys.

Imagining the future is the work of forecasters, fortune-tellers and very smart people. For this publication, we would like to thank the technology leaders at EY and Microsoft who helped identify and describe the impact of technologies they see having the most influence on how business will be practiced over the next few years.

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Introduction

Tree trimmer Rick Boland told a reporter how it felt to be sucked up by a tornado. "I figure I was spinning upright, like a top, because right before I hit the ground, I remember a feeling of untwining. I landed pretty hard on my stomach. When I looked up, lightning struck, and that's when I saw the tail up in the sky. Plain as day. It was the first tornado I'd ever seen."

Not to be overly dramatic, but Boland's description is probably close to what many top-tier executives feel each day ping-ponging around the business landscape as digital transforms their industry, their company and their strategy.

It's not just business leaders feeling anxious but workers on the front lines as well. Think of the taxi cab driver who spent the equivalent of a small mortgage to secure a medallion from the city to operate a cab. Then Uber landed, like a tornado, and soon the driver was looking up from the ground at the tail in the sky.

It's only natural to be apprehensive about the effects of such a monumental shift as digital. The journey should not be feared but rather fully and energetically embraced – with eyes and arms wide open. In the publication you are now reading, *Digital Directions: A perspective on the impact of digital technologies*, we want to help you prepare for and better experience that journey. We'll be sharing proven ideas and insights from our top EY and Microsoft alliance leaders, who are as close to new technologies and their impacts as it is possible to be.

Within this publication, we will detail the business domains that EY and Microsoft teams believe will be reshaped most by digital over the next three to five years, the current emerging technologies driving those changes, the opportunities that await those who are ready to pounce and the pitfalls for those who fail to engage.

We make the case that the business domains most likely to be touched by digital will be digital strategy, customer experience, workplace, operations and risk management. And the technologies creating the most impact in those areas will be cloud, IoT, artificial intelligence and blockchain.

Will the confluence of these turbulent trends and industry-altering technologies result in better products and services for your customers to improve returns to shareholders, and build a better working world? Realistically, how this plays out is not entirely under your control. What is controllable is your strategic approach, willingness to be agile and commitment to accepting and leveraging change. It is time to act and we are ready to help you move forward.

CHAPTER 1:

Strategy, Realized

Many companies understand they must rebuild their organizations to compete in the digital world but find the “digital divide” difficult to cross. They take partial steps – thinking of themselves as “digital” if a part of their payroll program is calculating in the cloud somewhere, or if they have a social media coordinator thinking up “pawsitively” cute posts for Dog Appreciation Day.



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You can no longer treat traditional and digital channels separately. They now need to form part of the same corporate strategy.

Adlai Goldberg, EY Global Digital, Social and Commercial Innovation Life Sciences Leader

In reality, they are **doing** digital versus **being** digital. Even as companies continue to ask themselves what the best way is to invest in a digital strategy, we think they must be asking a completely different question: “Is our strategy fit for a digital world?”

When a business creates a strategy fit for a digital world, it can forge disruptive business models, spur innovation, create competitive advantage and accelerate benefits broadly across the organization. All of these drive sustainable value for stakeholders.

Here is the fundamental concept. **Digital companies think differently.** Competing in this transformative age requires a series of mindset changes in how the organization operates. Instead of starting with a piece of technology and figuring out ways to apply it to their business, digital leaders think of outcomes their customers most value and how to deliver them using digital as a key enabler.

Digital organizations think differently in another, critical way. They realize that the concept of the vertically integrated enterprise going it alone is antiquated. The world is moving too fast. They need to build an ecosystem and digital foundation to create unique value that benefits all participants and this approach cannot be accomplished alone.

Traditional companies and their ways of doing things are under attack. Every business process, business model and business ecosystem will be disrupted sooner rather than later.

This disruption has several causes. One factor is driven by rapid advances of technology, such as artificial intelligence, that were unimaginable just a few years ago. The tablet computer needed about five years to reach saturation. A cloud technology gone viral today has enough established infrastructure and networked users that it can reach 50 million users in less than 35 days.

50m

users in less than 35 days*

Still, the primary cause of this upheaval is the ever-increasing expectations of customers. They are quick adopters of the latest and greatest, and reward firms that deliver a superior experience. Consider fintech pioneers who are successfully taking on traditional banks in generating consumer loans by using digital risk analysis to approve applications and authorize funds in days or even hours instead of weeks.

* Source: Reaching 50 million Users: The Journey of Internet and Non-Internet Products
<https://medium.com/techtoday/reaching-50-million-users-the-journey-of-internet-and-non-internet-products-7a531d36f4ea>

The mindsets that matter

In defining their own digital strategy, we believe the most successful companies adopt or adapt some subset of the following mindsets. These companies:

Create a culture of innovation

To thrive at this cadence, organizations must have a culture of innovation at speed. They empower small, autonomous teams from all levels that feed on open innovation, and also look outside their own walls for solution partners. Their goal is to get to market quickly, absorb feedback from customers and iterate, all with an aggressive pace. Speed to market is one of the ultimate drivers of success in the digital enterprise.

When a global consumer goods manufacturer of a popular snack decided to create a new line of its potato chips featuring pictures, trivia questions, facts and jokes printed on them, the company followed an open-innovation approach. It found the expertise it needed in a bakery in Bologna, Italy, which used an inkjet method of printing images on food products.

The collaboration saved at least a year in development time and significant cost. The consumer goods company now reports that 35% of its innovations – billions of dollars in revenue – are generated through open innovation.

Think a lot about experiences

Digitally savvy organizations think of what they deliver as an experience, a radical shift from delivering a product at a specific profit margin. This “experience” is what customers see, hear and feel when interacting with your organization. At the heart of being digital is this passionate focus on knowing what the customer wants and delivering experiences at such a high level that they generate goodwill, loyalty and shared benefits – a true competitive advantage, in other words.

But employees also have an experience, which employers must develop and nurture. Experiences can also extend to a broader ecosystem: how you take care of the partners you co-create with, suppliers you rely on and the community where you do business.

CASE SNAPSHOT

DriveTime goes virtual

Used vehicle retailer DriveTime purchases tens of thousands of vehicles each year at auction. It can be a terribly inefficient business model to operate. For DriveTime, it required sending 65 inspector-buyers to public sales across the country. Almost invisible to headquarters, the buyers relied on experience, knowledge and gut instinct to make purchases, then record the process on paper.

Clearly, a digital intervention was required. “We needed a process that was more data-driven and transparent, and that might help us bottle and share all that seasoned knowledge,” says Travis Bleile, Business Intelligence Developer, DriveTime.

For solutions, DriveTime turned to Microsoft PowerApps and Azure SQL Database.

The resulting app, Online Buyer, allows buyers to skip field trips and connect from their desktop to a video feed, viewing up to four auctions simultaneously. One benefit: buyers can purchase three times more vehicles than previously possible.

Better yet, purchase decisions are more informed because agents can turn to data inspection reports and web services in Online Buyer to estimate recondition costs, decode Kelley Blue Book values and then calculate and track bids.

Focus relentlessly on customers

Digital companies take traditional business models and stand them on their head. For example, traditional companies start with the need to sell product and work outward; digital companies start with a customer's pain point and mobilize resources to solve it. They invest heavily in determining what customers are demanding, both articulated and unspoken, plus the experience, and address these issues.

Use data and insight to build competitive advantage

Insight fuels smart companies, and data fuels insight. The digital enterprise knows it must own data to win, so the company must collect it at every point possible – sensors are everywhere. Nearly two-thirds of companies with well-established advanced analytics strategies report operating margins and revenues of 15% or more, according to a joint survey by EY teams and Forbes Insights.

That same survey found global companies are investing upwards of US\$5 million in analytics software, yet only 12% describe their analytics maturity as “leading.” This means that while many firms collect terabytes of data, relatively little of it is put to good use. Digital leaders create a strong company culture that champions analytics, understanding that the value is created by human judgment informed by data rather than by just data itself.

Forge a new partnership between IT and business

While IT is gaining inroads as a voice at the table concerning business strategy, it is time to amplify that voice and better leverage the value IT offers.

IT plays a pivotal role in creating scalable technology platforms and digital foundations on which businesses can operate while also understanding that it must deploy new processes and experiences quickly if the business is going to stay competitive.

In short, companies that want to create a strategy fit for a digital world need to develop a mindset built around experiences, innovation, customer needs, data and technology.

Who is going to make that happen?

US\$5 million

in analytics software is being invested by global companies

The digital leader

For success in this era, a recalibrated leadership model is required. Drill down and you will find a CEO with passion for the customer, supported by the board. The chief executive ignites a simple premise through the organization: if you take care of the customer, the rest of the business will take care of itself.

The digital CEO embraces a level of uncertainty that might have sent earlier chief executives and their 10-year road maps to early retirement. In today's environment, certainty is a rare luxury. Your digital organization – boardroom to factory floor – must evolve largely absent of guide rails pointing the proper direction.

Perhaps the emergence of artificial intelligence personifies this ambiguity best. AI systems lack a gold standard to base decisions upon. How AI systems are designed, trained, refreshed and monitored literally changes by the week. So do definitions of reliability and trust. There are few published decisions from a national standards group that a chief executive and team can turn to for guidance. Yet, AI is a potential Category 5 organization-changer, so you must be comfortable with uncertainty when evaluating and implementing these systems.

