The Digital Sprinters:

Driving Growth in Emerging Markets

Google

Contents

1. Foreword 2
2. Executive Summary 4
3. Introduction 6
4. Digital Transformation and its potential 12
5. Key Recommendations for Harnessing Digital Transformation 14
6. Conclusion 36

1

Foreword

This year, people and communities around the world are confronting a series of once-in-a-generation challenges: A major health crisis, an economic downturn of unprecedented proportions, rising demands for equity, and dramatic strains on fiscal resources.

The rain from this perfect storm is falling hardest on emerging markets. Yet emerging markets also have some of the most exciting economies and greatest entrepreneurial energy in the global economy. With the right policy framework, they can become ideal launching pads for future innovation. That's why this challenging moment may actually be exactly the right time for those markets to pursue an ambitious digital transformation agenda, leveraging immediate recovery efforts into sustainable economic development gains.

Technology can be an astonishing engine of progress, in the best of times and the worst of times. Over the past decades, the global spread of new technologies has helped lift over a billion people out of extreme poverty — an achievement unparalleled in human history. And it has created new and expanding middle class communities hungry for more.

We know from long experience that a crisis can be an opportunity for bold action - the introduction of social safety nets after World War I and during the Great Depression, the launch of multilaterlateral institutions after World War II, major investments in infrastructure during the Cold War, and sweeping reforms to the financial sector after the 1990s financial crisis and the Great Recession of 2007-08.

Decades into the Information Revolution, we see how major technological shifts can reach across society to lift all boats. In the US, a pro-innovation regulatory framework joined with public-private partnerships to accelerate the tech revolution. As Walter Isaacson put it: "The creation of a triangular relationship between government, industry, and academia was, in its own way, one of the significant innovations that helped produce the technological revolution of the late 20th century."

The current crisis reinforces the potential of digital technologies to help people across society. A recent study found that nearly one in three US small business owners are using digital tools to save their business during the COVID crisis. We have seen similar experiences in emerging markets, where digital technologies have served as a lifeline: plus-size clothes designer in Manaus, Brazil, a musical instruments maker in Istanbul, Turkey and an owner of a guest house in Durban, South Africa, have all been able to survive by using digital technologies and online commerce.

Trends of the last 20 years — digitized information, global networks, and massive computing power — have collectively unleashed unprecedented new economic opportunities. They have helped overcome challenges of geography and resources, giving people and small business access to remarkable new tools. The United Nations estimates that digital technologies are responsible for as much as 15% of the global economy — and in some countries that number is as high as 30%.

But digital transformation is still in its early stages in many emerging markets. Almost half of households in the developing world still lack broadband access. Many traditional sectors have not yet realized gains from digitization. And where Covid-19 accelerated reliance on digital solutions, these households and sectors are at risk of being left behind.

So emerging markets face a crisis, a digital gap, and a digital opportunity. What's the best path forward? To help answer this question, we compiled ideas based on Google's experience and collaboration with emerging markets, showing how the right digital policy frameworks can accelerate economic development. In parallel, we have commissioned an empirical study to estimate the potential impact of these changes.

Of course we recognize that these recommendations reflect just one company's experience. Governments can and should consult multiple public and private sector sources for guidance on digital transformation policy. But we hope that these two reports will help advance the conversation about digitally-driven growth among governments, civil society, international organizations, academic institutions and local entrepreneurs.

We are committed to bringing the next billion internet users online, connecting them into the global community. And we continue to work with the United Nations, the World Bank, and other multilateral actors on making progress toward a digital transformation that benefits everyone.

Kent Walker
SVP - Global Affairs

With the right policy framework, Digital Sprinters can become ideal launching pads for future innovation.

2

Executive Summary

While Covid-19 is first and foremost a health crisis, it is also an economic crisis of unprecedented proportions in modern times. And yet, to assume that no positive changes will emerge from the crisis would be misguided. An economic crisis presents an opportunity. In fact, some of the most thoughtful economic policies were triggered by economic hardships.

Within the past two decades, digitization, global networks, and massive computing power have been combined to produce a remarkable digital revolution — one that connects the majority of humanity to information and presents opportunities that were never available before. And unlike prior technological revolutions, this one has happened at a remarkable speed and on a truly global scale. As a result, the majority of individuals and enterprises with broadband connections now live in the developing world, and they are using the very same applications and products that are used in the most developed economies. So not only did the world witness a tremendous transformation, such transformation actually has the potential to rebalance the global economic order.

At the same time, digital transformation in many emerging markets continues to be in its early stages. About half of households in the developing world do not have broadband access. In Africa in particular, access reaches only 18% of households, and affordability remains a major obstacle. In addition to households that do not have access, many traditional sectors of the economy have not realized the gains from digitalization yet. And as Covid-19 accelerated reliance on digital solutions these households and sectors are increasingly at risk of being left behind. To address these gaps, and ensure that digital transformation helps yield inclusive growth, an ambitious and comprehensive effort across multiple policy areas is needed.

The stakes could not be higher. Emerging markets face a watershed moment today. As Covid-19 is disrupting world order and breaking supply chains, emerging markets have an opportunity to find inventive ways to catch up, leapfrog, and emerge as stronger competitors from the crisis.

To ensure that digital transformation helps yield such opportunities, an ambitious and comprehensive effort across multiple policy areas is needed. And indeed we propose a broad set of policies that address the diverse nature of the digital ecosystem. In addition to a digital agenda, national strategies for education, public health and technology may be needed. Where appropriate, we highlight such needs in the report, but focus our recommendations on the areas of expertise — the set of policies that facilitate digital transformation.

We propose a number of policies to facilitate digital transformation in emerging markets. These policies fall into four broad categories — **physical capital**, **human capital**, **technology**, **and competitiveness** — each of which needs to be addressed to achieve sustainable, inclusive economic growth. The critical issue around **physical capital** is connectivity and digital infrastructure. As we detail in the report, digital infrastructure does not depend solely on investments, but also on the way that it is being managed. For example, spectrum sharing can be a successful way of expanding access to underutilized infrastructure.

Physical capital alone of course does not produce growth. Countries need a growth agenda around **human capital**. Policymakers need to address a range of interconnected issues in this area, spanning worker training, job security, entrepreneurship, and discrimination. While such issues undoubtedly require a comprehensive approach, sometimes it is basic informational barriers, such as measuring gender pay gaps or providing relevant job market information, that can stand in the way of empowering human capital.

Economic growth will also require a commitment to **technological innovation**. Initiatives to proliferate digital data, artificial intelligence, and cloud computing empower the growth of next-generation technologies. For instance, as AI is poised to automate an increasing range of tasks once performed by humans, principles that govern the use of AI are an important aspect of such efforts.

Finally, as a fourth pillar, digitally led growth requires a regulatory ecosystem that promotes **competitiveness** — including competition policies that promote competitive markets rather than protecting competitors, tax regimes that are predictable and based on international standards, and a digital trade framework that promotes open markets and interoperable regulatory standards.

Our recommendations focus on digital policies in each of these four pillars. Of course other economic policies have been shown to trigger growth — including policies around capital formation, labor productivity and public education — but we leave those to others with greater expertise.

