

Research Insights

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# Extending digital acceleration

Unleashing the  
business value of  
technology investments

IBM Institute for  
Business Value





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## Key takeaways

### Digital acceleration—a reality

High tech adopters gain a revenue premium over their peers of 7 percentage points on average across 13 industries, with IoT, AI, and cloud contributing the most to this performance.

### Holistic reinvention required

The full benefits of digital acceleration depend on holistic reinvention. The research validates our Virtual Enterprise point of view—especially the impact of ecosystems and open innovation on performance.

### Untapped business potential

Open hybrid cloud provides the foundation for tapping the full potential of digital investments. It supports the optimal mixes of technology and organization through reinvention.

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## Introduction

Digital acceleration has become ubiquitous. 97% of businesses have started adopting cloud. And almost 80% have at least piloted artificial intelligence (AI). However, not all enterprises advance at the same pace: leading high technology adopters benefit from a 7 percentage points revenue growth premium over their peers across 13 industries. Indeed, merely adopting individual technologies is no longer enough to leverage their full potential and differentiate an organization from its competition.

Virtualization and digital ways of working are becoming the norm, giving high technology adopters an edge within their industries. But among these advanced companies, which are the leaders? What makes them enjoy greater success? How do they convert technologies into greater value? What operational, organizational, and cultural environments are most conducive to deep and enduring digital transformation? And how can organizations accelerate their digital transformation journey most effectively and sustainably?

The latest research from the IBM Institute for Business Value (IBV) provides new and striking insights into these questions (see Figure 1). The analysis of a new survey encompassing more than 7,000 C-suite executives conducted by the IBV in collaboration with Oxford Economics shows that not all technology-adopting businesses achieve similar results. *To truly set an organization apart, technology needs to be integral to an end-to-end enterprise transformation toward what we call the “Virtual Enterprise.”*<sup>1</sup>

### Welcome to the Virtual Enterprise

Increased virtualization—in part due to the pandemic—has accelerated the emergence of a new transformative organizational and operating model—what we call the “Virtual Enterprise.” The Virtual Enterprise re-imagines how and where work is done, re-evaluating the necessity for physical assets, infrastructure, and talent. The model expands potential for extreme digitalization, extended value chains, and intelligent workflows, along with new partnership and ecosystem approaches. The Virtual Enterprise is more seamlessly integrated into its environment, leveraging new data and intelligence, providing a new model to which organizations can aspire.<sup>2</sup>



# 40%

revenue growth rate premium for tech adopters that invest in ecosystems



# 20%

revenue growth rate premium for tech adopters with systems for moving and accessing data



# 13x

greater revenue growth impact potential from cloud through end-to-end reinvention

The single most important characteristic of the Virtual Enterprise is “openness,” which brings value at three levels:

- *Inside*—Within the enterprise, connecting divisions and functions in more collaborative and agile workflows
- *Outside*—With partners outside the enterprise who become ever more critical to delivering the core purpose of the business
- *Out there*—With the wider ecosystem that allows true platform economics to play out and the enterprise to take advantage of all those who wish or need to connect with its intent.<sup>3</sup>

The pandemic is both shaping and testing this new extended, near-boundless reality of the enterprise. The digital channel has become a primary source of engagement, unleashing new potential for markets and access, as well as creating new challenges for re-creating empathy, a sense of belonging, and human connection. The Virtual Enterprise operates in an environment where purpose, intent, and wider societal impact have come to the fore.

Our research has confirmed the benefits of adopting these key tenets of the Virtual Enterprise:

- The high technology adopters who focus on “openness” or “ecosystems” enjoy a 40% revenue growth performance premium over their advanced competitors. The magnitude of this number alone should give each business leader pause.
- Those who have a higher focus on user-centered design or developed mastery in their ability to move and exploit data benefit from a 20% revenue growth rate premium over other organizations.
- Tech-adopting enterprises that excel at reskilling staff to adjust to the new technology-driven world can benefit from a 15% revenue growth rate premium over other tech-adopting organizations.