One way through the confusing maze is iterative innovation, where experiments eventually lead to success. The CEO must accept and even celebrate failure so the rest of the organization does as well. Being able to innovate and experiment in the context of constant change, and to accept the risks that all that entails, will be a key driver of competitive success in the coming years. It starts with a transformative leader who instills a culture of “yes” across the organization.

Companies often underestimate the wall-to-wall changes in organization design and culture required to execute a digital transformation. Adobe CEO Shantanu Narayen foresaw that obstacle as the company began its digital journey in 2012, calling for a “burn the boats” mentality – signaling there was no turning back once committed to digital.

To do so, everything inside the company had to change. Adobe shifted its business model from selling packaged software to a licensing model around its Creative Cloud platform, which attracted almost 700,000 paid subscribers in the first year and is today a US\$4.1 billion cloud business. In parallel to this transformation, Adobe created a variety of digital products and services geared toward current consumer needs and future-focused applications.

According to research conducted by Innosight, half of current S&P 500 companies are expected to be replaced by 2026. Digital technology and new business model innovators are likely to drive this shift.

The digital workforce

Employees with new perspectives and capabilities are needed to execute digital strategies. This new wave of workers think fast on their feet, are continually learning, play well on teams and can expect to be in a new job, maybe a new career, every few years.

Organizational design in a digital enterprise must be aligned to motivate these employees to speak up, to be the voice of the customer and to be empowered to pull a metaphorical Andon cord – the rope (or button today) on a manufacturing line that lets any assembly worker halt the proceedings when a serious imperfection is spotted.

With the people element of your business, it's culture that bakes the cake. If the organizational design misses the opportunity to support, reward and encourage those behaviors behind the strategy, then a digital strategy is pointless.

Conclusion: when it works

Even in the first few moments of the emerging digital enterprise, the benefits of following a strategy fit for a digital world are becoming evident. Here are four.



1

Drives innovation and competitive advantage

It started with large online omni-channel retailers creating a better customer experience around convenience, price, personalization and discoverability. These innovations were supported by massive back-end sets of digital technology that advanced traditional warehouse and distribution processes. Also think about market leaders in ride-sharing services and online property/vacation rentals where technology helped create a better experience for getting a ride and renting a room. These breakthrough services started with customer need and leveraged technology as it matured and became scalable.

2

Enables disruptive business models

A digital orientation provides organizations the agility and tools to rethink what business they are truly in and extract competitive advantage. In 2015, Philips signed a deal to sell lighting to Amsterdam Schiphol Airport. Schiphol pays only for the light it uses, and Philips retains ownership of the bulbs and their maintenance. That's right, it's lighting as a service. From a strategy perspective at Philips, this requires a new business model for the group, enabled by sophisticated monitoring and analysis technology. Instead of being incentivized to sell more bulbs, Philips is motivated to create bulbs that last longer and are more efficient.

3

Accelerates strategy and benefit realization

Accounting and financial management is moving away from manual processing and into the digital era. Smart tools help speed up forecasting and what-if scenario planning. Another benefit is accuracy; intelligent automation increases accuracy by eliminating human error and potentially reducing human biases through the use of machine learning. Suddenly, decision makers have a predictive view into the company's finances, which gives them confidence to make more informed decisions.

4

Improves our communities

The digital enterprise is smart in the ways it manages natural resources in a sustainable manner, follows ethical and egalitarian business practices, and creates high-value jobs that spin off benefits for the surrounding community. In Detroit, JPMorgan Chase works with local economic and workforce-development organizations, small businesses, philanthropies and the mayor. The goal? A series of investments totaling US\$150 million to help turn around the struggling city with jobs, infrastructure and other community resources. In the end, creating a sustainable business model and a partnership with the community that benefits the company and its stakeholders.



Summary

As business leaders are learning, implementing a digital strategy is more than difficult. They must overcome previous mental models about how business is supposed to work. Their experiences of technology, of change and of customer experience are a mismatch for where things are today.

Digital transformation is less about digital and more about transformation. Less about machines and more about people – helping them flourish in a new environment. Transformation is messy. It's also inevitable if a company wants to keep its doors open.

In fact, consequences can be dire for companies that don't find their digital footing. They will continually be beaten to market by competitors operating from a digital platform. They will be too slow at innovating, building, testing and learning. They'll have trouble allocating resources quickly enough to adapt to fast-changing market conditions. They will lose touch with customers. Their best employees will depart. Maybe that's why more than 1,000 C-level executives identified developing "next gen" leaders as their No. 1 challenge in the Global Leadership Forecast 2018.*

So, have faith that the journey to creating a digital organization is worth the price in developing motivated employees, loyal customers and happy stakeholders.

The endpoint is strategy fit for a digital world. Remember, it is about **being** digital and not just **doing** digital. And it is about people more than technology.

* Source: Global Leadership Forecast 2018
25 Research Insights to Fuel Your People Strategy
[https://www.ey.com/Publication/vwLUAssets/ey-the-global-leadership-forecast/\\$FILE/ey-the-global-leadership-forecast.pdf](https://www.ey.com/Publication/vwLUAssets/ey-the-global-leadership-forecast/$FILE/ey-the-global-leadership-forecast.pdf)

CHAPTER 2:

Workplace, Reimagined

More than 1.3 million licensed truckers drive throughout the United States, and multiples of that number serve and support them on the road. If the pundits are correct about autonomous vehicles becoming mainstream around 2030 or 2040, many of these jobs will disappear, victims of automation, cost cutting and efficiency.



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Innovation is not merely disruptive. It is also one of the most powerful tools we have for promoting inclusive capitalism — the idea that businesses should work to create long-term value for stakeholders across society.

Carmine Di Sibio, EY Global Chairman and CEO

But new jobs will be created to support the rise of the autonomous trucking industry. For example, these vehicles will run as much on data as fuel, so specialists will be needed to prepare that data, clean it, mine it, analyze it and act on it. Insurance companies will hire data analysts to understand and price the risk. Digital supply chain professionals will be required to track cargo and monitor vehicle performance. IoT networks will be necessary to process feedback from the vehicle's cameras, lasers and other devices to help it steer, accelerate and brake. Predictive modeling scientists will program software built on AI to help avoid collisions. Shipping docks will need new physical designs, telemetry systems and cargo-moving machines to greet the driverless trucks when they off-load or load up.

The arrival of digital is changing the nature of work – and workers. The data explosion is one primary reason; data enables automation, but it also needs tending to by humans. The other reason why work is changing is the exponential improvement in the price per unit of performance of technology. As robotic process automation (RPA), machine learning and AI mature, they do more and smarter work at less cost.

Any business that hopes to be competitive must respond to these two imperatives, and quickly. The next few years will see even bigger and more disruptive shifts in the workplace caused by digital transformation.

The future of work, to some, is a terrifying prospect. By one estimate, more than 20% of the global labor force – 800 million workers – might lose their jobs to machines by 2030.

800m

workers might lose their jobs to machines by 2030*

To others, the future of work promises not only more engaging and impactful work but also a greater shot at the much fabled but little realized work-life balance. The digital workplace could be a place where capabilities such as collaboration, data savviness and the ability to learn will thrive. Productivity gains of the last few decades will accelerate thanks to collaboration among virtual teams and developments of “cobots,” smart machines working in tandem with humans.

* Source: Robot automation will 'take 800 million jobs by 2030' – report
<https://www.bbc.com/news/world-us-canada-42170100>

Although much commentary is around robots putting humans out of work – and that will certainly happen although estimates vary wildly – the fact is that companies that use digital technologies only to cut full-time employees (FTEs) will soon be out of business themselves. Winners will not be determined by how cheaply an assembly line can be run, but rather by the innovativeness of the products produced on it. Training workers to participate in the digital age is critical for both businesses and their employees to prosper, as well as those workers accepting responsibilities beyond just performing the job in front of them.

The next three to five years will be ripe for workplace transformations that leverage digital technologies in three areas: accelerating organizational change, empowering seamless virtual team collaboration and unlocking workforce productivity. Industries most likely to be touched are health care, transportation and financial services, but the impact will be felt across all sectors. Please refer to Figure 1 for further details.

Figure 1: Applicability of automation by business function (Percent, U.S. data)*



* Source: EY – The future workplace: how to automate intelligently
https://www.ey.com/en_gl/workforce/how-do-you-ensure-you-are-automating-intelligently

Accelerating organizational change

The human resources department is on a similar journey that the IT department was on 20 years ago, moving from an operational support function into a crucial business partner aligned with the strategic direction of the company. HR can choose to be the tip of the spear that is accelerating organizational change, and is being handed a mission to further industrialize recruitment, onboarding, compensation, benefits and career management. More profoundly, HR will be called on to manage the interfaces between human and nonhuman workers.

Nothing will be more important than recruiting, training and retaining the right workers to operate and lead the digital enterprise. But here's a real problem: many companies don't know how to hire the right diverse digital talent, making costly mistakes that can take years to correct and return to a state of normalcy. According to job-tracker Glassdoor, the average job opening receives 250 applications, yet 30% of those hired leave within 90 days.

