



Digital disruption: The growth multiplier

Optimizing digital investments to realize
higher productivity and growth

By Mark Knickrehm, Bruno Berthon and Paul Daugherty

A Newton's cradle with several silver spheres hanging from thin wires against a dark background. One sphere is in motion, having just struck or about to strike another.A large, solid red chevron pointing to the right, positioned behind the text "High performance. Delivered."/>

High performance. Delivered.

Gaining digital intensity

While organizations are taking advantage of digital technologies, many economies remain digitally immature. Even though Accenture Strategy research estimates that the digital economy, involving some form of digital skills and digital capital, represents 22.5 percent of the world economy, digital's ability to unlock value is far from being fully exploited.

Until now, it is the technology giants and born-digital companies that have taken advantage of digital disruption by realizing technology's power and developing new platform business models to unleash hidden value. The approach has meant they have dominated in terms of growth, profits, and high market capitalizations—gains that have been invested back into new digital ecosystems. Today, there is an opportunity for traditional incumbents to more aggressively pursue new digital business models. By optimizing their digital investments, business leaders and policy makers can be more competitive, productive and bring quality of life to people.

Understanding where to make those investments to realize the greatest improvement in gross domestic product is the subject of recent analysis by Accenture Strategy and Oxford Economics. We found that high-performing economies could realize better returns from the optimal combination of investments in digital skills, digital technologies and digital accelerators.¹ For example, business and policy leaders may have invested heavily in digital technologies, but have neglected to prepare for the workforce of the future. Our modelling shows how the smarter use of digital skills, technologies and other assets could boost productivity and generate US\$2 trillion of additional economic output by 2020.

In this way, digital investments can act as a growth multiplier in the coming years. Take the United States where adjustments in investments in digital skills, digital technologies and digital accelerators in line with our calculations could see the nation increase its gross domestic product by 2.1 percent—which equates to US\$421 billion in 2020.

Business leaders and policy makers need to invest the right amounts in the right areas; by doing so, they can discover new profitable, scalable and sustainable ways to help their economies grow.

What is the digital economy?

The digital economy is the share of total economic output derived from a number of broad "digital" inputs. These digital inputs include digital skills, digital equipment (hardware, software and communications equipment) and the intermediate digital goods and services used in production. Such broad measures reflect the foundations of the digital economy.

¹ See About the research page 11 for a full definition of these categories

Sizing digital economies

As businesses and governments seek greater growth in an uncertain world economy, many are turning to digitization. Accenture Strategy research evaluated the digital approach of 11 national economies and 13 industry sectors.

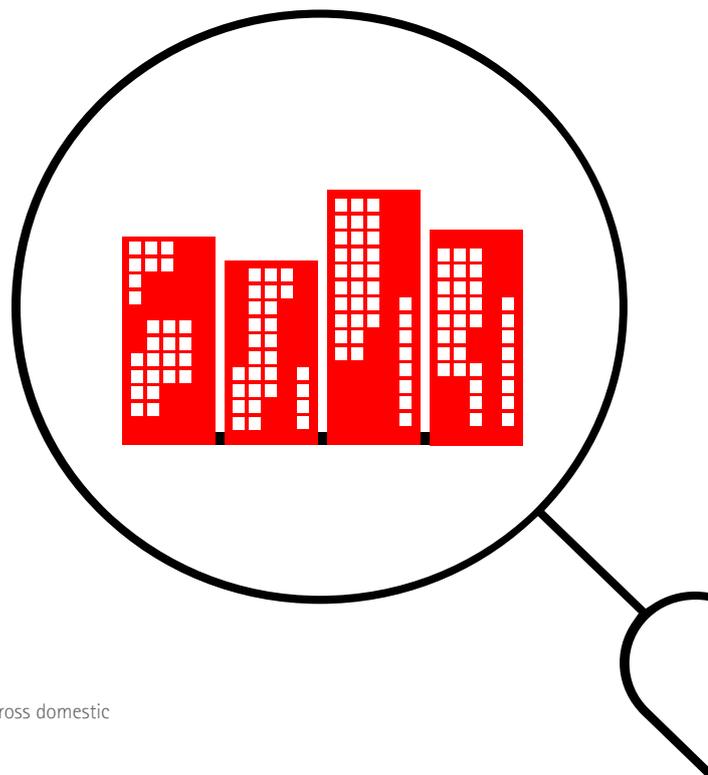
We found that while our latest statistical modeling suggests 28 percent of output in mature market economies is digital—compared to the far smaller 5.2 percent of mature market economies that would have been considered digital using traditional methods²—a deeper dive into the data highlights that even greater gains are to be had in productivity and growth. Being digital is not just a question of size but the degree to which digital practices and capabilities are embedded into the fabric of the world's economies.