Recommendations

Ensure affordable access to the Internet

- Promote the deployment of new technologies
- Facilitate spectrum sharing (e.g., South Africa's TV white spaces)
- Facilitate Infrastructure sharing (e.g., CSquared)
- Promote public-private partnership for mobile infrastructure (e.g. Red Compartida)
- Promote the availability of affordable devices
- Envision access in a broader context that includes both affordability and relevance considerations

Foster digital skills development

- Engage in public-private partnerships (e.g. Singapore's SG Ignite)
- Encourage work-based learning (e.g. Latin America's Laboratoria)
- Promote the accessibility of digital skill programs
- Partner with the private sector to collect complete and standardized job market data

Encourage entrepreneurship and startups

- Offer a framework to protect early stage investors (e.g., Turkey's Business Angel Law)
- Education models that highlight both STEM and managerial skills
- Comprehensive entrepreneurship training at colleges and high schools
- Local regulations in accordance with international guidelines (e.g., Turkey and South Africa)
- Offer regulatory sandboxes

Address the gender gap

- Continual measurement of gender inequality in digital products and services
- Promote financial inclusion policies
- Promote digital proficiency programs (e.g., IamRemarkable)

Promote the adoption of Artificial Intelligence

- Encourage AI research funding
- Encourage responsible data sharing
- Promote constructive governance frameworks
- Prioritize opportunities to utilize AI

Promote innovative uses of data

- Promote data interoperability
- Encourage data sharing initiatives (e.g. data trusts)
- Adopt an open-by-default approach to public data

Enable an inclusive digital payments ecosystem

- Advance open layer payment models (e.g., Mojaloop)
- Encourage RTP adoption

Encourage movement to the cloud

- Adopt cloud-first policies by government agencies
- Avoid data localization requirements
- Adopt international standards in selecting providers
- Promote sustainability as a selection criteria for cloud
- Invest in a national cloud strategy

Foster competitive markets

- Evidence-based implementation of competition laws
- Avoid incorporations of goals that are inconsistent with
- Competition-policy should not be used to promote other social agendas
- Over-regulation can harm innovation

Enable the platform economy

- Adopt explicit frameworks for platform responsibilities
- Incorporate safe-harbor liability standards

Adopt tax policies for a digital economy

- Avoid unilateral tax policies that raise trade barriers (e.g.digital services taxes or equalisation levies)

Commit to open digital trade

- Prioritize digital-first trade agreements

Advance a digital government

- Move more citizen services online
- Promote the use of and provide access to public data

3

Introduction

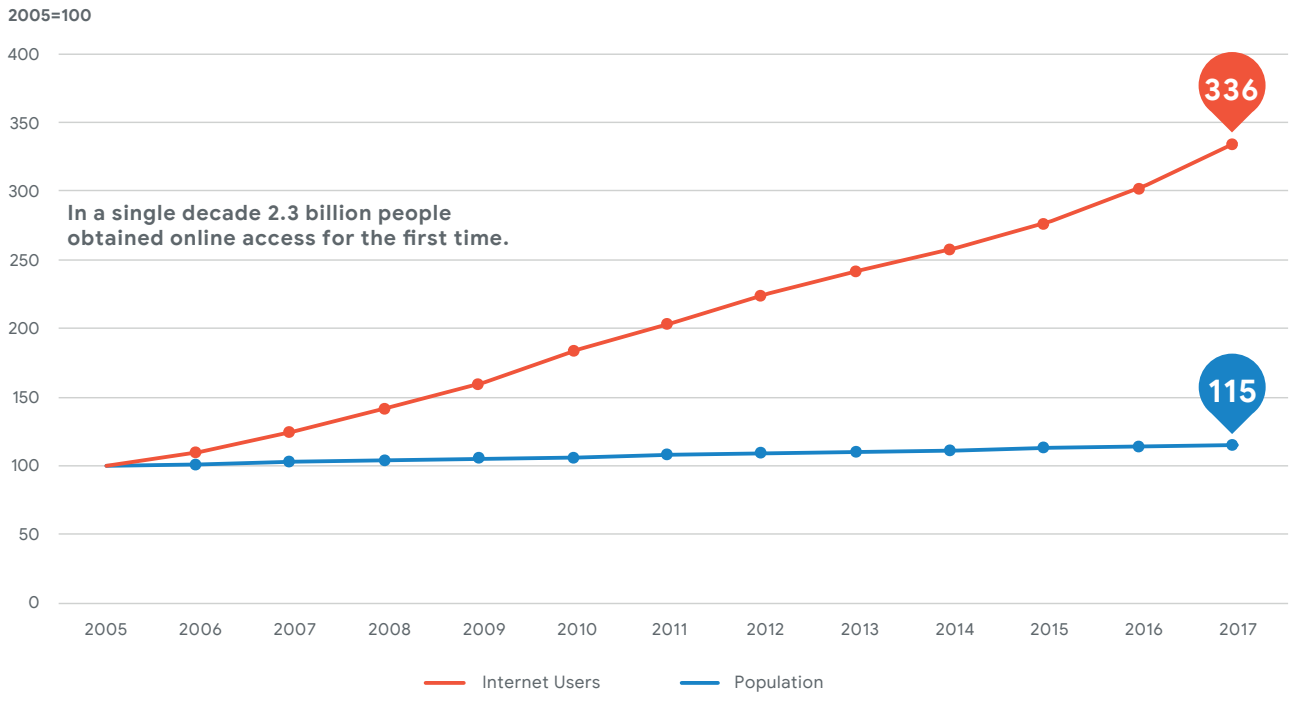
A digital revolution

The term "revolution" is not one that we take lightly. And yet, in the past decade the developing world has experienced a technological transformation that is unprecedented in its depth and speed. Within a single decade internet access was expanded to 2.3 billion people—accounting for **nearly a third of humanity**. And as Chart 1 shows below, while global population and GDP grew at modest rates, access to the internet nearly quadrupled in a matter of a few years. No prior wave of the industrial revolutions - steam, electricity or computing - crossed society and achieved global adoption with such lightening speed.

A decade ago the developing world accounted for roughly a third of the digital population, whereas today that share stands at 72%.

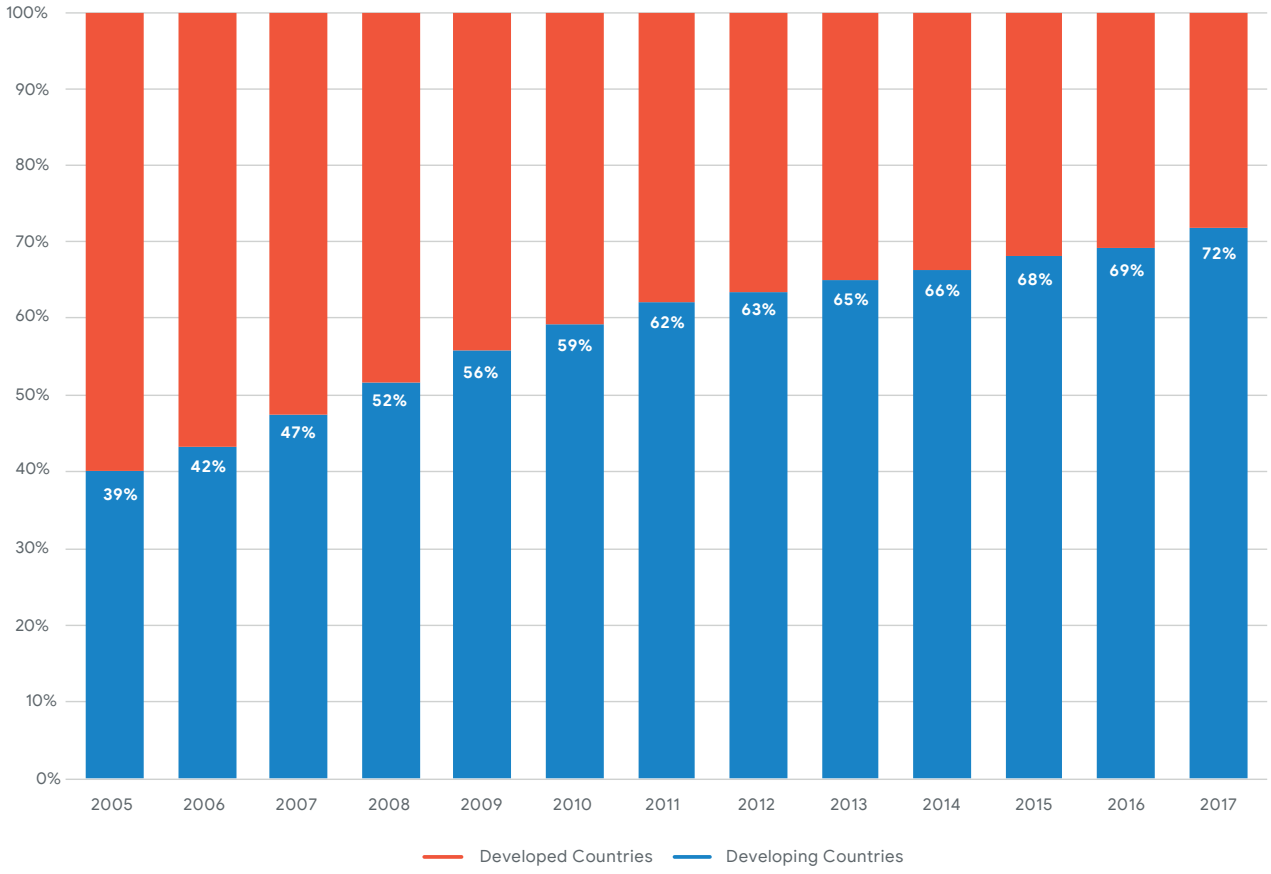
Moreover, the overwhelming majority of this transformation has taken place in the developing world, which accounts for the vast majority of new users. This development is critical, as not only did the world witness a tremendous transformation, but it was the type that has the potential to rebalance global economic power. Indeed, only a decade ago the developing world accounted for roughly a third of the digital population, whereas today that share stands at 72%. And the transformation is not limited to internet access alone. It pertains to all the unimaginable ways through which technologies or data can advance human activities. And for these reasons, the digital transformation can be leveraged to do the unimaginable: help address the **growing economic imbalance** between the developing and developed world.