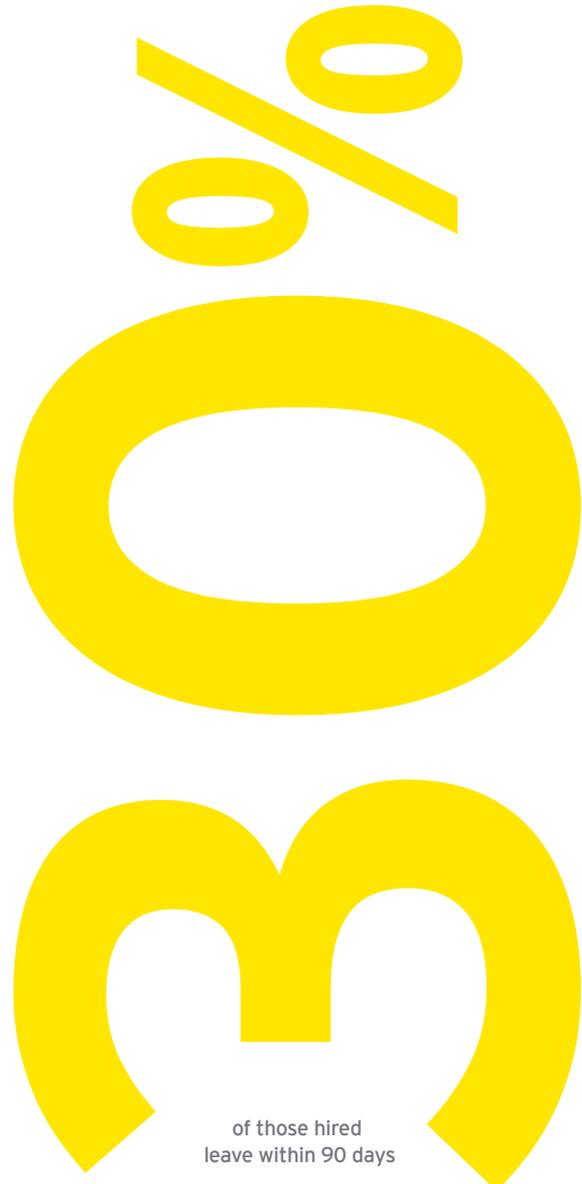
One fundamental reason for this is that hiring managers often introduce unconscious bias into their selection decisions. Such prejudgment knocks out many qualified candidates whom employers can't afford to lose, and reduces workplace diversity. Digital technology appears ready to make a difference here – AI will not only speed up early-stage, top-of-the-funnel applicant winnowing but also can be designed to mitigate bias during hiring.

Pymetrics, a start-up hiring consultant, puts applicants through neuroscience-based quizzes and games that test for cognitive and emotional traits. Results are matched with those of top-performing employees working for the client. Another start-up, HireVue, uses AI to evaluate recorded candidate interviews and grades them on verbal skills, intonation and gestures.

The gains of bias-neutralized job searches can be measured several ways. By introducing AI to make prehire assessments for customer support positions, Hilton's corporate recruiting division

shortened the time between initial interview and job offer from 42 days to 5. Here is a more important payoff: by hiring the best candidate, no matter their gender, race or nationality, employers promote a balanced, integrated workforce with diverse skills forged all across the world.

That said, AI can introduce bias in its analyses. Amazon was embarrassed recently when an in-house recruiting tool was apparently underrating female candidates for software development jobs. The reason? The program studied recruiting patterns over 10 years, a time when most successful hires were men.



Empowering seamless virtual team collaboration

Is the workplace even a “place” anymore? As digital business models advance, location and distance become less relevant. In fact, having too much real estate can become a burden on a digital company’s financial agility. The workspace itself is in transformation, just like everything else. In the coming years expect a transformation in what the work environment looks like, designed to leverage digital collaboration technologies used by virtual teams.

Take Eli Lilly and Company, which experiences the same organizational silos that most companies of any size encounter. At Lilly, the wall is between scientists in their labs and leadership and administrators in offices. It’s a gap that slows collaboration and getting innovation to market at competitive speed.

Lilly is trying to work around silos, and has plans on the drawing board. “We envision dissolving these physical barriers through something we call ‘in-lab collaboration’ – putting communication and collaboration tools inside our labs that empower scientists to share a creative spark with other scientists across the globe, or with the clinical development manager just upstairs,” recently wrote Mike Meadows, Vice President and Chief Technology Officer at Lilly. Using Microsoft Surface Hubs to whiteboard ideas, make Office 365 video calls and chat in real time through Microsoft Teams should “foster innovation at scale and can help ensure that great ideas don’t get lost.”

Workplace design is trending toward open layout, fun and funky spaces intended to bring workers together serendipitously. Apple’s glistening US\$5 billion corporate spaceship promotes employees bumping into each other. McDonald’s new Chicago headquarters, opened in 2018, features “work neighborhoods” that include huddle rooms, rooftop spaces and private phone rooms.*

* Source: McDonald’s Opens New Global Headquarters in Chicago’s West Loop
<https://news.mcdonalds.com/stories/company-news-details/mhq-grand-opening>

Unlocking workforce productivity

As the digital enterprise matures, workers will be freed from mundane and repetitive tasks and be ready for high-value work. Instead of manually recording numbers on spreadsheets, highly trained accountants will help clients prepare for audits. Instead of switching on new access accounts, technicians will switch to customer service, where they can use their cognitive reasoning and communications skills to build trust.

Productivity will grow as data and analytics capabilities extend to the trades, where smart tools that include augmented reality and interactive schematics will deliver information that must be analyzed by the operator. Manufacturing tools are now and will increasingly be embedded with tacit knowledge – specialized know-how distilled from experts.

Other benefits of freeing up human capital for higher-value work are more obvious. Intelligent automation allows processes to flow 24-7, increasing efficiency and enabling companies to react more quickly to economic changes, customer demands and geopolitical shifts in society. Lower costs, increased efficiency and happier employees add up to sustainable wins for stakeholders and shareholders.

Digital brings new responsibilities

With the creation of the new digital workplace comes new responsibilities that will have to be accepted by business leaders and even by employees themselves.

Responsibilities to stakeholders

Automate intelligently. Leaders today have the opportunity to stay ahead of competitors by prioritizing automation projects that build distinctive market advantages and deliver value for their organizations, customers and society at large. Companies can start their automation project prioritization by linking the automation strategy to business priorities and culture transformation; performing an organizational review to identify talent needs and skill gaps; and defining and developing an ecosystem plan to unlock the right talent and technologies.

auto

mate

Report responsibly. Financial reporting lets shareholders know if the numbers are succeeding, but corporate social responsibility reporting educates all stakeholders about whether the business is achieving its environmental, social and governance goals. Investments in areas like human capital can be measured to see how they contribute to a company's long-term profits. Big data can underscore the value of these kinds of investments.

CASE SNAPSHOT

Three steps to intelligent automation

To automate intelligently, driving the greatest long-term impact with scarce organizational resources, leaders should consider three key steps:

1. Link the automation strategy to business priorities and the culture transformation agenda.
2. Perform an organizational review to prioritize potential automation projects, identify talent needs and skill gaps.
3. Define and develop a build, buy or partner plan to unlock the right talent and technologies.

We believe the challenges posed by initiating, launching and deploying automation initiatives require broad executive-level buy-in and coordinated strategy, since the impact will be cross-organizational and likely utilize a scarce talent pool.* As such, leaders are best positioned to succeed by aligning automation activity with broader business priorities.

* Source: EY The Future Workplace: how to automate intelligently https://www.ey.com/en_gl/workforce/how-do-you-ensure-you-are-automating-intelligently

Responsibilities to employees

Bring employees on the journey. Companies moving forward on a large-scale digital transformation should bring all employees into every stage of the journey. It's important they have input into the purpose of the transformation as well the "what" and the "how." Explaining "why" includes leadership's views on industry-wide trends, stakeholder input and reflection on the company's values.

Provide skills to succeed. Training workers to participate in the digital age is critical for businesses and their employees to prosper. Workers will need to be constantly re-skilled for our evolving needs such as digital analytics, AI, customer experience and other in-demand competencies.

Rethink career development. Businesses are fundamentally rethinking career development in the digital age. Leading companies not only train their people, they also build learning into their career paths. They support mobility and job rotation. They create teams that are rich in ethnic, gender and racial diversity. They guide workers into jobs that didn't even exist when they were first hired.

Responsibilities to society

The digital revolution is a disruptive force that is both challenging and empowering. For the world at large, it promotes "inclusive capitalism" – the belief that businesses should work to create long-term value across all society.

One way the digital enterprise can serve the greater good is by embracing the "gig economy," which represents a massive shift in how people work. Freelancers increasingly work on their own terms, which suits their goals and the needs of the companies they work with. Enterprises are catching on to the value of creating a network of top contractor talent. An August 2017 study of nine Fortune 500 firms found that, over the previous year, the number of projects sourced via online freelancing platforms increased by 26%.

A second way business can benefit society is by harnessing big data to promote inclusive capitalism. Big data and advanced analytics produce undreamed amounts of information regarding the performance and impact of businesses around the world – whom they source from, the working conditions of their factories and where their financing comes from. This information can be used by regulators, activists, consumers and most powerfully by companies themselves to make economic growth more inclusive.