What did we measure?

Typically, measures of the digital or Internet economy have focused largely on technology infrastructure, IT and communications sector investment, eCommerce, and broadband penetration rates. But this does not account for the whole scope of digital. Using a groundbreaking model that assesses how digital is adding value throughout the entire economy—by tracing the use of digital skills, equipment and intermediate goods and services in the production of all goods and services—we have been able to derive a more comprehensive and rounded view of what constitutes a digital economy (see About the research, page 11).



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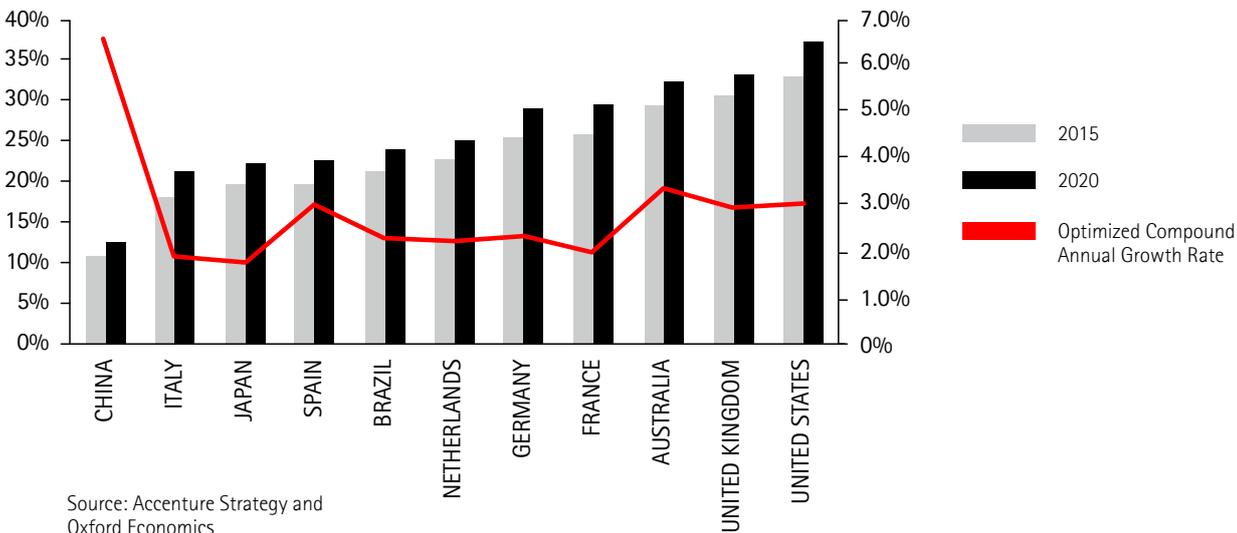
² Source: Oxford Economics, based on "Information and Communications sector GVA" share of gross domestic product in advanced economies, 2015

What is the size?

Figure 1 shows the digital share of gross domestic product across the 11 countries in our sample. For most economies, the digital share of gross domestic product has the potential to grow by around three percentage points between 2015 and 2020—the equivalent of a 12.5 percent increase worldwide. Today, the United States leads the ranking, with a digital economy valued at around US\$5.9 trillion, which equates to 33 percent of gross domestic product. Forty-three percent of employment in the United States' workforce is digital. If we measure the accumulated investment in software, hardware and communications equipment, digital capital stock represents 28 percent of total stock.

By contrast, Italy's labor force may be 37 percent digital, but only 10 percent of its capital stock is digital—a relatively smaller capital investment than most other economies—resulting in a digital economy worth just 18 percent of gross domestic product.

Figure 1. Country-by-country digital share of gross domestic product (2015 and 2020) showing Compound Annual Growth Rate under optimized scenario* (right hand axis)



Source: Accenture Strategy and Oxford Economics

*The growth rate resulting from an optimal 10-point improvement to digital skills, digital technologies and digital accelerators.