Chart 1: Unprecedented Growth in Number of Online Users



Source: International Telecommunication Union (ITU) and The World Bank.

Chart 2: Growth in Online Users Caused a Fundamental Shift between Developed and Developing Markets



Source: International Telecom Union ICT Statistics

The glass half-empty

However, as remarkable as the digitalization of the developing world has been, it has fallen short in a number of ways. First and foremost, it's incomplete. To date, 53% of households in the developing world do not have either fixed or mobile broadband access. In Africa in particular, broadband access reaches only 18% of households. And in many countries in Asia and South America, access remains an issue. As Chart 3 shows, even in the 16 Digital Sprinters that are the main focus of this report, access remains a challenge. And access to the internet is not only about the physical infrastructure, but also about the affordability of services and devices, and the relevance of local content.

Digitalization has also been incomplete in the share of sectors and industries that it has transformed. Particularly in traditional industries such as healthcare, agriculture and transportation, despite the considerable advances in artificial intelligence, robotics and computing, digital technologies are not being fully utilized in emerging markets.

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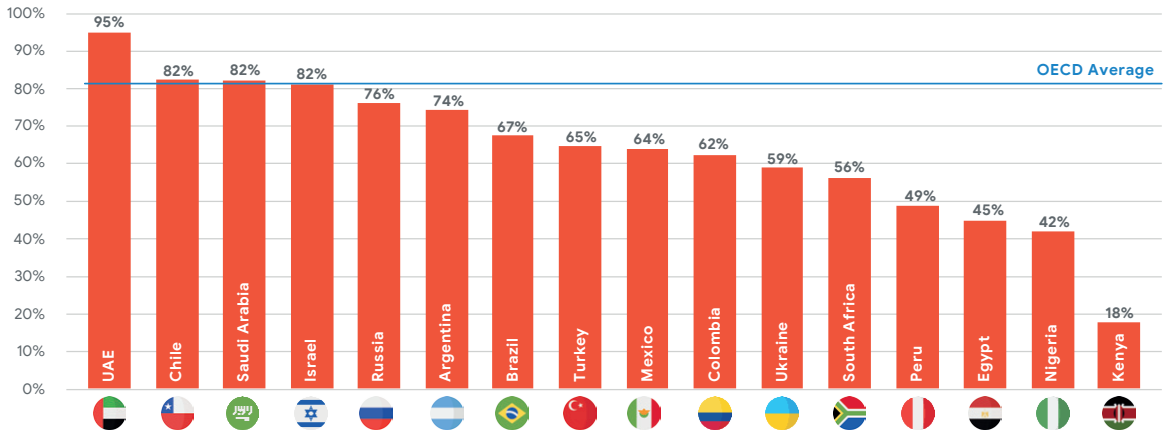
[1] *The 16 Digital Sprinters include six of the ten largest economies in the Latin America, Middle East & Africa respectively, as well as three of the five largest mid-income economies in Europe. Together, they account for 13 percent of GDP, 16 percent of population and 19 percent of internet users globally.*

Chart 3: Emerging Markets Lag Behind in Percent of Online Users



Source: The World Bank.

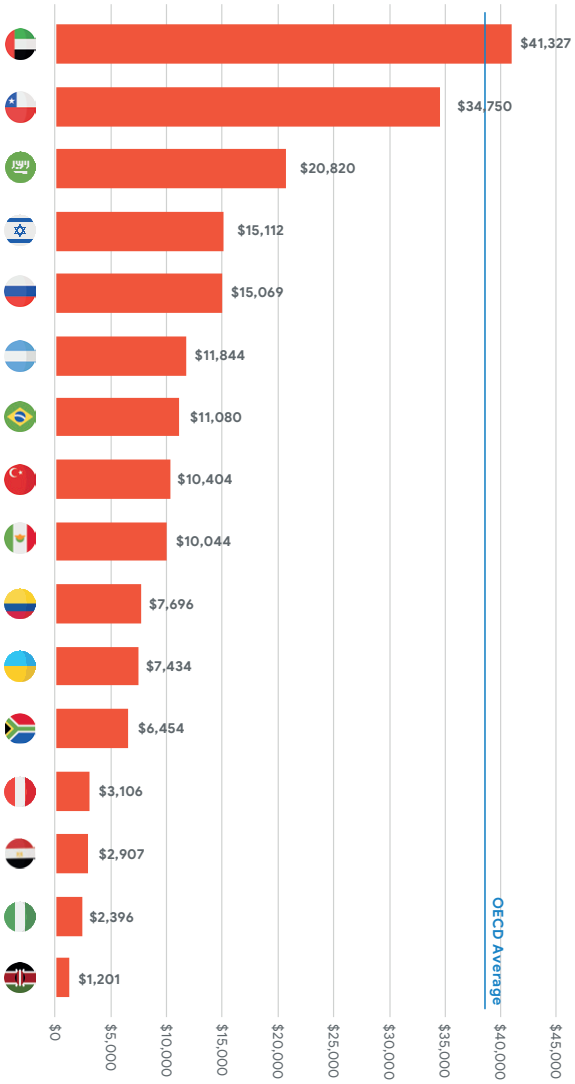
The growth paradox

As its reach of households and industries in emerging markets has been incomplete, the digital transformation has not achieved its full economic growth potential. In fact, in the past decade and a half as internet penetration was racing ahead in emerging markets, both GDP per capita and labor productivity made only modest gains.

And despite the advances in connectivity, both of these measures remain low relative to those of developed countries. There are indeed significant challenges ahead, not only to expand access to the internet, but also to ensure that policies are put in place so that the full economic potential of a digital revolution is indeed realized.

While digitalization provides emerging countries an extraordinary opportunity to unleash economic growth, there are **myriad challenges ahead**. First is that sustainable economic growth cannot be accomplished by digitalization alone. Economic growth depends on a wide range of economic, political, institutional, demographic and cultural elements. In the same way that economic growth does not depend on any other single issue, it is misguided to suggest that growth exclusively depends on digitalization. Second, it is not a coincidence that economic growth has proven to be an elusive proposition in the majority of the developing world. Strategies for economic growth may differ from one market to another (e.g., what is appropriate for Israel may not be right for Brazil) and may be constantly evolving over time (e.g., what was a right policy for Russia 5 years ago may not be right today). Time and time again we have seen that the nature of digital transformation defies simplistic planning and easy projections. While it is important to note the potential of digital transformation, we also highlight the challenges that arise in promoting economic development; and highlight how such efforts must take into account the diversity of other considerations that affect economic prosperity.

Chart 4: Emerging Markets Lag Behind in GDP per Capita (2018)



Source: The World Bank.