Only 14% of CEOs have the leadership talent to execute their strategy.*

The worker's responsibilities

It's not just companies that have new responsibilities in the digital era. Workers do, too. To contribute to the success of their organizations and their own careers, employees should proactively upgrade their skills and develop new capabilities. Another must is for employees to advocate, to contribute with ideas as much as with muscle. As digital flattens organizations and breaks down silos, good ideas and strong opinions need to flow horizontally, from every nook and cranny of the enterprise. Finally, if an organization is to truly be customer-driven, every worker must serve as the voice of that customer.

* Source: Global Leadership Forecast 2018
<https://www.ey.com/gl/en/services/people-advisory-services/ey-the-global-leadership-forecast>

Summary

In mid-2017, the era of industrial automation took an unexpected turn. In the city of Fall River, Wisconsin, employees of Three Square Market considered an invitation from their employer to inject RFID microchips into their hands, to better understand the possibilities around machine-and-man integration. Once the chips were injected subcutaneously, the hand would serve essentially as a handy ID card, allowing employees “to make purchases in the company’s break room market, open doors, log in to computers, use copy machines” and other actions, according to a company press release.

Although dozens of employees declined, 50, more than half of the staff, accepted. By January 2018, the number was up to 70, and then 80.

What was going on here? Humans becoming cyborgs for their employer? What was not captured in much of the press coverage was the company’s partnership with Swedish company Biohax. They are investigating how implantable technologies can help improve health care and

solve other big problems. Would you inject a microchip slightly larger than a grain of rice if it could detect a heart attack waiting for you in three weeks? Three Square Market workers want to be on the forefront of that discovery process, starting with how it feels to live with a built-in biochip.

The experiment at Three Square Market underscores the journey ahead of how work is being reworked. It’s a metaphor for all of us as we turn to incredibly powerful new technologies to perform not only some of our labor but also to learn, exercise judgment and make decisions. And in areas such as medicine, bio-machines will become, literally, part of us.

Are we open to the possibilities and ready to participate in innovation – even if it is in partnership with a machine? We believe that by doing so we have the best chance to author a future where technology improves the lives of workers rather than displaces them, and where businesses and their stakeholders create a sustainable environment rather than an uninhabitable one.



CHAPTER 3:

Customers, Understood

What is needed to engage consumers is fairly well understood; however, many organizations are not designed to deliver those experiences.



It's not about implementing technology to improve customer experience — it's about running a business like a digital leader.

The problem: most companies are organized around silos, where customer needs and opportunities become quarantined in individual departments. And in these siloed companies there is little recognition that a customer-driven business, by necessity, is an evolving and functioning ecosystem that spans not only all areas of the company but also across partners and vendors.

We believe that the next three to five years will prove crucial if companies want to create impactful experiences that attract and delight their customers. To do so, organizations have to make significant advances in three areas.

First, traditional organizational structures built around vertical chain of command and business silos need to be **redrawn from top to bottom** and designed with the customer at the center of the hub. Second, firms need to be **much more aggressive about deploying advanced technologies** throughout the organization, not just using them to solve departmental problems. And finally, the **customer experience needs to be redefined** as an end-to-end, integrated journey that include employees, partners and all stakeholders.

Software maker Adobe is an example of a company that has successfully made a digital strategy transformation, morphing from a seller of packaged desktop software to a subscription-based, cloud-delivered model. It changed its management organization from top to bottom and used technology such as AI to optimize processes and spark innovation. Adobe has also created new services and products around digital. The result? Since its journey began in 2013, Adobe has doubled revenue, to US\$8.5 billion.



* Source: Adobe: One Step Ahead Of The Market
<https://seekingalpha.com/article/4261734-adobe-one-step-ahead-of-market>

What's the rush?

It's not technology's accelerated pace of progress that drives an enterprise's march to digital; instead, it's that consumer expectations are moving even faster than companies can keep up. What's more, customers expect to be treated in a way that makes their experience seamless and easy. Frictionless. A Forrester study shows that 17% of Gen Y and 20% of Gen Z consumers will consider dropping a brand if the company's online chat response is slow.*

This rising tide of expectations isn't a big secret; business leaders are consumers too. So, organizations have spent the last five years figuring out what the digital equivalent is of a Four Seasons Hotel high-touch customer experience (CX). The truth is that there has been more pondering than successful implementations.

Let's look more deeply at how companies can better deploy their technological assets, and then how organizations themselves can restructure to create difference-making experiences that leave customers craving more.

Several powerful forces around CX are emerging, as are technologies that can help firms take advantage.

Personalization

Personalization is seen by many as the next big advantage-creator in marketing. When combined with big data analytics, personalization of products and services creates great value for customers – and often at very little extra cost to the producer. As we continue to drive better experiences, personalization of those experiences becomes critically important.

For example, Blair buys a latte each day as she departs the subway near midtown. Her favorite café probably has enough shopping history on Blair to know what time and days she comes in, her order history and payment preferences. A tap on the store's app sets the coffee-brewing wheels in motion so her beverage is ready and paid for when she arrives – no lines.

* Source: New Study Reveals How the Expectations of Gen Z 'Are Reshaping Brand Experiences'
<https://www.adweek.com/brand-marketing/new-study-reveals-how-the-expectations-of-gen-z-are-reshaping-brand-experiences>

CASE SNAPSHOT

Will healthbots be trusted?

In January 2017, the UK's National Health Service (NHS) prepared to launch a six-month chatbot trial involving 1.2 million residents in north London. It never got past beta.

The idea was that the bots could serve as an alternative to the overburdened NHS helpline that patients use for medical advice and to find additional services. So what went wrong?

According to Medpage Today, patients indicated they would use the system more to game the appointment system than trust it for reliable medical advice.

"I think health chatbots will be able to alleviate the lack of nurses and doctors worldwide; we just need to give it more time and significant development efforts and educate patients as well as doctors about the option," observed Dr. Bertalan Mesko, director of the Medical Futurist Institute.

The lesson: in some settings such as patient health care, introducing automation could be a bot-by-bot process.

Proactive marketing

Using the Blair scenario to illustrate another point, the retailer could deploy a bot to extend the experience by reaching her via the text she willingly provided via the app. She could be contacted to confirm the order and upsold in the same text during her train ride in: *Your order will be ready at 9:00 a.m. We currently have a special on croissants. Would you like to add to your order?* Machine learning will make future transactions even smarter, better able to predict behavior and perhaps become better sales agents.

This scenario depicts not only great service for the customer but works for the merchant as well by helping predict stocking and staffing needs. It creates a just-for-Blair channel capturing all the benefits of the customer-of-one strategy. Intelligent use of data can build trust and loyalty by offering more personalized and relevant experiences that customers truly value.

Still, only 52% of organizations offer relevant or personalized promotions during customer interactions, while 37% lack the capability to use analytics to reach customers with tailored communications, according to a joint EY-Forbes survey. This is a vast untapped opportunity.

Consumer privacy

From a consumer's perspective it's nice to have your needs anticipated; it's creepy to be anticipated too much. It's a delicate balancing act marketers face: collect just the right amount of information to power CX goals, but not one byte more. Enter blockchain, a distributed ledger or database that records an ongoing list of tamper-proof records, or "blocks," that is transparent to other users on that chain.

By design, blockchains are intended to be shared, and so they could help companies acquire better customer data from third-party vendors or partners. The time is coming when blockchain-based identity management systems will empower consumers to directly authorize with whom they will share personal data – and possibly charge a fee for that access.

The making of a great experience

Rapidly maturing technologies ranging from natural voice recognition to virtual reality will play key roles in creating "wow" experiences that delight customers and keep them engaged in the brand. London's hip fashion retailer Topshop last year installed a virtual reality (VR) waterslide that shot excited riders on a digitally created journey above Oxford Street.* Topshop sees VR as a branded experience to generate buzz.

Similarly, some North Face stores provide their shoppers with headsets and a guided tour of an exotic location to get them in a Yosemite state of mind. Other retailers like Lowe's and Wayfair are experimenting with technologies to help do-it-yourself shoppers envision how a remodeling project or new furniture might look like in their homes.

Unfortunately, few companies lean in to digital CX as much as they could. In fact, technology advances much faster than most can keep up with.

But there is no alternative but to keep up. Your customers aren't waiting around for you, and neither are competitors.

A large, bold, yellow number '52%' is centered on the page. The '5' and '2' are significantly larger than the '%' symbol.

Number of organizations that offer relevant or personalized promotions to customers**

* Source: Topshop to transform Oxford Street into a giant water slide - in VR
<https://www.thedrum.com/news/2017/05/25/topshop-transform-oxford-street-giant-water-slide-vr>

** Source: EY-Forbes Insights: Building trusted relationships through analytics and experience.
[https://www.ey.com/Publication/vwLUAssets/EY-building-trusted-relationships-through-analytics-and-experience/\\$FILE/EY-building-trusted-relationships-through-analytics-and-experience.pdf](https://www.ey.com/Publication/vwLUAssets/EY-building-trusted-relationships-through-analytics-and-experience/$FILE/EY-building-trusted-relationships-through-analytics-and-experience.pdf)

What is great customer experience?

Just what is a customer experience, exactly? Customers have multiple touch points when they engage with a company, including using online search, browsing the physical store or returning a product. Taken in total, these individual transactions form a journey. Great customer-centric companies think deeply about each of those experiences, about the overall journey, and how to improve them.