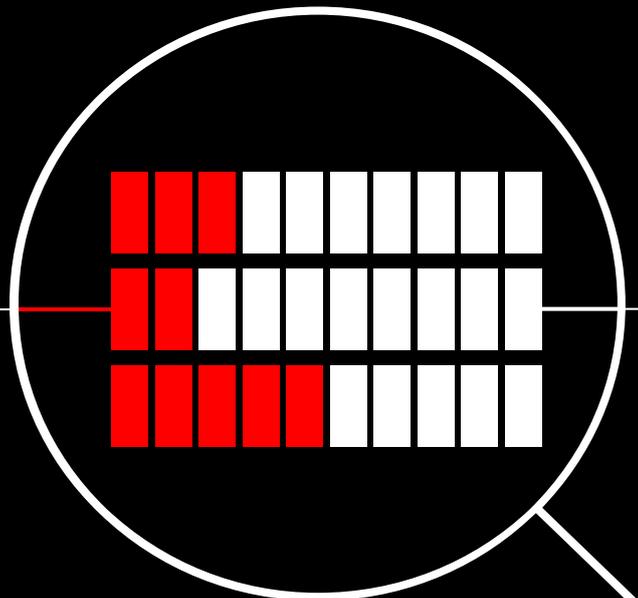
Specific industries also reflect the steady move toward digitization. In the United States, Financial Services leads the ranking at 57 percent, followed by Business Services 54 percent and Communications 47 percent. Here is where the differentiated nature of our research—focused on digital output across the entire economy—reveals interesting progress for digital transformation. From a global perspective, it is unsurprising that the data-driven service sectors such as financial services are proving their digital worth. But digital skills and digital technologies are also having an impact across various world economies—22 percent of the global retail industry's output is derived from digital, 28 percent in health, and 20 percent in consumer goods.

Converting scale to value

Assessing the digital economy offers insight into its size and scope. But while it is vitally important to the overall well-being of an economy to calculate how much has been spent on information, communications and technology or account for the number of digital jobs, there is more to achieving a high-performing economy than accumulating digital assets and skills.

In earlier research, the Accenture Strategy [Digital Density Index](#)³ showed that a broad-based application of digital technologies—including the enabling environment, company behaviors and consumer attitudes—matters in driving productivity gains. The index methodology assessed 48 indicators (see About the research, page 11) to determine a ranking of countries' digital density. The results of that analysis showed that a statistically significant relationship exists between digital density and total factor productivity. A 10-point increase in digital density is associated with an approximately 0.4 percentage point increase in total factor productivity growth for advanced economies, and a 0.65 percentage point increase in total factor productivity for high-growth emerging markets.

So how can business leaders and policy makers deliver a 10-point increase in a way that works best for their economies? By understanding which areas need improvement, business leaders and policy makers can recalibrate their digital skills, digital technologies and digital accelerators to enhance productivity and output gains across the economy.



³ Digital Density Index: Guiding digital transformation, Accenture 2015

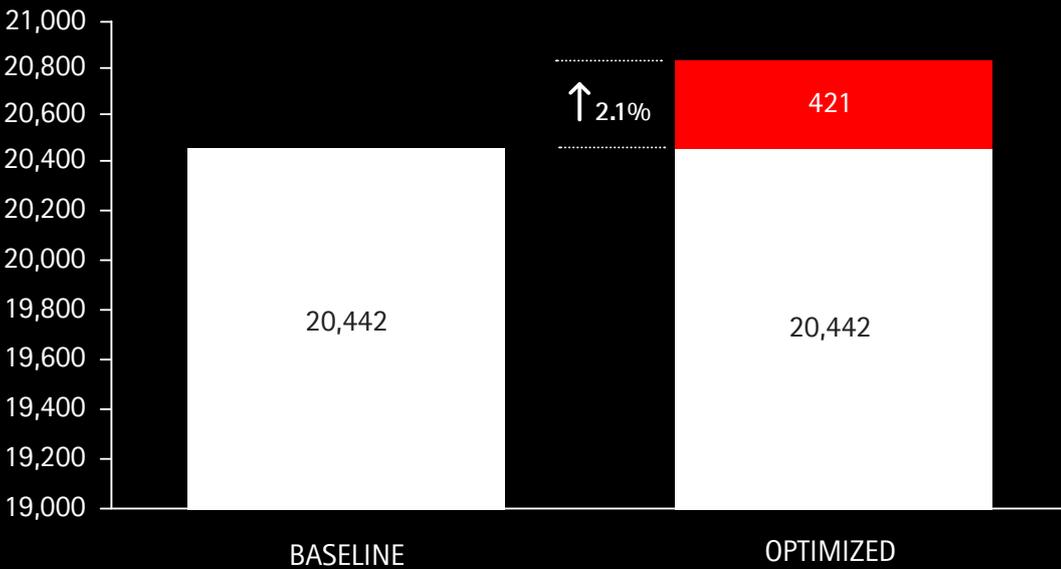
How can digital investments be more effective?

Even when organizations understand the size of their digital economy and the opportunities from their digital efforts, they often lack the ability to influence or change their digital outcomes on the global stage. Our research shows how adjusting three levers—digital skills, digital technologies and digital accelerators—can enhance overall digital intensity and act as a growth multiplier.