Importance of inclusive policies

For economic growth to be sustainable, it must be inclusive. And to accomplish economic development through inclusion, digital policies must ensure **opportunities for all**. As we detail below, digitalization needs to address at least three important economic mobility barriers: (a) incomplete access to digital skills; (b) incomplete geographical access to the internet; and (c) incomplete diffusion of technologies to traditional sectors of the economy. We discuss the way that technology can address these barriers to inclusion in the report (particularly in the connectivity, digital skills and discrimination sections). But as we note, technology is of course implemented by humans, and as a result, it too can preserve inequities and biases.

Covid -19

The novel coronavirus unleashed both a health pandemic and an economic crisis that impacts nearly every economy and every household across the globe. But while established countries may have institutions and resources to better confront the economic crisis, developing countries often do not. Prior to the crisis, many developing countries had an inadequate public health infrastructure and were coping with structural unemployment and informal economies. For these reasons an economic recovery, let alone sustained growth, in the emerging world may be even more challenging and further prolonged.

A crisis as an opportunity

While it may be difficult to predict the economic impact of the pandemic, or whether it will lead to shifts in global economic order, Covid-19, similar to other crises, may well bring **forward positive changes**. The history of crises suggests that they may be an opportunity. Social Security, the first comprehensive program to provide a safety net for elderly and the unemployed, was born out of the U.S. Great Depression. Britain's inclusion of women in the workforce and passage of the Sex Discrimination Removal Act followed World War I and the economic toll that it inflicted on the U.K workforce. And the Asian currency crisis of 1997 led to long lasting reforms and financial stability in Asian markets that were most affected. Covid-19 could similarly present an opportunity to advance reforms that may leverage an economic recovery into sustainable growth.

Crisis driven digitalization

To a great degree, the pandemic has already pushed forward digitization in both emerging and established markets: empowering SMBs to rise above local conditions through e-commerce, governments to provide continuity of services, students to learn remotely and employers to remotely keep their employees. This increased reliance on digitization is encouraging. It demonstrates that digital tools contributed to resilience during this current crisis and may very well be helpful in the next crisis as well.

Leapfrog opportunities

For economic recovery to be effective, it must account for the challenges that emerging markets were facing prior to the crisis, as the crisis itself, to a great degree, merely unearthed pre-existing economic challenges. Catching up with established markets, has been a key growth objective for many emerging markets prior to Covid-19. But now, with Covid-19 disrupting world order, breaking supply chains and shifting international trade, an opportunity may arise for emerging markets to find inventive ways to catch up, leapfrog, and emerge as stronger competitors from the crisis.

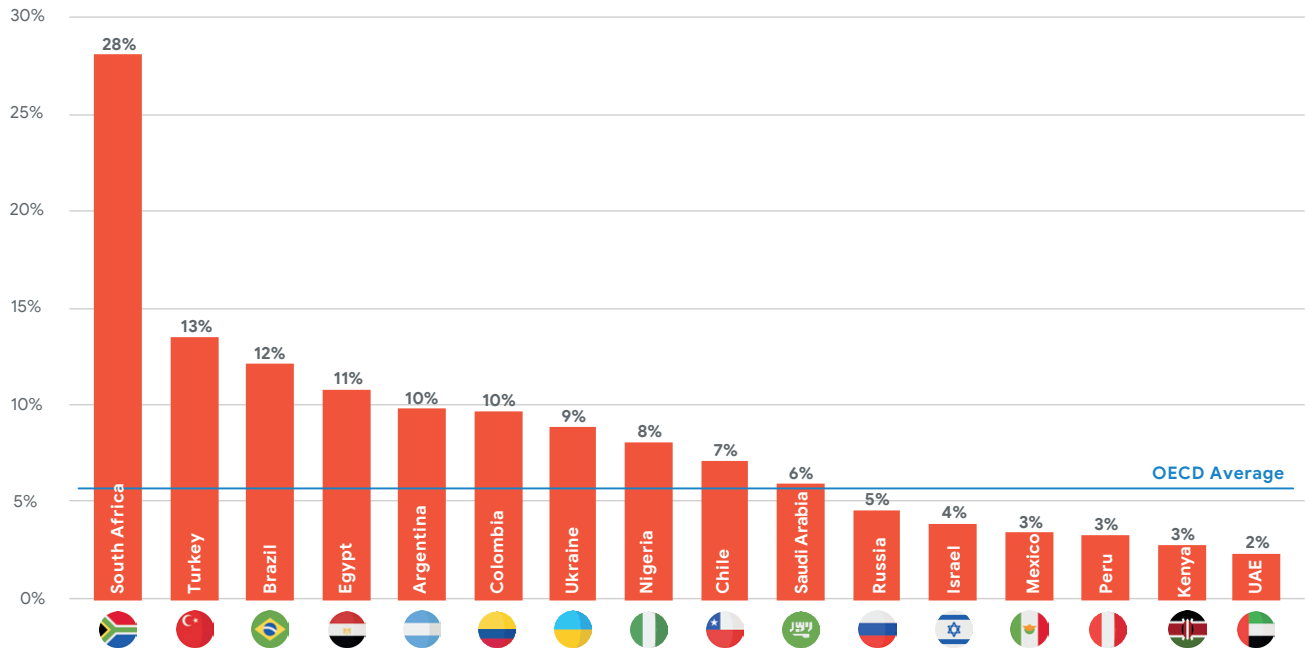
In some respects, emerging markets have been latecomers to tech adoption and may have a relative advantage. Free from outdated technology lock-ins, emerging markets may have an opportunity to avoid replacement costs, leapfrog into new technologies and ultimately emerge as stronger competitors. For these reasons we believe that a focus on the Covid-19 economic recovery presents a unique opportunity to invest in the tremendous potential of emerging markets and harness digital transformation to advance a sustainable and inclusive growth.

Characteristics of developing economies

While digital transformation is generating considerable benefits in established economies, it can be uniquely impactful in the emerging markets world. In particular there are a number of economic characteristics that position emerging markets especially well for a digital transformation. For instance, a large volume of unconnected users may imply that infrastructure investments will have greater reach. And a younger population or more numerous SMBs indicate that the benefits from expanding access may be greater in emerging markets. Similarly greater unemployment may imply that investments in digital skills can provide more individuals access to the workforce. To illustrate the degree to which emerging markets provide such unique opportunities, we provide qualitative estimates for unemployment in Chart 5. It demonstrates that even prior to Covid-19, the majority of emerging markets experienced unemployment rates significantly above OECD averages. This, as we noted above, is an opportunity.

Covid-19, similar to other crises, may well bring forward positive changes.

Chart 5: Emerging Markets Face Greater Unemployment (pre-COVID, 2019)



Source: The World Bank.

The digital transformation can be leveraged to do the unimaginable: help address the growing economic imbalance between the developing and developed world.

4

Digital Transformation and its potential

Contours of a digital transformation

We use the term digital transformation to describe the use of either digital technologies or data to advance human activities. The transformation implies changing the way we think about how technology intersects with our daily life, economy and society. And dramatic increases in computing power combined with declining cost over the last decade has driven remarkable technological advances. As of today, these include the internet of things, quantum computing, artificial intelligence, advanced wireless networks, cloud computing, big data analytics and many more breakthrough technologies currently under development.

> Dramatic increases in computing power combined with declining cost over the last decade has driven remarkable technological advances.