EY credits a great customer experience to specific hallmarks. The experience is creatively inspired and aesthetically engaging. It's frictionless for the user to find what they want to find and buy what they want to buy. (Every hang-up they encounter in getting something done is an excuse to go elsewhere.) The experience is end to end.

Although 69% of executives understand the benefits of creating personalized experiences for customers, 41% of them say they aren't using advanced analytics to analyze customer behavior.*

Developing those experiences is a team sport built on continuous innovation and experimentation. Remember when it was up to just IT to create an online experience? Now it needs to be a creative partnership involving many experts (including IT) who know product design, industrial design, motivational behavior and sensory science – and the technology that makes it all add value for customers.

Momentum behind creating terrific experiences for consumers must extend to dealings with business customers and partners. B2B customers expect the same qualities in transactions that you deliver in B2C engagements: ease of use, engaging interfaces, high-quality service and consistency across channels. If you fail to address a customer experience problem in a commercial setting, you will lose customers just like in the consumer world.

In both B2C and B2B, success means getting to understand the jobs that customers are trying to accomplish and making sure that you're helping in ways that build trust. Understand which of those interactions are building trust, and which are eroding it. Which of your touch points cause pain points? Which of those interactions are really phenomenal and valued?

Retailers have been creating experiences for their customers since the first brick-and-mortar store opened; see the shop owner sweeping her sidewalk to welcome patrons. But in this era of omni-channel selling, companies often don't apply the same rigor to each channel. They create a wonderful experience in-store, but their online experience is cookie-cutter. Or they focus too much on individual touch points without knitting together the overall experience.

Fabletics gets it. Actress Kate Hudson co-founded the activewear brand as an online-only store in 2013, but then bucked the e-commerce trend by adding 22 brick-and-mortar locations. Why? Data richness was one reason. There are things you can learn about a customer in-store that you can't learn online. Marrying the two could draw a more dimensional, more predictive image of who shops the brand.

For example, when a Fabletics customer wants to try on clothing, an associate logs the event using a mobile device running on Microsoft Azure, touching the device to a screen outside the dressing room. A tracking system logs the apparel pieces along with the customer's name and account information captured previously online, such as size preferences.

"From this, we can analyze: Did the display get you excited about the product? Did the merchandising and product speak to you?" says Fabletics President Gregg Throgmartin. "And if the product has a high take rate to the fitting room but a low conversion rate at checkout, we can learn why. Was it the fit? Was the fabric scratchy?"

During the third quarter of 2017, same-store sales increased by 38% year-over-year and Fabletics is currently expanding to 100 stores while competitors shutter theirs.

* Source: EY analysis, How can big data increase customer trust?

The four pillars of customer transformation

“Put the customer at the center of everything you do” has been trusted advice long before digital arrived. It’s almost a cliché. But we find that most organizations organize with the customer outside looking in. They are set up to optimize silos, but silos don’t work for creating end-to-end customer enchantment.

There are four dimensions to how we connect the customer experience to break down those silos.

1

Challenge your operating model

Traditional operating models do not acknowledge the organizational fluidity needed to enable that customer to be a common asset and a prized focus of everyone in the company. Companies that lead in CX build a business innovation capability that allows crosscurrents to flow, and that can quickly innovate around new technologies. Their motto: innovate, prototype, test, analyze, scale and repeat.

Building trust with customers becomes the basic building block enabling you to create relationships that lead to unwavering loyalty and sustainable profits.

2

Challenge your data

Companies have an information gap to fill, and most are behind in the heavy lifting required to get their customer data organized and accessible. Their hard-won information sits on platforms that don’t speak to other systems. Companies need to request all internal data, and request more; they need to fully leverage data for insights that offer competitive advantage. Data is the currency that drives the customer experiences.

3

Challenge your existing systems

Companies have used technology such as automation as solutions to problems or process gains rather than as platforms to underlie a customer-driven strategy. There’s much work to be done that connects the dots from your grab bag of platforms and solutions, whether that means replacing old with new or integrating what’s in place. The cloud is often the best place to start the journey that must involve elements of open architecture and organizational agility.

4

Challenge your external operations strategy

The fourth pillar of transformation is to rethink the external operating model; organizations need to rethink and re-create the way they do business with partners and vendors. This model is often as siloed as internal operations. Companies need external partners to help create this new trust with new and existing customers. If that model isn't coherent, then internal and external may be working at odds.

You'll know your pillars are aligned correctly when it's clear to everyone in the organization who is responsible for innovating, delivering and deploying customer experiences. It won't be just marketing, or just sales, or just IT. And that culture change requires a different model from the ones most organizations have today.

With a newly connected enterprise, leaders should keep asking questions that lead to experiments. Could we use this new technology to improve CX? What are three technologies that might allow us to take a leap forward in customer engagement? Are our technology deployments eroding trust or enhancing it?

Benefits of getting the experience right

This is all very hard work, but leveraging new technologies to create a customer-centric organization is difficult for competitors to challenge. Your customers will become more engaged, loyal and contribute to your brand equity. All three increase sales and in doing so improve enterprise value. They ultimately confer sustainable competitive advantage.

For stakeholders and shareholders, the rewards can be great as well. A Harvard Business Review study found that, for companies with transactional business models, "customers who had the best past experiences spend 140% more compared to those who had the poorest past experience."* For businesses built around subscription services, members who gave top experience scores had a 74% chance of remaining a member for at least another year. Members who gave a low rating had a 57% chance of canceling the next year.

A better world

Finally, digital technologies that serve the customer also serve a greater social purpose. We believe that blockchain, to take one example, will transform the supply chain, giving customers a means to verify the authenticity of the goods they buy and the safety of the foods they eat. In the same way, blockchain will help producers and manufacturers build trust with consumers, who will know whether those coffee beans were ethically sourced or those tomatoes grown organically.

TOMS, a shoe retailer, donates a pair of shoes where needed for every pair it sells. To bring consumers on board with the idea, it put virtual reality headsets in more than 100 stores around the world. Shoppers take a trip to Peru, where they take in panoramic views of a schoolyard as children are handed boxes of free shoes. TOMS' "Walk in Their Shoes" campaign is a perfect alignment of brand mission, social benefit, customer engagement and technology that creates a great company and a better world.

* Source: The Value of Customer Experience, Quantified
<https://hbr.org/2014/08/the-value-of-customer-experience-quantified>



Summary

We believe that over the next three to five years, digital companies need to break down silos and reorganize with the customer at the center. To be productive, responsive and innovative, companies will need to be much more aggressive about deploying advanced technologies. Finally, they must rethink their customer experiences as end-to-end, integrated journeys that include employees, partners and all stakeholders.

If your company still believes that the sales or marketing departments “own” the customer, you are set up for failure as the next decade approaches. In the digital enterprise, everyone owns the customer, and nobody owns the customer.

CHAPTER 4:

Operations, Reinvented

In some ways, automating operations to increase productivity, improve efficiency and reduce costs should be the low-hanging fruit of digital transformation. Start with ever-increasing computing power, IoT, layer in digital analytics, artificial intelligence and other software smarts, and plug it all into the cloud. Add blockchain to season and voilà! The digital enterprise is humming like a Formula One race engine.



Technology, media and telecom companies that adopt this Operational Excellence model have significantly higher levels of satisfaction with their product quality (39% vs. 16%) and have much higher levels of confidence in managing today's risks (48% vs. 11%) than those who have not.

The problem: That powerhouse engine is still in the garage.

Think of these three examples:

Criminal inefficiency

The biggest police service in the United Kingdom relies on incompatible IT systems that frustrate effective coordination and waste valuable time. According to a newspaper report, "Whenever a crime is committed the details are gathered separately by the police, the Crown Prosecution Service, courts and prisons, leading to duplication of resources."

Preventable deaths

Science and technology provides medical patients with a panoply of wonder drugs and delivery innovations, yet thousands of people with treatable diseases die annually in the United States because they don't take their medication properly, according to the World Health Organization. Technology promoting patient adherence is still in its infancy.

Unusable data

To solve their silo problem, companies often create data lakes, a repository filled with business data from which the entire organization pulls information. However, because these repositories are not tuned to corporate strategy or designed to solve real problems, they become difficult to use and eventually languish. Data lakes often turn into data swamps.

If organizations relied more on intelligent automation coordinated throughout the enterprise, they would win with significant personnel savings, fewer entry errors, faster closes, better customer experiences and freeing up people to do more meaningful work. We would all win with a better working world that could address big, complex industry issues and opportunities to deliver outcomes that help grow, optimize and protect businesses.

In other words, by fragmenting operations improvements, a lot of money is left on the table. In a typical supply chain cost reduction program, the industry targets savings of 3%–5% for cost of goods sold and 5%–10% for selling and general administrative expenses. Using digital technologies, EY professionals believe that operations has the ability to deliver 25%–40% cost savings, a fundamental shift that frees up resources for improving things like customer experiences or audit preparation.

It's a matter of conjecture to explain why more investment is not being made to create end-to-end digital operations. Analysis by paralysis is certainly one explanation: corporate decision makers are bombarded constantly with alternatives for platforms and technologies. Another possibility might be attributable to "the innovator's dilemma," the term for companies so caught up in prior successes that they fail to react to disruptive technologies headed their way.

Over the next three to five years, however, those that make the most informed decisions in digital operations will win clear competitive advantage. To get the race car out of the garage, business leaders should keep focused on three areas of maximum pay-off potential: intelligent automation, AI and blockchain.