The three levers consist of a collection of broad and specific indicators. For example, digital skills measures elements such as the information, communications and technology expertise in the workforce or the use of digital to facilitate remote working. Digital technologies include mobile connectivity and the economy's capacity to make use of the industrial Internet. Finally, digital accelerators include wide-ranging parameters such as making use of the cloud or access to finance or the economy's regulatory burden.

Looking at the United States, a 10-point digital opportunity improvement optimized across the three levers could add 2.1 percent to 2020 gross domestic product, the equivalent of adding US\$421 billion to the economy (Figure 2).

Figure 2. United States 2020 gross domestic product, baseline and optimized (US\$ billion, 2015 prices)



Source: Accenture Strategy and Oxford Economics

Where are the greatest opportunities?

Managing digital disruption is a complex and ongoing process. While the striking impact of a 10-point uplift in the digital opportunity should not be underestimated, choosing the right combination of levers to maximize that impact opens up the potential for countries to better exploit the digital opportunity—especially those disadvantaged by size.

Our analysis shows a clear link between digital skills, technologies and accelerator levers and total factor productivity. Allocating each economy a hypothetical “budget” of 10-points to invest in improvements to economies’ digital capabilities, one point at a time, we modelled the optimal combination to make the greatest 10-point impact. In this way, each country can find new and untapped value that goes beyond the gains from maintaining “business as usual” (Figure 3). For countries such as France and Italy, this could mean gains of around US\$80 billion in gross domestic product.

Although adjusting these levers is challenging, it could be highly rewarding. For instance, France, where six points in digital technologies has been identified as optimal for total factor productivity growth, could set itself some positive technology targets to increase these investments, perhaps by following leading practices in Germany and the Netherlands to make better use of the industrial Internet, or matching world leaders in mobile connectivity, such as Japan or Australia. France could also benefit from a three-point increase in digital skills by building capabilities in data analytics or strengthening digital platforms for collaboration, two areas that are currently embraced in the United States, the Netherlands and Australia.⁴

Figure 3. The gross domestic product impact from digital density optimization

Country	Change in 2020 gross domestic product (%)	Change in 2020 gross domestic product (US\$ billion, 2015 prices)
Australia	2.4%	34
Brazil	6.6%	120
China	3.7%	527
France	3.1%	80
Germany	2.5%	90
Italy	4.2%	81
Japan	3.3%	146
Netherlands	1.6%	13
Spain	3.2%	43
United Kingdom	2.5%	84
United States	2.1%	421

⁴ Digital Density Index: Guiding digital transformation, Accenture 2015

By finding the optimum combination of these specific levers, high-performing economies could realize a dramatic improvement in their country's gross domestic product growth rates. For example, the United States currently ranks first in our sample for its level of digital technologies, second for digital accelerators and third in digital skills. Using its 10-point increase to allocate one point to technology, four points to digital skills and the majority five points to digital accelerators, it can optimize its productivity gains. Currently, the United Kingdom is ranked fifth for its level of digital technologies in our sample, fourth for digital accelerators and second in digital skills. Using its 10-point increase to allocate five points to technology, one point to digital skills and four points to digital accelerators, it can gain the equivalent dollar value of US\$84 billion by 2020.

It is important to note that the categories marked zero (Figure 4) indicate where countries need to maintain their current levels of activity, rather than take no action. For example, Japan needs to make additional effort in its digital skills, maintain current activities with digital technologies and improve its digital accelerators by four points. In other words, the country must invest 60 percent of its efforts in a smarter use of digital skills and 40 percent in digital accelerators to realize the maximum gains. Similarly, Brazil and Italy both need to maintain their current investments in skills while considerably boosting their focus on digital technologies and investing more in digital accelerators.

Figure 4. Three levers to optimize a 10-point digital density improvement per country

Country	Technology	Skills	Accelerators
Australia	3	3	4
Brazil	7	0	3
China	4	4	2
France	6	3	1
Germany	4	5	1
Italy	6	0	4
Japan	0	6	4
Netherlands	4	5	1
Spain	3	2	5
United Kingdom	5	1	4
United States	1	4	5

To optimize their digital opportunity and become high-performing economies, countries need to be aware of two key influencers of undiscovered value



The impact of digital accelerators on total factor productivity

Even though each of the three levers can positively impact productivity growth in their own right, we found that the interaction of digital accelerators and digital skills and technology levers has an additional effect. When the digital accelerator score is higher, the impact of any given change in skills or technology is higher, too. Whereas some countries are merely maintaining their digital skills and technologies, all countries in our sample rely on at least some investment in the area of digital accelerators to find their optimal combination of levers—with Spain and the United States standing to gain the most from investing in digital accelerators by 2020.