Ecosystem built on complementary features

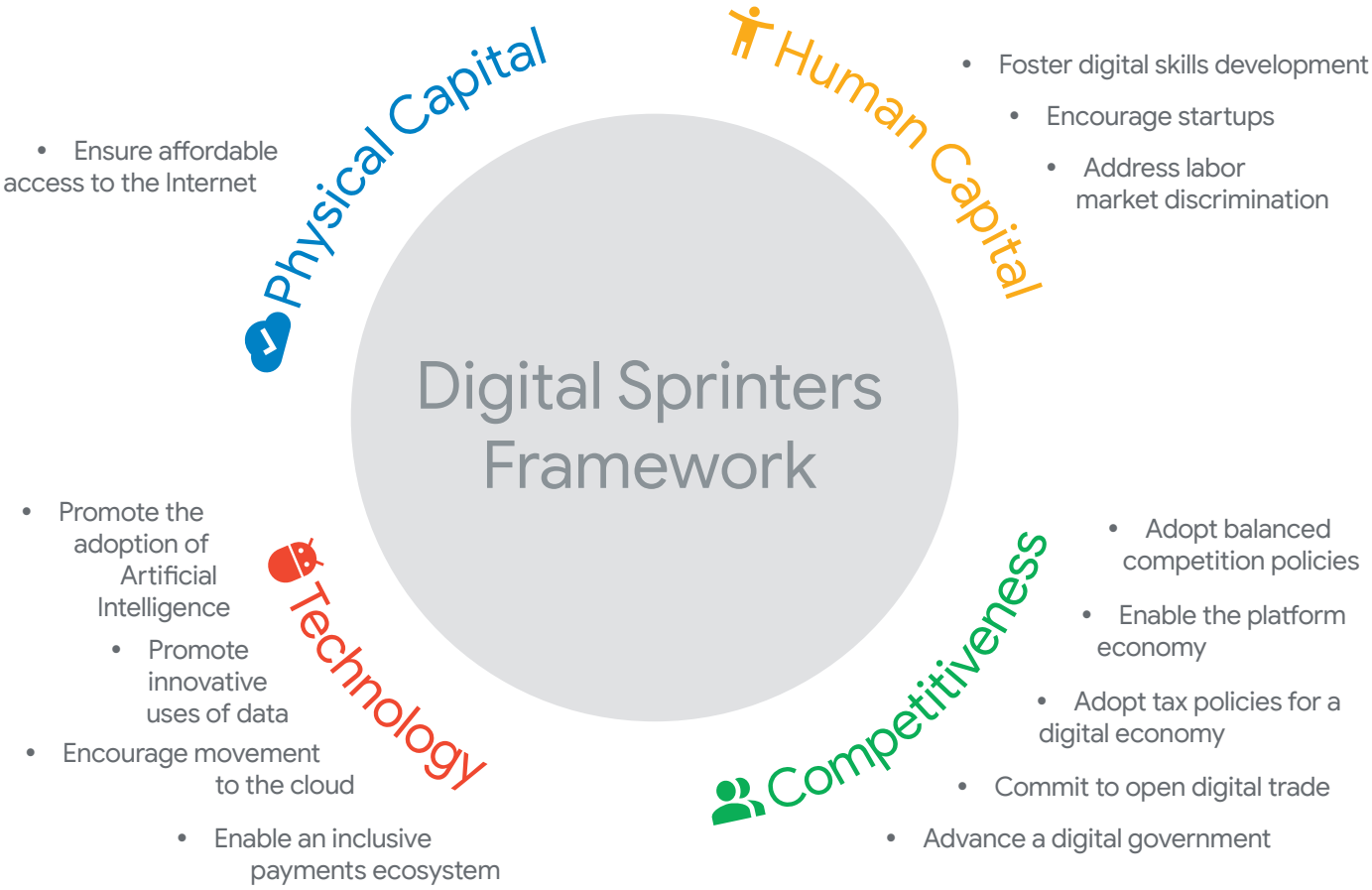
At the core of the digital transformation is the recognition that its sum is greater than its individual parts. And as the digital transformation advances an ecosystem of interdependent technologies, this ecosystem is much stronger than its individual components.

Consider big data analytics for instance. Although data has been collected ever since humans recorded information, the volume that we currently collect daily dwarfs the aggregated amount of data that was collected in its entirety since the dawn of civilization through the early 2000s. However, for big data analytics to be effective, powerful computing is needed. And for computing to be useful for large data analytics, cloud computing is typically required. However, for cloud computing to work, always-on, everywhere-available high-speed internet connectivity is needed as well. Big data analytics, cloud computing and 5G connectivity are representative of the interdependence in the digital ecosystem. These technologies operate with, and complement one another, as many other technologies in the digital transformation do.

Transformative potential

Digital technologies are general-purpose technologies that are not limited to a single use, but rather can transform societies, create opportunities to do new things and advance new kinds of knowledge and innovations. Accordingly, the ecosystem that such technologies create inherently extends beyond the information technology sector. In fact, the majority of benefits that accumulate from digital transformation accrue to traditional industries through improvement of productivity and expansion of employment. With the right policy mix, digital technologies can be used to generate growth on an economy-wide basis.

We propose below a number of policies that can encourage digital transformation in emerging markets. These fall into four categories — physical capital, human capital, technology, and competitiveness — each of which needs to be addressed to achieve sustainable, inclusive economic growth. The critical issue around **physical capital** is connectivity and digital infrastructure but it does not independently produce growth. Countries need a growth agenda around **human capital**, investing in people. Policymakers, the private sector and other stakeholders need to address a range of related issues in this area — spanning worker training, job security, entrepreneurship and discrimination. Economic growth will also require a commitment to **technological innovation**. Initiatives to proliferate AI, digital data, cloud computing and digital payments empower technological innovations. Finally, digitally-led growth requires a regulatory ecosystem that promotes **competitiveness** — spanning such issues as competition policies focused on promoting competitive markets, a tax regime established on international practices, and open rules-based digital trade framework.


Physical Capital
• Ensure affordable access to the Internet
Human Capital
• Foster digital skills development
• Encourage startups
• Address labor market discrimination
Digital Sprinters Framework
Technology
• Promote the adoption of Artificial Intelligence
• Promote innovative uses of data
• Encourage movement to the cloud
• Enable an inclusive payments ecosystem
Competitiveness
• Adopt balanced competition policies
• Enable the platform economy
• Adopt tax policies for a digital economy
• Commit to open digital trade
• Advance a digital government

5

Key Recommendations for Harnessing Digital Transformation

1. Ensure affordable access to the Internet

Access as a precondition

Access to the Internet is of course a precondition for digital transformation. Despite the rapid deployment of infrastructure over the past decade, availability of internet connectivity and smartphone use remains a barrier for economic development. As corroborated by a recent Pew Institute research and Chart 3 above, there is significant variation in the state of internet access within emerging markets, with UAE actually exceeding the OECD average internet penetration, while Kenya reaches only 18% of its population.

Access in a broader context

However, having physical infrastructure in place is not enough. For the Internet to be widely adopted it has to be **affordable** and offer **relevant** content. Affordability may be a challenge not only for budget-restrained governments who struggle to invest in such infrastructure, but also to many households who cannot afford devices and internet access, even when the infrastructure is available. Consistent with this interdependence between internet use, affordability and relevance, a recent A4AI report suggests that markets where access is not widely affordable or where digital proficiency is insufficient, internet use may be suppressed as well even if sufficient infrastructure is deployed.

New connectivity technologies

New technological breakthroughs offer emerging market governments the opportunity to build powerful networks without the high infrastructure investment and risk that are associated with traditional infrastructure investments. Emerging countries can promote connectivity by enabling the deployment of new technologies and expand the reach to the entire population, including underserved communities.

Access in rural areas

Access in rural areas is a crucial element for development. And yet while emerging markets have made significant progress in providing more access to the internet, problems of connectivity remain persistent even in markets that have made significant progress. Globally individuals in rural areas are 40% less likely to have mobile internet access relative to their urban counterparts. The challenge in connecting rural areas is rooted in economics. With lower user density, and remote infrastructure, it is more costly and it generates fewer revenues to invest in rural areas. And yet, governments in emerging markets cannot afford to leave rural area connectivity at the hands of free markets. For this reason, governments need to actively **promote infrastructure investments in rural areas**. We recognize the challenge of encouraging investments in any area that is less profitable. As we note above, there are several strategies that governments can undertake to encourage infrastructure investments including shared infrastructure, partnerships with private telecoms, deployment of new technologies and removal of red tape. In addition, emerging market governments may want to consider extending financial incentives that improve the profitability of investing in rural infrastructure such as tax exemptions and/or deferrals.