Here is the takeaway:

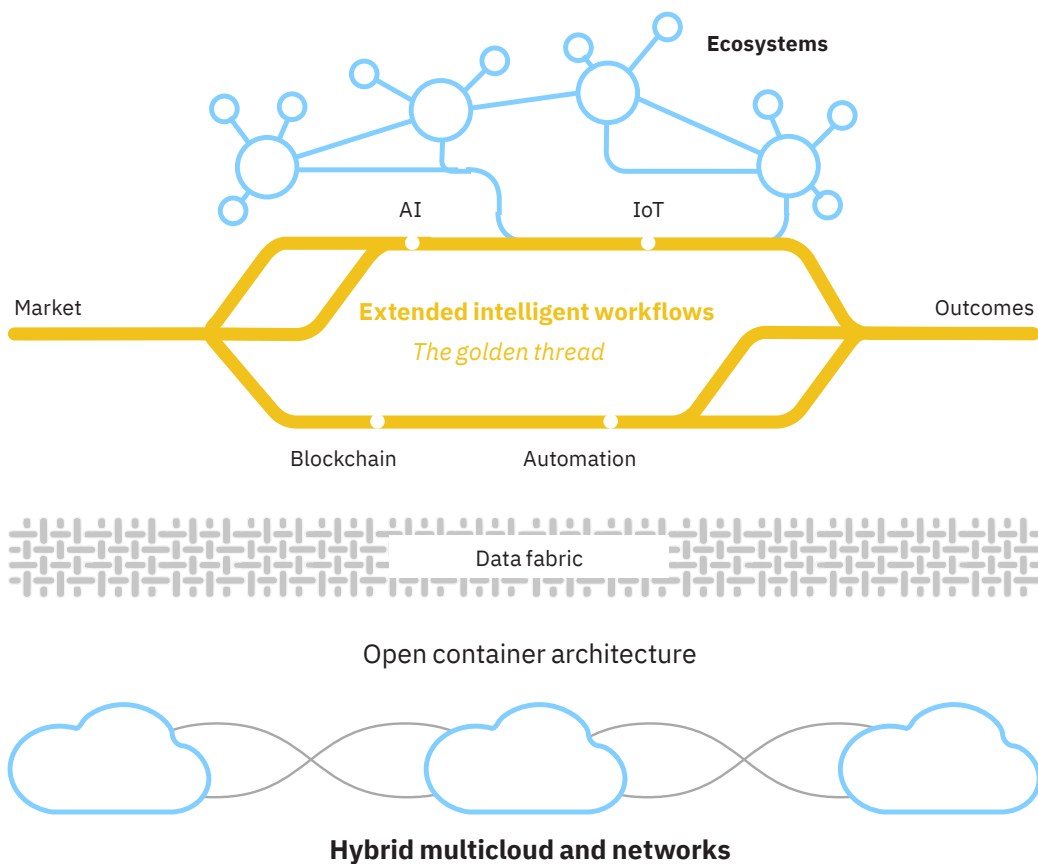
Organizations that combine high levels of technology adoption with a holistic approach to their business and cultural transformation achieve higher rates of revenue growth than organizations that focus on technology adoption alone.

Organizations that combine high levels of technology adoption with a holistic approach to transformation can achieve higher rates of revenue growth.

**Figure 1**

**The Virtual Enterprise**

Expanded potential for digitization and revenue growth rate premiums



**Tech adopters that...**

<p>Invest in <b>ecosystems</b></p> <p>↑ <b>40%</b> revenue growth rate premium</p>	<p>Invest in <b>open innovation</b></p> <p>↑ <b>40%</b> revenue growth rate premium</p>	<p>Have more efficient <b>user-centered design processes</b></p> <p>↑ <b>20%</b> revenue growth rate premium</p>	<p>Have more efficient systems for <b>moving data</b></p> <p>↑ <b>20%</b> revenue growth rate premium</p>	<p>Outperform at <b>reskilling staff</b></p> <p>↑ <b>15%</b> revenue growth rate premium</p>
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# Industry and cross-industry platforms and ecosystems can provide solutions and standards that solo organizations cannot.