The importance of digital "catch up"

We found that there was an extra productivity boost for those countries that rank lowest on the economic opportunity scale, enabling them to "catch up" with the leaders. A one-point increase in any of the three levers delivered a greater increase in gross domestic product growth for the country ranked lowest, than that same one-point impact for a country at the top of the table. Take France, where a one-point movement on the digital technology lever would be associated with a 0.09 percentage point boost to annual gross domestic product growth, compared to a 0.05 percentage point boost in the higher-ranking Australia.

Welcome to the platform economy

Adopting a platform strategy opens up new paths to strategic growth—essential for organizations to defend their position in the market and take advantage of digital disruption. Industries such as healthcare, virtually at breaking point in many parts of the world, are being entirely reshaped and reignited using a platform model—offering benefits to the public and governments along the way. Using platform ecosystems, organizations can tap into resources and capacity that they do not have to own. The shift toward ecosystem-driven value creation has implications for economies worldwide. Uncoupled from the constraints of traditional business models, Europe's incumbent industry players can find new routes to value creation—embracing disruption to become the new leaders of the digital economy.⁵

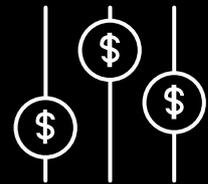
The digital growth multiplier

Within the next three to five years the competitive landscape could be turned on its head. Platform players are not only seizing growth, they are redefining it—new leaders, multi-dimensional industries and market capitalization valuations, all driven by digital.

Key actions business leaders and policy makers must take to exploit the growing digital economy, improve their economic opportunities and drive new productivity and growth include:

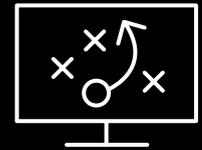
Prioritize digital investments based on value opportunities

Balance digital investments so that an optimal combination of improvements in areas such as skills or technology helps you to deliver the best returns.



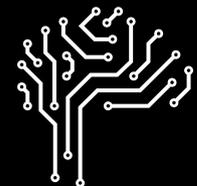
Compete using an industry-specific digital strategy

Be clear on which platform, what roles, and which data are fundamental to compete successfully in your industry.



Create the right environment for digital transformation

Improve your "digital IQ," teaming with government to open up cross-industry relationships and change the rules of competition.



The power to connect digital size, scale and outcome lies with businesses, industry sectors and governments. With smarter investments, digital resources, technologies and assets can have a positive influence on competitiveness and help economies and industries drive greater, more sustainable value.

About the research

The Accenture Strategy Digital Economic Value Index uses an entirely new approach to traditional examination of the digital economy. Our basic premise is that the value of digital technologies is not confined to any particular sectors, but pervades the entire economy. Our model recognizes digital goods and services add value not just at the point of production, but all the way through the supply chain. For the first time, we have developed an internationally comparable, replicable and scalable framework to measure this economic snapshot. Our methodology takes into account the value created by the indicators related to:

Digital skills: the digital nature of occupations and the skills and knowledge required of people to perform their jobs.

Digital technologies: the productive assets related to digital technologies (hardware, software and communications equipment).

Digital accelerators: the environmental, cultural and behavioral aspects of digital components of the economy that support digital entrepreneurship or activities.

In assessing the impact of the digital levers, we cross-referenced previous analysis on economic opportunity. The earlier study, launched in October 2015, estimated the effect of changes in total factor productivity on gross domestic product. Working with Oxford Economics, we used internationally comparable observations across a large pool of measures of digital technology and related indicators from public and private sources. We constructed the Accenture Strategy Digital Density Index for 33 major economies and undertook multivariate regression analysis to estimate equations that explain variation in countries total factor productivity by references to their Digital Density Index scores.

We found a 10-point boost in economic opportunity is associated with an approximately 0.4 percentage point increase in total factor productivity for advanced economies, and a 0.65 percentage point increase in total factor productivity for high-growth emerging markets. Now, in calculating the optimum value of economic opportunity, we effectively allocate each economy a hypothetical "budget" of 10-points to invest in improvements to their digital capabilities. By thoroughly testing where the points are best allocated, one point at a time, our model is able to evaluate which combination of the three levers has the greatest impact.

It is important to note that the optimal combination is a purely statistical result, based on available data. It does not incorporate qualitative judgment, which could influence the outcome.

Geographic perspective

If you would like to learn more about your country's findings or find out how to improve your country's digital strategy, visit www.accenture.com/digitalgrowth

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