Loon and Taara

Two groundbreaking innovations that Alphabet is developing in collaboration with local telecoms in emerging markets are project Loon and project Taara. Project Loon extends internet access through the creation of a new layer of connectivity in the stratosphere to obtain access where physical infrastructure is scarce. Working in cooperation with countries' national cellular providers, Loon has recently launched commercial service in Kenya and will soon do so in Mozambique. Similarly, Project Taara explores technologies that replace fiber optics cables deployment with high-speed data transmission through beams of light, reducing costs and deployment times for both last-mile and middle-mile backhaul. To date, Taara has launched pilot programs in Kenya, Mexico and India.

Collaborations and effective deployment

Both technologies can be deployed for the 'last mile,' reaching the remaining people and enterprises that have not been connected, where development needs are greatest. Both reflect meaningful efforts by tech platforms to address connectivity issues at large scale. Yet neither would have been possible without the collaboration of local governments and telecommunication partners. In fact, the opportunity to transform communications networks critically depends on minimizing red tape to deploy infrastructure in the areas where it's most needed. The deployment of Equiano, another Google infrastructure project, demonstrates the importance of such collaborations. Equiano is a Google funded subsea cable that will run along the West Coast of Africa with branching units in several countries requiring local approvals and licensing. The project was made possible by investment-friendly, regulatory frameworks born of a collaborative approach between regulators and service providers.

Spectrum sharing

One tool available for emerging markets governments is making radio spectrum available for commercial use. The availability and affordability of wireless services, from mobile networks to WiFi and other unlicensed uses, critically depends on access to sufficient spectrum. A promising approach to spectrum management is spectrum sharing, that is, use of the same spectrum by multiple non-interfering users. This includes approaches such as using television broadcast spectrum that is not carrying any broadcast signals in an area used for broadband (so-called TV White Spaces).

South Africa's TV White Space

South Africa's recent TV White Space trials provide an example of how spectrum can be shared to deliver low-cost Internet access in rural areas. The pilot program, which seeks to determine the commercial feasibility of TV White Spaces in rural areas where affordability has proven challenging in prior initiatives. The program is backed by a collaboration of non-profit and business partners that include Microsoft, International Data Corp and Adaptrum. The program aims to provide 1GB of monthly access at $2/month: a fraction of the cost of prepaid cellular data. An important key to the launch of the program has been South Africa's Independent Communications Authority's proactive approach to set transparent regulations detailing the rights and obligations of secondary white space broadband providers in the years leading to the program's rollout.

ITU spectrum bands

Additionally, the International Telecommunications Union has identified a number of spectrum bands (in the 700 MHz-to-3 GHz frequency range) to support commercial broadband services. Where they are not being fully utilized by existing operators, these frequencies can be made available to local businesses and other operators to expand access to broadband while ensuring that the current applications are fully protected. A regulatory framework that permits use of such bands, such as the framework in South Africa, is required nonetheless for the ITU initiative to be used.

Infrastructure sharing

Another form of mobile deployment that has been effective at reaching rural areas in emerging markets is mobile infrastructure sharing. A shared infrastructure model often enables mobile network operators and internet service providers to share both the use and the costs of broadband infrastructure. One such example is CSQuared, a joint venture between Google, Mitsui & Co (Japan), Convergence Partners (South Africa) and the International Finance Corporation (a World Bank Group) to connect metropolitan areas in Africa to existing long-distance fiber lines. CSquared specifically leases the fiber optic networks to mobile network operators and internet service providers on a wholesale model. It currently owns over 2,200 km of metropolitan fiber lines in Ghana, Uganda & Liberia.

Public-private partnerships

Investments in infrastructure may also be accelerated by forming private-public partnerships. In particular, by enabling private entities to form infrastructure partnerships, governments may be able to not only facilitate investments in areas that are out of reach, but also promote competition between the partnership members, once the infrastructure is deployed. Mexico's Red Compartida is a good example of a partnership in which the Mexican government provided spectrum to a coalition of private firms who then funded backbone infrastructure. Red Compartida already today makes high-speed connectivity available to the majority of the population in Mexico and is expected to complete over 92% coverage by 2024. Other examples of Public-Private alliances for shared infrastructure include submarine cables Tannat, funded and operated between Google and Uruguayan state owned telco provider Antel, as well as Australia's National Broadcast Network, a government funded wholesale-only open-access broadband network.

Rich, diverse and relevant content

As noted above, access alone is not enough. For the infrastructure to be effectively used, content must be rich, diverse and relevant to the interests of local communities. While content may grow organically, governments have a role to play by partnering with communities and businesses to promote content that is relevant. And given the interdependence of user interest and incentives to invest in infrastructure, comprehensive **partnerships to promote wealth of content** will in turn also induce the profitability of investing in infrastructure.

Affordable devices

In addition to infrastructure availability, device affordability is a key factor that ensures individuals can connect to the internet. Affordability of devices is not a singular issue, as in addition to the purchase price of the device, whether it requires extensive data use or can be easily financed also impacts its affordability. Google has engaged in efforts to address such issues by not only by building a lighter, yet powerful Android operating system - Android (Go Edition), to power affordable smartphones, but also by partnering with providers such as Safaricom in Kenya to enable individuals to finance the purchase of an affordable device with as little as $10 upfront.

Emerging markets governments may also promote the availability of affordable internet devices, including by enabling device authorization, and easing import restrictions and duties on such devices. Efforts to accelerate 'time to market' for a range of devices and technologies may critically depend on government agencies and procedures. As radiofrequency devices become more complex, it is important for governments in emerging markets to provide timely procedures for in-market testing, evaluation and demonstration. Allowances to permit imports of pre-authorization radiofrequency devices may enable the newest technology to come into users' hands more quickly. Furthermore, recognizing limited-purpose importation allowances represents another important means to provide flexibility without undermining basic regulatory requirements. Additionally, non-tariff barriers like RF device pre-authorization requirements and onerous spectrum licensing requirements can impose additional costs or delays in deployment of affordable devices. Governments may benefit from coordinating their regulatory standards with those of other countries to provide a degree of flexibility and eliminate burdensome procedures that undermine IT products trade.

Colombia's Orange Economy

The "Orange Economy," an outside-the box initiative promoted by the Inter-American Development Bank, offers a creative example of efforts to promote rich online content and effective use. In 2017 the President of Colombia co-author The Orange Economy, a legislation intended to promote rich online content. This legislation included credit lines and tax exemptions to fund cultural digital activities, as well as initiatives to train cultural entrepreneurs in the use of digital tools.

To take advantage of the economic growth opportunities stemming from affordable access a few steps can be followed by emerging markets policymakers. A broader approach to access that includes both affordability and effective use is essential. We also highlight that not all infrastructure investments have to be public, but also private partnerships between carriers can be leveraged to promote investments in underserved rural areas. It is important that industry partners are provided the necessary regulatory commitments so that they can invest and compete over provisions of infrastructure.

2. Foster digital skills development

Why are digital skills critical?

Digital skills are not just about designing a web page. They encompass the range of vocational proficiencies that are needed for effective participation in the digital economy. As jobs require increasing interaction with technology and as traditional businesses are shifting online, skill development becomes a **core requirement for economic perseverance**. Emerging countries cannot participate in the global digital economy unless their workforce has sufficient digital literacy. Developing mass literacy nonetheless is not an easy challenge. It requires a deliberate and comprehensive approach. And yet, notwithstanding these challenges, overlooking the importance of digital skill will likely undermine the ability of countries to use its digital infrastructure let alone leapfrog other rivals. Technology does not get adopted unless it is useful. And for digital technology to have any economic value, constituents at large must be able to use it.

The upshot is that with certain emerging markets having relatively low digital proficiency, investments in skill development will likely generate far greater returns. Chart 6 shows the untapped potential of skill development in emerging markets. Skill development, in this context, can unlock one of the greatest resources found in emerging markets — the human capital of their constituents.

Skills and digital diffusion

Skill development contributes to emerging markets in two critical ways. It empowers individuals to find jobs and empowers consumers to use digital products - thereby increasing their demand for digital products and services. For these two reasons, developing skill proficiency is akin to **doubling-down** — it not only increases access to a digital workforce, but also boosts adoption and promotes the diffusion of the digital economy.