Intelligent automation

Operations executives are already familiar with front-end software technology called robotic process automation (RPA), which enables software bots to perform simple human actions and automate repetitive tasks across multiple business applications at a fraction of the cost of traditional solutions, and without the need to swap out current IT systems. Companies use RPA primarily to replace humans performing menial and repetitive tasks on the assembly line, in the warehouse and in finance management, and can drive about 20%–25% of FTE savings. RPA process automations can be written in weeks; payback on RPA programs is typically less than a year.

The next advance comes as IA is added to the mix. New automation solutions combine machine learning and cognitive technologies that allow systems to make decisions, something not possible with RPA alone.

* Source: Internet of Things (IoT)
https://www.ey.com/en_gl/internet-of-things-iot

For example, an insurance bot with machine learning capability could approve a claim application based on available documents and historical data on similar claims. Part of the win is a happy customer who doesn't have to wait weeks for a human to make the decision.

IA will have a big impact on end-to-end processes such as plans-to-produce, order-to-cash and procure-to-pay, where decisions are required. In a potential plan-to-produce example, the software would identify potential sources for a part, send candidates an RFQ, evaluate returned bids and monitor performance of the winning bidder, all steps previously done manually.

As the digital industrial world evolves, AI will work together with another powerful technology, the IoT, which connects devices to the internet using embedded software and sensors to communicate with one another.* This process generates seemingly unfathomable amounts of data, requiring AI to make sense of it all. Tesla's Elon Musk refers to his vehicles as operating on a network where "when one car learns something, they all learn it."** Many other companies are connecting their facilities to IoT networks to accomplish everything from predicting turbine failures to reducing energy and water waste.

** Source: How Tesla is ushering in the age of the learning car
<https://fortune.com/2015/10/16/how-tesla-autopilot-learns>

Top 10 reasons why RPA projects fail

Up to 40% of RPA projects fail, further stalling many companies on their digital transformations. EY teams see multiple reasons for these failures:

1. Not considering RPA as business led, as opposed to IT led.
2. Not having an RPA business case and postponing planning until after proof-of-concepts (POCs) or pilots.
3. Underestimating what happens after processes have been automated.
4. Treating robotics as a series of automations vs. an end-to-end change program.
5. Targeting RPA at the wrong processes.
6. Applying traditional delivery methodologies.
7. Automating too much of a process or not optimizing for RPA.
8. Forgetting about IT infrastructure.
9. Assuming RPA is all that's needed to achieve a great ROI.
10. Assuming skills needed to create a POC are good enough for production automations.

For example, the world of manufacturing is currently undergoing a transformation – commonly referred to as Industry 4.0. The default position for many C-suite executives has been to invest in Industry 4.0 technologies, such as AI, the industrial internet of things (IIoT), 3-D printing and cloud-based platforms. The expectation that spending on smart manufacturing technologies will rise by nearly US\$300 billion (12% CAGR) by 2023 is reflective of this fact.* However, the challenge for companies will be to manage the convergence of these digital systems with physical ones, and for CEOs, it is knowing where and how to invest. Working together, AI and IoT power many cost-saving and performance-enhancing industrial solutions required by the smart factory.

Smarter systems become more cognitive, adding technologies such as natural language processing/generation to handle unstructured queries and understand the meaning, sentiment and intent around an interaction, useful for handling typed-in queries on a customer-support app, for example.

Blockchain

Blockchain is at the high end of its hype cycle but is also being tested in a number of experiments to determine what it can do in an operations environment. To be truthful, there are relatively few examples today of industrial uses of blockchain at scale. But it's also obvious that blockchain's ability to act as a verifiable distributed ledger will have real impact.

Blockchain makes it possible to track and trace integrity. Being able to have authenticity of origin – from producer through the supply chain to the end consumer – is a boon for insurance companies to keep track of their risk exposure while an item is in transport. It means consumers can be assured that their organic produce is actually organic or musicians can ensure that royalties are appropriately distributed.

Procurement and smart contracting might be ideal blockchain partners as well. In the journey from producer to end user, blockchain can remove friction from the process managing sales orders, shipment orders, providing proof of delivery and

authorizing payment to the logistics company. All of those decisions can be held in blockchain's contract and software logic, executable when the shipment reaches its destination.

As powerful as these potential payoffs seem, highest-level benefits will come when the operation's function is recognized as a driver of competitive advantage rather than as a lever to lower costs. Digital tools now make this possible.

Digital finance and tax

In many corporations, the finance function feels behind the digital wave. And this is true even as digital companies are under extreme and increasing scrutiny from global tax regulators; tax has seen more change in the last 5 years than in the previous 50. This is especially true in developing economies like Brazil and Mexico, which are ramping up use of technologies like blockchain to audit and collect tax from companies with offshore operations. They are accessing data closer to the source and changing the dynamics of the reporting process – they can basically peer into a company's financial profile at a level that's never been seen before and in almost real time.

As companies step out of their old business models and look for new opportunities, especially app-driven businesses, they create additional tax exposure. Companies must think about what EY professionals term “digital tax effectiveness,” identifying the tax implications of business strategies, models and supply chains.

Companies must get on an equal tech footing using RPA, machine learning, blockchain and other digital tools to digitalize their tax and finance functions. In other words, intelligent tax automation. They need tools that communicate directly with government regulators. Embracing digital finance and tax management and moving to the cloud will give them greater instant insights into their up-to-the-second financial situation, generate cost savings and help avoid paying unnecessary fees and assessments. We think following a multiyear road map to achieve this state will be essential.

* Source: Smart Manufacturing Market by Enabling Technology (Condition Monitoring, Artificial Intelligence, IIoT, Digital Twin, Industrial 3D Printing), Information Technology (WMS, MES, PAM, HMI), Industry, and Region - Global Forecast to 2023 <https://www.marketsandmarkets.com/Market-Reports/smart-manufacturing-market-105448439.html>

Strategy shift: making operations a competitive differentiator

A primary role of leadership in operations generally and supply chain specifically is to cut costs. The cost of goods sold, or operational cost, needs to come down to fund needed investment in R&D, pricing, marketing and sales. What has changed is the complexity of the supply chain environment due to the emergence of digital sales channels and the increasing speed of both product development and the arrival of new entrants. Supply chain needs to raise its performance to keep their companies competitive.

Digital technologies are poised to deliver cost-cutting and other efficiency gains starting immediately. But new operations technology requires investment, the opposite of cost cutting. That logjam needs to be broken.

At most companies, operating models don't fit the goals and requirements of the emerging digital world. Their operations need to be overhauled by applying digital to core business processes in supply chain, finance and HR. While digital capabilities can often be found in various pockets, they need to be extended and integrated throughout the business.

AI tools make it possible for machines to review about 70%–80% of a simple lease's contents electronically, leaving the remainder to be considered by a human.*

They also help reduce risk. As recent natural disasters have demonstrated, supply chains are just as vulnerable as people and buildings to hurricanes, fires and floods. Firms affected by the 2011 earthquake in Japan, for example, lost 3.73 percent of their shareholder value over the ensuing three months when they couldn't get parts into or product out of impacted areas, according to a study by the Georgia Tech Scheller College of Business Research.** Digital operations make it much easier for companies to recover by

* Source: How AI will enable us to work smarter, faster, EY analysis
https://www.ey.com/en_gl/assurance/how-ai-will-enable-us-to-work-smarter-faster

quickly assessing damage, rerouting suppliers to backup facilities and coordinating emergency response teams from headquarters.

But supply chain leaders also know they must balance increasing demands for agility and responsiveness against driving down costs and improving cash. In short, supply chains and operations should be viewed as sources of strategic competitive advantage, not just cost-cutting centers. The supply chain, still a remnant of the 20th century, needs to be reinvented for the 21st century.

When fulfilled, digital operations will enable organizations to react dynamically to the increasingly interactive flow of information between customer and supplier, balancing agility and cost, and unlocking value from supply chain assets and, ultimately, drive competitive advantage.

In the field of aerospace manufacturing, customers frequently change specifications throughout the manufacturing process. One result: manufacturers must maintain extra inventory stock. A more efficient solution was developed by automation service provider SupplyOn, which provided its manufacturing client with a window into its suppliers' production driven by Microsoft Power BI Embedded.

Gaining a holistic view of production status across the entire supply chain, the client could analyze trends related to lead times and safety stocks to proactively respond to potential supply chain interruptions by switching to another supplier. As a result, the aerospace manufacturer has reduced its inventory levels and costs while maintaining a high level of supply reliability.

Zara, a leading "fast fashion" retailer, shows the way in the consumer sector. By closely tracking its customers' preferences and leveraging a few trusted manufacturing partners nearby, Zara can beat most competitors at getting new styles to market. Zara's process captures elements of a new supply chain model, refocusing a product-centric system to one that is demand-centric. This shift, which rides digital technology, is from a traditional perspective of plan-buy-make-sell-deliver-return

** Source: Stock Market Reaction to Supply Chain Disruptions from the 2011 Great East Japan Earthquake
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2959681

to one that is a demand-centric: create-sense-shape-respond. The result: a fundamental change in operations performance that supports sales growth, increases cost competitiveness, minimizes risk and improves operational resilience.