## The power of ecosystems

Invest in ecosystems

↑ **40%**  
revenue growth rate premium

How can organizations discover new markets, reach more customers, extend their capabilities, and promote widespread innovation? Platform-enabled ecosystems are the answer. An open, dynamic Virtual

Enterprise depends on wide ecosystems, and it uses business platforms to create, encompass, and empower them.

Recent IBV research reveals a much greater reliance on platform business models and partner networks going forward, with 70% of executives planning significant partnering activity inside their industry and 57% looking outside. Either way, they expect these collaborations to grow more than 300% over the next two years compared to two years ago.<sup>4</sup>

Why? The combined power of applied technologies can create and differentiate external business processes and extended workflows, creating market opportunities for virtually all participants. There's strength in community: industry and cross-industry platforms and ecosystems can provide solutions and standards that solo organizations cannot.<sup>5</sup>

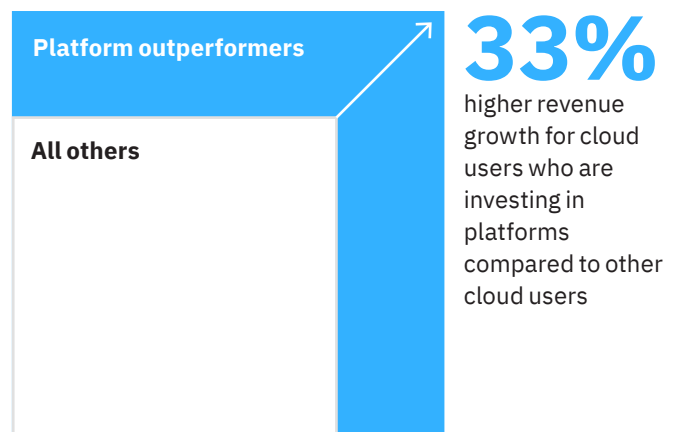
In short, the move to platforms and ecosystems should be considered existential, not experimental.<sup>6</sup> And the key is combining tech adoption with investing in ecosystems. When high tech-adopting organizations follow this strategy, they see an average revenue growth rate premium of 40%. Specifically, cloud users that invest in platforms realize 33% higher revenue growth compared to other cloud users (see Figure 2).

Given the ripple effects of platforms, ecosystems, and open innovation, it's not surprising that their adoption drove some of our most dramatic findings on tech investment impacts.

**Figure 2**

### Platforms with cloud elevate revenue

Cloud users investing in platforms see higher revenue growth compared to their peers



## State Bank of India and YONO: Spurring growth with a platform and ecosystem<sup>7</sup>

The State Bank of India (SBI) has been around for more than two centuries. Yet as India's economic ascent gained steam in recent years, the bank found itself losing market share. To attract a younger, more digital-savvy customer base, it created a digital bank, an online marketplace for third-party offerings, and a digital financial superstore under a new brand, SBI YONO ("You Only Need One"). Partnering with more than 100 e-commerce sellers, SBI YONO quickly grew into a mobile platform with more than 10 million daily logins and 64 million downloads.

Since the launch of the ecosystem, SBI has implemented over 100 digital customer journeys, hosted over 650,000 mutual fund transactions, and sold over 400,000 life insurance policies through YONO.

## Open innovation, open opportunities

Invest in open innovation

↑ 40%  
revenue growth  
rate premium

Tech adopters can see viable rewards from investing in open innovation—as much as a 40% revenue growth rate premium compared to other tech adopters. In fact, digital technologies and open innovation are becoming

intertwined and complementary. Technologies such as hybrid cloud, AI, and blockchain are opening new ways for organizations to collaborate and innovate.