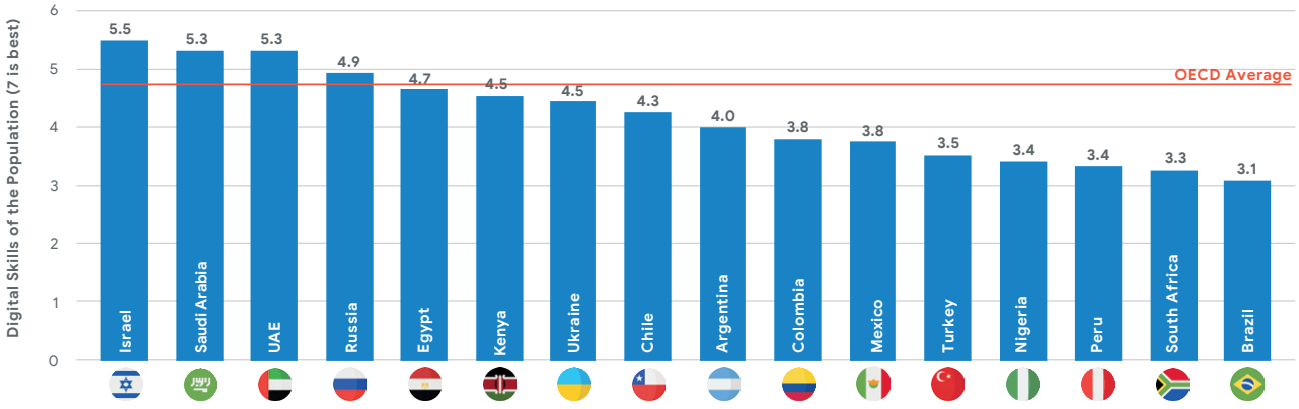
Skills as a continual investment

Digital skill development is not a single-shot proposition. As technology evolves, it inevitably impacts labor markets. And skills that are acquired by individuals that enter the labor market today, are likely to become obsolete at some point tomorrow. Moreover, technology doesn't only impact skills, it also impacts occupations. And as technology and automation replace tasks that used to be conducted by humans, new technologies also create new jobs. This dynamic is particularly important for emerging markets. As new technologies present an opportunity to elevate low-skilled jobs with new jobs that require greater skills and higher autonomy. But to exploit such opportunity, governments must recognize that ongoing investments in digital training both on- and off-the job are required.

IT certification and apprenticeships

The private sector has a key role to play in digital skills development. Google, for instance, has focused on two types of skilling programs in emerging markets: certificate and apprenticeships programs. For instance, Digital Skills Africa, which offers certification programs, is designed to train people for fast-growing jobs in technology and leverage Google's reputation for the benefit of those who do not have such opportunities. To date, we have trained over 5 million people, with 60% reporting a positive impact on jobs, career and business growth. Similarly, our partnership with the Inter-American Development Bank Lab, enabled us to expand our U.S. IT Certificate Program to Latin America. The program is part of a broader effort by IDB to form a 21st century skills coalition, and consists of 22 public and private sector participants, who are introducing a new generation of education and training policies in Latin America. In addition to technical skills, the program also targets socio-emotional skills such as creativity, critical thinking, flexibility and communication - which remain increasingly important in a dynamic digital economy that is continually evolving. On the apprenticeship side, Google supports Laboratoria which not only offers IT bootcamp courses, but also delivers on-the-job training programs at a multitude of employers across Latin America.

Chart 6: Emerging Markets Face Greater Unemployment (pre-COVID, 2019)



Note: The World Bank assigns the digital skills ranking as the extent a country's active population possesses sufficient digital skills such as computer skills, basic coding, and digital reading. The values reflect a range from 1 (not at all) to 7 (a great extent). Source: The World Bank.

Job-matching technologies

In addition to skills training, we also deploy technology solutions to help individuals identify job opportunities and address common barriers in the job search process. Such barriers are not negligible. This is because finding a job is a time consuming, complex, and costly process. Without the right tools, job seekers are often left browsing through unstructured, ambiguous and unclear job descriptions posted by a nearly endless number of employers. Google's Job Search solution aims to address these challenges by aggregating job postings, providing relevant job categories and ultimately identifying relevant positions based on a job seeker's search queries. Job Search is currently available in 120 countries and can be used to identify jobs on the basis of one's skill set, like "customer support jobs" or even filter for remote-work jobs, a criteria that was unavailable prior to Covid-19.

Google is also developing an innovative job search product piloted in the U.S. called Pathways. It identifies potential occupations based on a job seekers' skills sets and connects her to skill development tools required for such occupations. Similarly, Kormo, surveys a job seeker's interests and connects her to occupational training or job postings based on such interests. Kormo was launched in Bangladesh, India and Indonesia, where it is also used to match job seekers to employers in informal labor segments that have less transparent labor market conditions. Kormo and Pathways are innovative examples of how to address labor market frictions by expanding the set of occupations that job seekers would have typically considered by actually analyzing more broadly their interests or skills.

> Developing skill proficiency is akin to doubling-down — it not only increases access, but also boosts adoption of the digital economy.

Singapore's SkillsFuture

Governments can play a role in digital skills development as is demonstrated by Singapore's SkillsFuture program. Singapore's government launched this program to promote online learning, apprenticeships, and other skills acquisition programs. More than 500,000 Singaporeans have enrolled in the program. Following the Covid-19 economic crisis, the Singapore government expanded its partnership with private entities to further develop skilling and apprenticeship programs. Google recently launched SG Ignite with several government agencies in Singapore to offer training in digital marketing and cloud technology as well as an IT apprenticeship program.

Turkey's 1 Million IT Coders Campaign

Turkey's efforts to advance its digital workforce shows another example of a comprehensive program that partners with private firms, provides signals to employers, and addresses information challenges about the evolving labor markets. Their ambitious cross ministry campaign was announced with a target of reaching one million individuals. The plan relies on collaboration with technology firms to deliver IT courses that are relevant and up-to-date. As part of the campaign, Google will be providing several training programs including mobile app development, cloud solutions, python, statistics, data analytics, and AI. In addition, the program also provides direct incentives to employers to hire the program's graduates and provides added transparency on the skills that job seekers acquired through the program.

Technology and public education

We focus on the critical economic role that skill development plays in preparing a nation's workforce for the 21st century. Digital skills nonetheless are not the only form of public education required for such a challenge. For emerging markets to actively participate, compete or even lead the digital economy, several public education initiatives are required. These include Investing in STEM education, developing a national digital curricula and ensuring that public education keeps up with an increasing rate of tech innovation. As the scope of such efforts exceeds digital transformation, we do not cover public education reforms in this report but note the importance of implementing a national public education strategy.

Labor market mobility

As emerging markets increasingly participate in the digital economy, labor market policies that accommodate a rapid pace of innovation will be needed. New technologies create new jobs. And yet as occupations are evolving, emerging markets need to adopt policies that enhance labor market mobility.