When done right, digital operations drive performance in three ways:

1. Top-line performance increases through operational agility, service and innovation leadership.
2. Risk management is enhanced through reduction of value leakage and protecting the operation through optimizing risk, resilience and sustainability.
3. Margin growth is promoted through efficiency and productivity savings gained from rigorous application of operational excellence.

CASE SNAPSHOT

AI reduces processing time

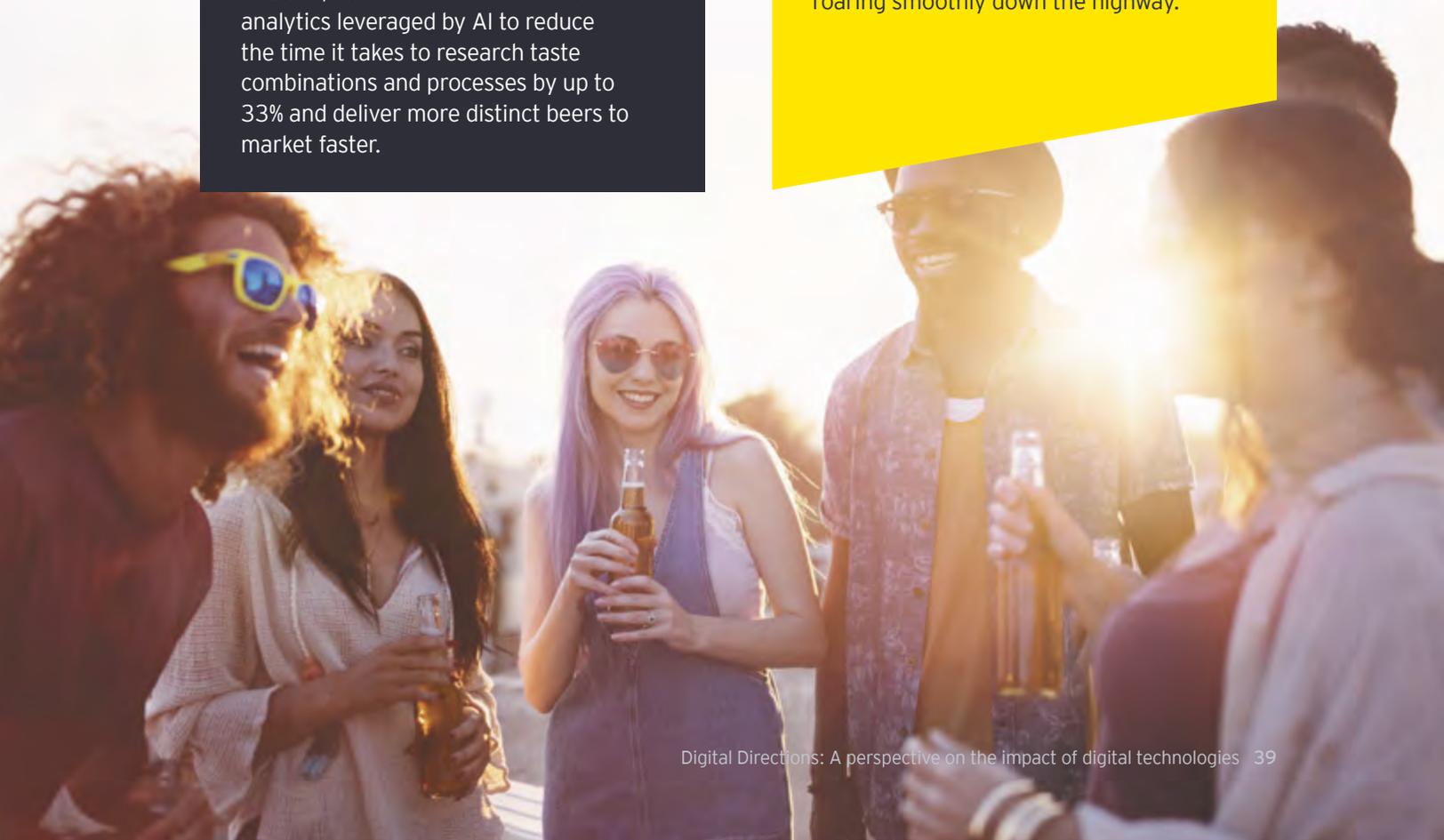
Beer-maker Carlsberg A/S, founded in 1847, uses advanced sensors and analytics leveraged by AI to reduce the time it takes to research taste combinations and processes by up to 33% and deliver more distinct beers to market faster.

Summary

So even though it's not happening in a holistic way at many enterprises, businesses of all types are starting to capture the benefits of and need to complete the digital journey. Digital companies are seizing digital strategies, tools and techniques to automate operational processes, leverage machine learning to increase quality and productivity, and capture insights that fuel process improvement and cost savings.

If aligned with strategy, digital operations can create better returns for stakeholders through cost efficiencies, products that respond quickly to consumer demand and that empower a better workplace by shifting mundane tasks to robots and high-value assignments to human professionals.

As "being digital" happens at scale, and more companies pounce on the opportunities to gain competitive advantage through innovation, the race car will truly be out of the garage and roaring smoothly down the highway.



CHAPTER 5:

Risk, Redefined

Organizations are operating in a time of unheard of disruption – global climate change, technology moving faster than our ability to absorb the implications and business-model innovators obliterating entire industries, just to start a long list.



RISK IS NOT JUST A THREAT; IT'S A PRELUDE TO GROWTH.

Because of the above and many other known and yet-to-surface concerns, risk management in the enterprise needs rethinking. The old way of managing risk, by looking at the past to learn what went wrong and adjusting, is no longer up to the task in today's dynamic environment. Companies need to reconsider the organizational culture within which risk is considered and how the risk function itself operates.

The big change will come when organizations fully understand that risk is not just a threat but also a prelude to growth. It's these companies that will be best positioned to reward their customers and stakeholders and to help create a better working world.

New opportunities are blooming for leaders bold enough to grab them. These include the rapid development of digital technologies such as intelligent automation and AI, falling costs for funding experimentation and innovation, new ways to redeploy the human workforce and acceptance by business leaders that they have a responsibility to serve all of society as well as shareholders.

Here's the recipe: leaders should expand their view of risk in the coming years, shift technology and other resources to support that broader vision of risk management as an enabler, and make sure their risk managers and business innovators have the experience and mindset necessary for the challenge. Risk functions need to shift from a posture of risk avoidance to one of risk mitigation and ultimately risk optimization.

As they create a new type of risk management function enabled by technology, leaders should also pay particular attention to one crucial element: digital trust. In an environment churning with fear, uncertainty and doubt, customers and partners begin to elevate the value they place on trust at or near the top of other factors that win the deal. Digital enterprises that differentiate themselves on trust, and that transform their partners' uncertainty into confidence, will be positioned to gain financial health and competitive advantage.

The risks of digital risk management

Let's look at several examples of how advanced technology might tame risk and promote opportunity like never before.

Blockchain

One of the oldest and most tradition-bound of industries, maritime insurance, is a testing ground for one of the newest, still maturing technologies to prove its worthiness: blockchain.

For hundreds of years, insurance terms were agreed to between insurer and shipowner on paper, sometimes on the very dock where the ship was berthed. For insurers, the contract with the shipowner was something of a black box bet. Risk can increase or decrease as a container ship navigates from the Port of Yantian to Miami, depending on weather, engine efficiency and the trustworthiness of dockworkers. Enter blockchain, which is essentially a distributed ledger (or database) stored on potentially thousands of servers that anyone authorized on the network can see and that safeguards the integrity of the data it holds.

An insurance-related blockchain solution plays in several areas of the risk management spectrum. When evaluating downside risk, insurers are able to assess their exposure in near real time. Premiums can be agreed to quickly (avoiding lengthy negotiations), and claim payments made in seconds rather than years (avoiding costly litigation long after the event). The result is risk better managed through digitalization, automation and increased transparency.