To that end, establishing and maintaining architectural openness and interoperability through hybrid cloud is critical. Hybrid cloud can support levels of platform and ecosystem engagement far beyond what was once feasible. Coupled with digital and business transformation, hybrid cloud generates new strategic and financial benefits. Data democratization and dramatically increased intelligence brought about by hybrid technology and open architecture can redefine the economics of business.<sup>8</sup>

Current IBV research shows that innovating within ecosystems provides even stronger results: open innovators with strong ecosystem engagement achieve 58% higher rates of revenue growth relative to other organizations actively pursuing open innovation.<sup>9</sup>

It's a natural fit: strong ecosystem innovators transform ideas and creative concepts into compelling customer experiences within and across their ecosystems. By nature, open-source solutions can enable collaboration and the building of shared capabilities that release cross-functional and cross-industry value. The solutions created through these models draw upon the development and innovation of the crowd, giving contributions an inherent compatibility. This is fundamental to the adaptiveness of the Virtual Enterprise.<sup>10</sup>

Open innovation requires a profound change to the pre-existing ways of working and the embrace of a different, new culture. This is why leading organizations also create cultural environments that shape and support innovation and creativity.<sup>11</sup>

## Alior Bank: When regulations spark innovation<sup>12</sup>

Alior Bank, one of the leading banks in Poland, is building an ecosystem of partners and collaborators to comply with industry-changing regulations, seizing this as an opportunity for innovation.

To protect consumers and streamline the payments market, the European Commission recently issued the Second Payment Services Directive (PSD2), which requires banks and financial services to share more customer data with third-party payment providers. For Alior Bank, the new EU directive represented an opportunity.

To launch new partnerships and prepare for the next wave of financial regulations, Alior Bank is embracing the API economy to drive innovation with collaborators and developer communities. And as a result, they're paving the way for compliance with the Second Payment Services Directive (PSD2). They have enabled new revenue streams by helping to cultivate new partnerships and services. And they've accelerated the time required to introduce new services from weeks to days, helping to keep competitors at bay.

For example, a culture that insists on innovation reaping immediate rewards can be a huge creativity stifler. The pressure or expectation can contribute to what the *Harvard Business Review* calls an erosion of intellectual bravery. In brief, intellectual bravery is defined as “a willingness to disagree, dissent, or challenge the status quo in a setting of social risk.” A lack of this characteristic creates bureaucracy, which buries boldness.<sup>13</sup>

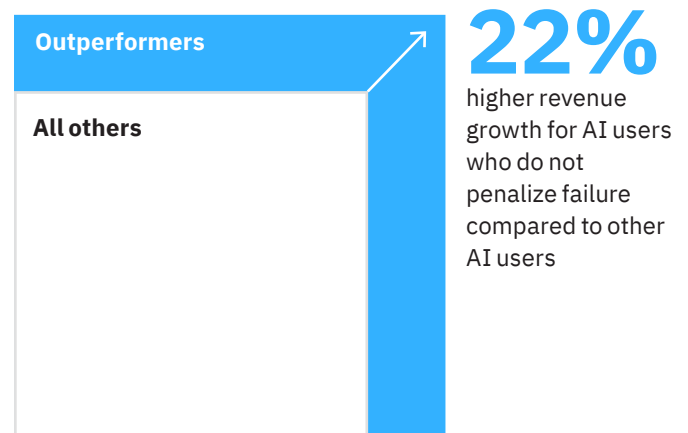
The financial repercussions are real.

Our own research found that a culture of not penalizing failure provides a 10% revenue growth bump in the context of technology adoption and digital transformation. These advantages jump even higher in the context of specific technologies. AI users that don't penalize failure within their organizations—in other words, an environment of open innovation—achieve a 22% higher rate of revenue growth compared to other AI users (see Figure 3).

Figure 3

### Free to innovate

AI adoption and “fail forward” principles jumpstart revenue growth





To create richer, integrated experiences, both internal and external data must be mastered. Indeed, it is data that makes the ultimate difference.

Converting the creativity unleashed by tech-enabled open innovation into business impact makes mission clarity more critical than ever. In fact, tech-adopting organizations that develop and convey shared values report a 14% revenue growth rate premium over other tech adopters. And having clearly articulated long-term business goals provides an 11% revenue growth bump.

## New ways of working

Extending the enterprise through platforms and ecosystems can radically drive innovation and value creation for both employees and external stakeholders. Intelligent workflows serve as the connective tissue throughout.<sup>14</sup> These workflows are more expansive than simple processes and harness the capabilities of ecosystem partners as well as the internal enterprise. They use technologies such as automation, blockchain, AI, 5G, cloud, and edge computing to contribute to exceptional outcomes. *In fact, IBM research indicates that using these technologies in workflows can triple the benefits.*<sup>15</sup>

In effect, these intelligent workflows transmit the experience and values of the ecosystems they are threaded through.<sup>16</sup> And, through user-centered design processes, enhanced utilization of data, and the facilitation and automation of skills development, they can help create new ways of working.

## From processes to workflows: User-centricity and data in focus

Have more efficient  
user-centered  
design processes

↑ 20%  
revenue growth  
rate premium

Have more efficient  
systems for  
moving data

↑ 20%  
revenue growth  
rate premium

Using intelligent workflows, organizations can incorporate automation, exponential technologies, and data into end-to-end user-centered design processes that deliver great experiences for customers, employees, and ecosystem partners.<sup>17</sup> And a two-pronged approach can reap tangible rewards. In our study, enterprises that adopt digital technologies and excel at implementing user-centered design processes gain a revenue growth premium of 20% on average across technologies compared to other tech adopters.

To create richer, integrated experiences, both internal and external data must be mastered. Indeed, it is data that makes the ultimate difference. An organization must first embrace effective data governance, mobility, and management. Without these capabilities, data that could be an organization's lifeblood stagnates in a silo, inaccessible and unusable.

But it does not stop with experiences—data can also be a source of new discovery.

Using data-driven innovation, enterprises can entirely recast workflows and processes, creating efficiencies and ways to engage employees and customers. For example, continual mining and monitoring of the activities and performance within a process can reveal areas for improvement and initiate automated or human intervention.<sup>18</sup>

## Modernizing e-commerce and transforming workflows in the food industry<sup>19</sup>

A leading food company recently centralized and modernized its tools by expanding its e-commerce strategy and creating new solutions for its customer and employee workflows. It led with a human-focused approach, assessing how employees and customers were using tools and identifying their pain points. This resulted in two new solutions that supported workflow transformation.

One solution streamlines frontline-employee delivery routes and improves performance and visibility. It unites the back office with the frontline through a seamless mobile experience.

Another helps customers simplify their ordering and delivery processes while providing them with more expansive product offerings. An AI engine uses data-driven insights to make ordering suggestions based on seasonal preferences, regional trends, and current events. It can also predict when retailer inventory is low and recommend curated assortments.

Intelligent workflows extend into the ecosystem, creating a fluid communication channel between the frontline and dispatch. This gives drivers and merchandisers the ability to quickly adapt and redirect resources when issues arise. The solutions provide the company with real-time visibility into key operational and stocking metrics to drive field productivity and scheduling efficiencies—and retailers experience fewer out-of-stock scenarios and expensive rush shipments.