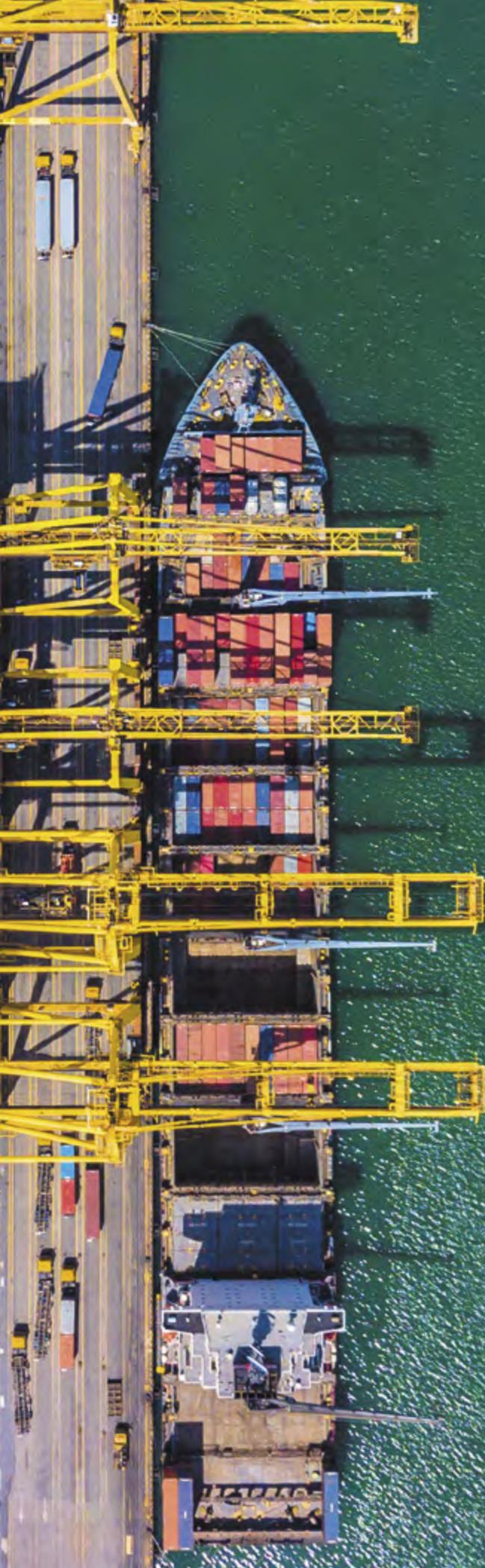
CASE SNAPSHOT

Blockchain on the high seas

Insurwave, a 2018 joint venture between EY and Guardtime, leverages blockchain and distributed ledger technologies, Microsoft Azure infrastructure and ACORD data standards. The first-year goal: support more than 500,000 automated ledger transactions and help manage risk for some 1,000 commercial vessels.

In short, the distributed database offers secure access to a single version of the truth to all participants in specialty insurance.

By connecting participants in a secure, private network with an accurate, immutable audit trail and services to execute processes, the platform establishes a first-of-its-kind digital insurance value chain.



Blockchain technology also creates opportunity to innovate with pricing or entirely new offerings. When first introduced, motorcycle insurance was extremely expensive. But once the actual risks were better understood by insurers, more entrants came in and prices dropped. Blockchain allows insurers to better understand and calibrate for risk. By precisely analyzing the asset, its location, the stakeholders involved and the existing threat environment, insurers can provide finer-grain coverage on a sliding scale based on previously agreed-to terms – all embedded in a smart contract. As a cargo ship enters a dangerous area, for example, new rates could be triggered until the ship sails into safer seas.

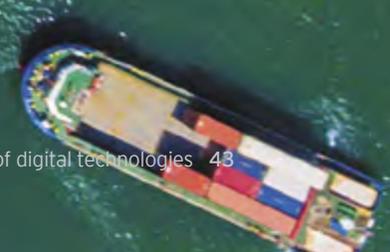
This isn't fantasy: in the first use of blockchain to manage risk in maritime insurance, EY and Guardtime teams are working with Microsoft, Maersk and a number of insurance providers offering hull coverage to some 1,000 commercial vessels. (See Case Snapshot.)

RPA

Plain and simple, RPA does not have the street buzz of other emerging technologies. What it does have is the potential to powerfully enable organizations to automate high-volume, routine, system-based tasks by unleashing a virtual workforce of robots, at less cost than human operators.

One strength of RPA bots is that although they aren't very "smart," they are quite dependable and incredibly efficient, and can be deployed without the need for much change to underlying platforms.

This becomes a significant asset for tasks like access provisioning. Large companies often use dozens or even hundreds of workers to create user accounts generated by new apps, business services and everything else employees must log in to in order to access the digital ecosystem. Identity and access management processes – if done manually – can take hours. This time can be reduced to minutes by using a software robot, while freeing up human capital for more "brain-worthy" jobs.



From a risk management perspective, RPA reduces the potential for everything from audit failures to enterprise attacks by lessening human error, helping ensure dependable data and increasing business norm compliance.

AI

Where RPA is about brute force automation, AI approaches risk management with a learning eye. Related technologies such as machine learning, neural networks, data science and heuristics enable AI-based applications to learn through experience, similar to human cognition, and compare their growing knowledge of “normal” behavior with suspicious or unknown activity they encounter.

Since these systems can adapt as the risk environment changes, AI tools enhance monitoring in a multitude of areas, including cybersecurity, regulatory compliance and corporate governance. Not only can they detect and warn humans of problems, intruders or breaches, but they can also initiate mitigation against them. Best of all, from a risk perspective, early-learning systems can help prevent threats from even materializing.

This is a dramatic step better than traditional defense systems that looked for specific “signatures” used in creating viruses or other attack software. The bad guys have become quite good at cloaking their signatures or misdirecting detectors, like a cancer cell fools immune-enhancing T cells into turning off. AI is much harder to fool.

AI risk management is hardly limited to cybersecurity, of course. Machine learning can create more informed predictions around potential loan defaults. MIT researchers reported that credit losses could fall from 6% to 25% because of AI-based tools. Financial services firms can cross-check trades against a trader’s behavioral information, such as recent phone calls. Even the slow-to-digitize legal profession

uses the power of AI to intelligently risk-hunt through thousands, even millions, of pages of documents while performing due diligence for mergers and acquisitions.

All three technologies can be used as disruptive technologies to transform the business and transform how to manage risk in the business.

Welcome to risk in the digital age, where the very technologies used to improve production, quality and security end up causing serious new problems. With the digitization of organizations has come an explosion of new threats in business strategy, operations, internal controls, compliance and cybersecurity.

By analyzing behaviors and patterns and looking for anomalies, AI tools are becoming adept at identifying threats in information systems. But news reports have chronicled the fact that the assumptions used by AI can themselves be as biased as the designers who created them.

There is another potential risk to prepare for as companies turn over daily processes to RPA. In doing so, they are willingly trading off human error and inefficiency for speed, accuracy and consistency. All to the good, but can designers build the same rigor into our automated processes? Do they understand enough about human decision-making that it can be translated into software?

To guard against these uncertainties, companies should build risk prevention into processes, tools and products at the start of their development, not after the fact. Risk management by design. (Think of all those IoT camera breaches that occurred because users didn’t change their factory-set password of “password.”) This will be more difficult than you think. The whole DNA of people in technology is first to make sure that something works, not to hedge bets in case it doesn’t. That’s a complete mind shift that needs to happen.

Risk management enters a new age

Organizations have traditionally focused their resources on what risk managers call preventative or avoidable risk, such as paying the same invoice twice.

To achieve performance goals over the next few years, companies must broaden their vision beyond the preventative to two other areas: upside risk and outside risk. This enables organizations to expand their focus from the dangers they can control to include the ones they cannot or that they need to balance to better drive performance.

Managing upside risk is increasingly important because the digitization of the enterprise is all about business model innovation and experimenting with new products and services. Where downside risk is focused on saving money, upside risk is also about making money through invention.

External risk, also called unavoidable risk, is suddenly an ever-expanding blip on the business radar. Three years ago, Brexit didn't exist, the United States and China were exploring ways to increase trade rather than tax it, and globalism seemed to be thriving. What could possibly go wrong?

Are you ready?

Blockchain, RPA and AI will prove excellent partners in risk management, but other technology and techniques should be considered as well.

MIT researchers report that credit losses for lenders could fall from 6% to 25% by using AI-based tools.*

When it comes to dealing effectively with outside risk, for example, organizations must be **prepared**, must know what **could happen**, and must be **resilient**. With the help of technologies like augmented reality and virtual reality, companies can reduce the cost of mitigation and improve recovery outcomes. Forward-thinking organizations are testing their ability to respond to the unknown by taking part in live, sophisticated scenarios and stress testing.

* Source: Consumer Credit-Risk Models Via Machine-Learning Algorithms
<https://dspace.mit.edu/handle/1721.1/66301>



The role of leadership

In the next few years, “smart” organizations will create and follow a risk strategy that shifts away from overfocusing on risk as threat to understanding that risk is a necessary component for innovation – you can’t generate value if you don’t take risks. But there is nothing that prevents a company from finding and leveraging informed risk. They must turn risk management into competitive advantage.

Risk professionals must evolve from their traditional mindset of risk avoidance to one of identifying upside strategic risks. Doing this will require a CEO driving the message, a board that allows him or her to do so and a culture change throughout the organization that values risk-taking where it makes sense.

Risk managers must change, too. Many risk professionals today are more about risk and controls, focused on fixing immediate threats. The risk professional of the future needs to be forward-thinking, digitally savvy and data-smart. They will build models to help management see what can happen when the risk is mitigated.

In trust we trust

Here is one element of risk management that costs little to implement but conveys tremendous competitive advantage when done correctly: building trust with partners, third-party vendors and certainly with customers. Today’s uncertain world makes people and organizations reach out for trusted, dependable partners.

Think of trust in your organization as a framework that includes strategy, products and services, and operations execution. A robust risk management program in and of itself can drive trust.



lead

A person in winter gear is walking up a snowy mountain ridge. The scene is misty and the snow is deep. The person is in the center of the frame, moving away from the viewer.

Summary

The big takeaway about managing risk is that the most significant threat comes from ourselves. It's the risk of failing to act, of not responding to the disruption that is changing the nature of competition and competitive advantage. Leading risk functions are those that provide leadership with the confidence to take the steps needed to embrace change in a way that builds and maintains stakeholder trust.

The winners will act on risk as an opportunity, and they will win the battle for the trust of their stakeholders. As companies learn to be more educated about the risks they take, they will continue to grow even though the world changes around them. They will act boldly and with confidence.

rsnip

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