Our research found that tech adopters with more efficient systems for moving data achieved a 20% revenue growth rate premium over other tech adopters. And companies are recognizing the urgency. In fact, they report data initiatives that make data more accessible and responsive as a top investment criteria.<sup>20</sup>

One European industrial technology provider puts this data emphasis into action. The company reaped benefits with an intelligent analytics-driven “single point of truth” for sales and product information. Making this data more accessible helped their salesforce to meet customer demands for advanced robotics and other industrial automation products. The company increased sales productivity, boosted revenue growth, and garnered customer insights that led to market expansion.<sup>21</sup>

But even as organizations embrace intelligent workflows, data-driven innovations, and virtualization, they must also address new challenges. How to lead, inspire, engage, and connect in a remote digital age requires savvy adoption of technology and sophisticated data analysis—as well as the human qualities of empathy and creativity.<sup>22</sup>

Looking forward, addressing these challenges will become even more critical. Indeed, the integration of quantum computing, AI, and classical computing into hybrid multicloud workflows is expected to drive the most significant computing revolution in 60 years. Quantum-powered workflows can radically reshape how enterprises operate as they evolve from analyzing data to discovering new ways to solve problems. When combined with hyper-automation and open integration, this can ultimately lead to new business models.<sup>23</sup>

# A culture oriented around dynamic skills development is essential to an enterprise's performance.

## Closing the skills gap

Outperform at reskilling staff

↑ **15%**  
revenue growth rate premium

As they strive to develop their legacy IT workforce, organizations can struggle with a skills reinvention challenge.<sup>24</sup> But while digital acceleration creates demand for new skills and ways of working, it also

creates opportunities to tap into larger talent pools. For instance, open source reduces proprietary limitations and specializations.

From an employee perspective, the more open, digital environment of a Virtual Enterprise can both create opportunities and pose threats. Global connectivity provides a conduit for employees to use skills in new areas. But organizational access to those same skills via broader ecosystems—in other words, outside of the enterprise—is easier as well.<sup>25</sup>

Whether you're viewing skill development from the executive or employee perspective, becoming a learning enterprise is increasingly important. In fact, our data suggests that as many as 160 million employees across the 12 largest economies could require significant reskilling over the next two to three years as a result of greater use of digital technology.

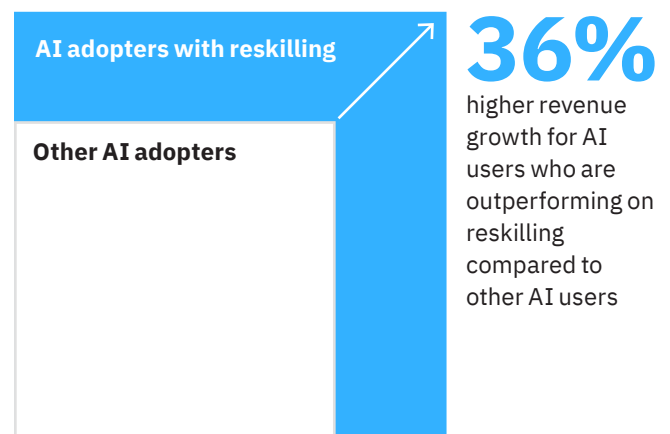
Tech adopters that succeed at reskilling to accommodate technology-driven job changes report a revenue growth rate premium of 15% on average across technologies compared to other tech adopters. And in one standout area, AI users that outperform in reskilling see a notable 36% higher rate of revenue growth when compared to peer AI users (see Figure 4).

Why? Because a culture oriented around dynamic skills development is essential to an enterprise's performance. While that's an obvious statement, our recent C-suite CEO research supports it: financially outperforming companies emphasize industry-specific skills 79% more than underperformers, and technology skills 47% more than underperformers.<sup>26</sup>

Figure 4

## Head of the class

AI users outperforming in reskilling achieve higher revenue growth



## A major US airline: People transformation for successful digital transformation<sup>27</sup>

As one of many integral steps to advance its digital business transformation, one major airline is creating a new cloud operating model that transforms and modernizes its technology platform. It expects to increase its agility, speed to market, and innovation capabilities related to digital transformation.

While the technical transformation was critical, the airline realized that an equally essential element was the transformation of its people. This involved reskilling the IT workforce, redesigning the company's operating model, and building a digital change capability. To accomplish this, it needed to build a framework to promote sustainable IT capability and competency management while promoting a culture of continuous learning.

This people-centered transformation required a comprehensive view that extended beyond skills. It also required new ways of working and organizational alignment to build a more elastic IT capability for the future. The core components of the strategy were organizational change, from silos to squads; new ways of working, from waterfall to agile; and people skills focusing on talent strategy and knowledge transfer.

## Enterprise transformation for greater societal impact

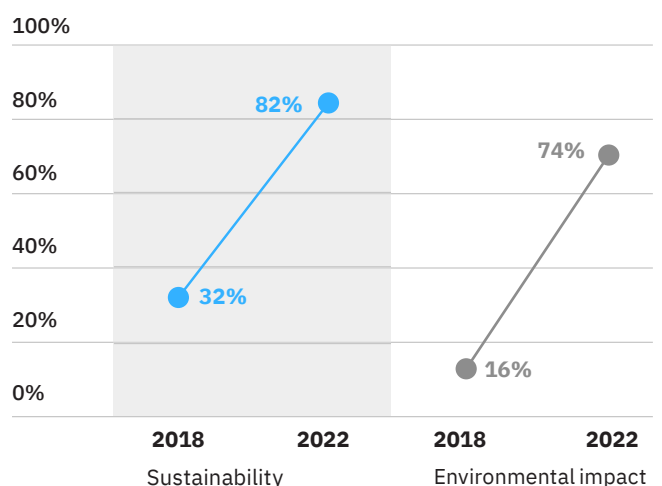
Framing digital transformation within a context of enterprise transformation creates new opportunities for enhancing value for the individual enterprise, ecosystem stakeholders, and society at large. In fact, successful digital and enterprise transformation can recalibrate the relationship between business and society and allow companies to address critical societal priorities—including sustainability—that are increasingly becoming C-suite imperatives. According to our research, the number of business leaders who express concern about sustainability has increased 156% since 2018 (see Figure 5). And 9 out of 10 companies say they'll be working on various sustainability imperatives across the enterprise by the end of 2021.<sup>28</sup>

Organizations can take advantage of this pivotal point in time by creating innovative products and services linked specifically with sustainability efforts. Extended ecosystems, open innovation, new ways of working, and accessible data have the potential to be essential drivers of these important initiatives. In these ways, digital and enterprise transformation have the potential to underscore global connectedness and exercise a positive influence on how humans impact the planet.<sup>29</sup>

**Figure 5**

### An urgent priority

Business leaders express more concern about people and the planet than ever before.<sup>30</sup>



## Extended intelligent workflows can change value creation as we know it.

### Becoming a Virtual Enterprise

Transformation needs to be holistic, comprehensive, and strategic. It requires focus and the ability to drive toward clearly defined objectives in a concerted fashion. At IBM, we use the Virtual Enterprise to shape and direct a transformation effort that radically reconfigures the modern organization. This Virtual Enterprise, with openness as its defining characteristic, is supported by a “golden thread” of value and purpose that connects partners internal and external to the organization. It’s brought to life with extended intelligent workflows that can change value creation as we know it.

Cloud provides an astute illustration of this value creation. Our findings indicate that cloud alone accounts for only 8% of the potential revenue impact that it could bring to an enterprise.

But envision combining cloud adoption with enhanced data capabilities, exponential technologies, operational enablers, and organizational and process transformation—all hallmarks of the Virtual Enterprise. This can amplify cloud’s potential revenue impact by up to 13 times.<sup>31</sup> Cloud, alone on the playing field, is nominally effective. But potent enablers such as AI, IoT, process transformation, skills, cybersecurity, platforms, open innovation, and a reconceived organizational culture—in effect, a Virtual Enterprise—all create a winning team that converts cloud to value.

It’s important to visualize the Virtual Enterprise as a framework for reinvention, not a destination. Underpinned by new technology and data capabilities, the Virtual Enterprise can continually foster opportunities for co-creation and collaboration orchestrated through platform-enabled ecosystems. The result? An ongoing, dynamic cycle of innovation and transformation—one that’s responsive to the seismic changes in our ever-shifting world.

Now to our action guide.

## Action guide

### *Unleashing the business value of technology investments*

Concerted action across each of the following six areas is critical for converting the promise of digital acceleration into value and competitive differentiation. Here's how:

#### **1. Market-making platforms and ecosystems to open your organization**

- Invest and actively participate in platforms that will enable your organization to connect with partners, customers, and other stakeholders in new and improved ways. These platforms can also enhance your digital and operational capabilities and help you scale at speed.
- Integrate your digital, platform, and ecosystem strategies to create open digital capabilities that tap into the potential of ecosystem partners.

#### **2. Science- and data-led innovation**

- Create end-to-end ideation and experimentation capabilities with design thinking and garage methodologies to drive innovation at scale throughout the organization and your ecosystems.
- Align innovation activities with strategic objectives. Strategic clarity sets priorities and allows you to make clear choices. In the absence of strategic clarity, too many unsupportable ideas can compete for attention.

#### **3. Extended intelligent workflows**

- Transform processes into intelligent workflows, infused with data and enabled by exponential technologies, to capitalize on the business potential of digital acceleration.
- Enhance your cybersecurity capabilities as you extend your digital acceleration. Engage ecosystem partners to help enable secure collaboration and sharing of relevant data and insight.

#### **4. Sustainability and impact**

- Integrate your digital transformation and sustainability strategies. Use open technology architecture and platforms to allow for interoperability and sharing of data in pursuit of greater societal impact with ecosystem partners and stakeholders.
- Assess how data and digital technologies can improve your operations while achieving greater societal impact and better environmental outcomes.

#### **5. Inclusive human-technology partnerships**

- Build a culture that brings transformation efforts together and creates clarity of purpose and direction.
- Embed learning and continuous reskilling within the enterprise as an integral part of your transformation journey.

#### **6. Open, security-rich hybrid cloud and networks as the technology foundation**

- Invest in cloud—and hybrid cloud in particular—to enable integration, connections, and collaboration. Combine with other technologies that drive the greatest impact for your business.
- Facilitate integration, movement, sharing, and access to data and workloads across your organization and ecosystems.



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Jean-Stéphane Payraudeau is Managing Partner, responsible for IBM's thought leadership research and publications, centers of competence for industries, as well as Global Business Services offerings and assets. In tandem with fellow IBM Services and industry leaders, Jean-Stéphane's team drives, coordinates, and builds the key elements that accelerate clients' journeys towards becoming Cognitive Enterprises enabled by hybrid cloud.

Jean-Stéphane is a member of the GBS Business Consulting global leadership team. He has extensive business management experience as well as expertise in complex enterprise transformation in the domains of finance, HR, and procurement.



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Anthony also is personally active in conducting original thought leadership in areas including innovation, digital transformation, artificial intelligence, and cloud strategy.

## Methodology

This analysis is based on a survey of 7,175 executives representing 28 industries and 47 countries conducted by the IBM Institute for Business Value in cooperation with Oxford Economics. Survey data has been complemented with actual key financial metrics for the surveyed companies, including revenue and profitability.

We have used a combination of analytical methods to understand how organizations are using digital technologies, as well as the relationship of those technologies to business performance.

First, we used descriptive statistics to understand adoption, trends, and differences by industry.

To understand potential complementarities between technologies, and their interaction with other capabilities in shaping business performance, we then segmented the data into groups with different combinations of technologies and capabilities. This determined differences in performance between groups. To analyze these relationships in greater detail, we used a combination of multivariate regression and neural networks analysis with revenue performance as the dependent variable. This included the adoption of different technologies and maturity on various capabilities as explanatory variables as well as multiple interaction terms.

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The IBM Institute for Business Value develops fact-based, strategic insights for senior business executives on critical public and private sector issues.

### For more information

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IBM Corporation  
New Orchard Road  
Armonk, NY 10504  
Produced in the United States of America  
October 2021

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