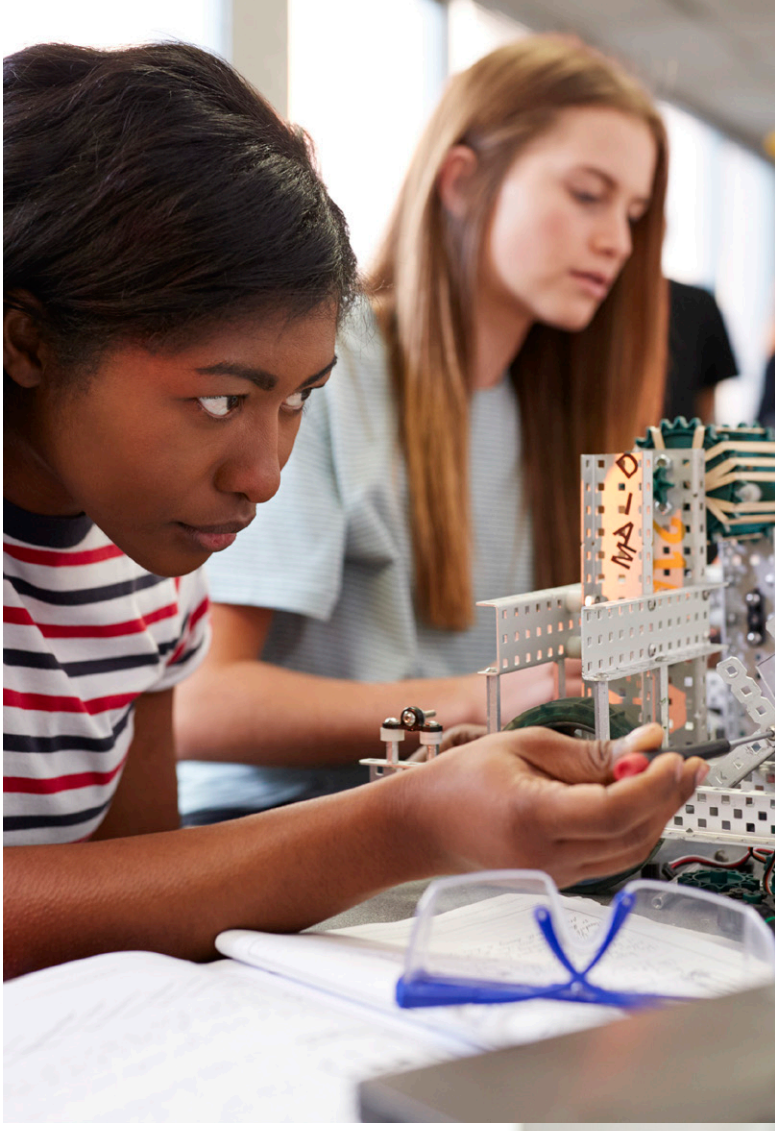
- As more individuals participate in on-demand employment, they face greater business risks and less stable employment benefits. To give such individuals more security in the workplace and promote their willingness to assume risk, labor standards need to **accommodate non traditional employment models**. In particular, labor laws need to make it easier for employees to switch jobs, (both encouraging workforce mobility and making it harder for employers to prevent employees from switching to competitors).
- To better align employee-employer interests in an economy powered by startups and rapid technological innovations, emerging markets may advance **tax rules that facilitate employee stock options and ownership**.

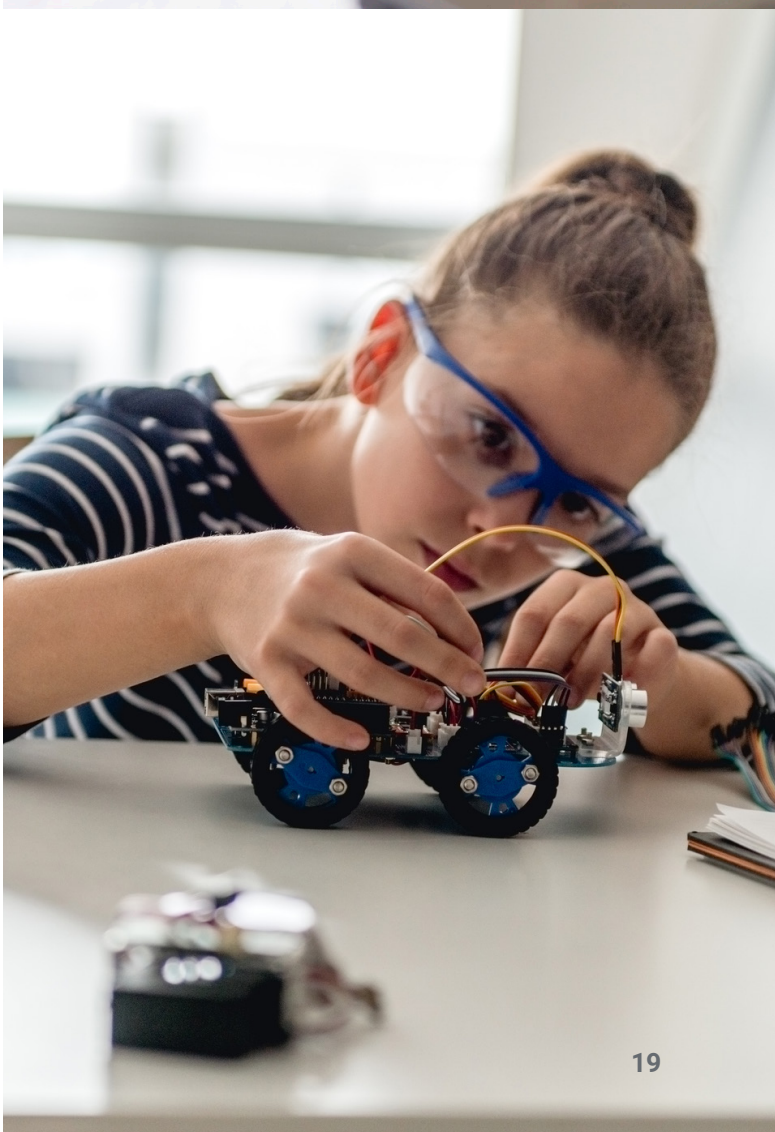
Role of government

To address digital skills development, emerging market governments should consider adopting the following recommendations:

- *Invest in public-private partnerships*, to build **skills-based training programs** that lead to sustained employment in a dynamic marketplace. This would enable government agencies, tech firms and nonprofits to jointly develop high-quality curricula and where appropriate certification for high-growth, high-demand jobs, and deploy it at scale.
- **Encourage work-based learning**, such as apprenticeships and on-the-job training. Which can provide a strong learning environment, ensure the relevance of training, and have better odds of resulting in actual employment. Public-private partnerships can be used to pilot and scale work-based learning programs. They not only address funding constraints of a single entity that is interested in launching such programs, but also can provide a more cohesive national strategy for work-based training.
- **Promote accessibility to digital skill programs** *by helping to ensure that online programs qualify for government funding particularly at times of turbulent labor markets where individuals may find it challenging to invest in vocational education*.
- Partner with the private sector to **collect complete and standardized job market data**, which is necessary for labor markets to work effectively. For instance, job postings should be standardized so that open jobs are more easily discoverable and so that public agencies can obtain a complete measurement of job market conditions that is actually relevant for new occupations as they emerge with the introduction of new technologies.

As detailed in this section, the challenges around preparing workers in emerging markets for post-COVID digital reality will require a comprehensive strategy. And while we focus on skill development, we also note that STEM and public education are critical for reasons that go beyond a digital transformation. As technology races ahead, a failure to invest in education will not only create disparities, but also undermine a market's ability to maintain sustainable growth. For these reasons, governments should develop a **national strategy** to prepare their workforce for the digital economy.





3. Encourage entrepreneurship and startups

Google's own path

Google began as a startup two decades ago, and our startup roots remain a core part of our company culture. As long as there have been Googlers, Google employees around the world have passionately mentored and helped connect startups, rooting for the success of their local startup ecosystem. We have also established Google for Startups campuses and accelerators, in Sao Paulo and Tel Aviv, where technology startup founders and teams get access to mentorship, education, and training from Google and their local startup community. In Africa, we have run 4 accelerator classes impacting 47 startups, 160 founders, $39m+ raised in funding. Below we share some insights and recommendations based on these experiences.

Unique opportunities

Entrepreneurship presents a unique opportunity for emerging markets for two important reasons. First, entrepreneurship is born of resources that are abundant in emerging markets - creativity, imagination, drive and unmet needs. Second, it offers a chance to excel even if one does not have an initial customer base, commercial infrastructure or operations. Startups in the emerging world are **not fundamentally different** from startups in the established world - they both start with not much more than great potential. For this reason, startups that survive, tend to have greater employment and revenue growth than established firms.

Not a level playing field

Startups are not born in equal environments or a level playing field. In fact, obstacles to entrepreneurship vary dramatically from one economy to another. And as Chart 7 indicates, entrepreneurs in emerging markets face greater costs of starting a business relative to counterparts in high income countries. Addressing regulatory burdens and prohibitive costs of doing business is understandably imperative for a healthy startup ecosystem.

Entrepreneurship as an ecosystem

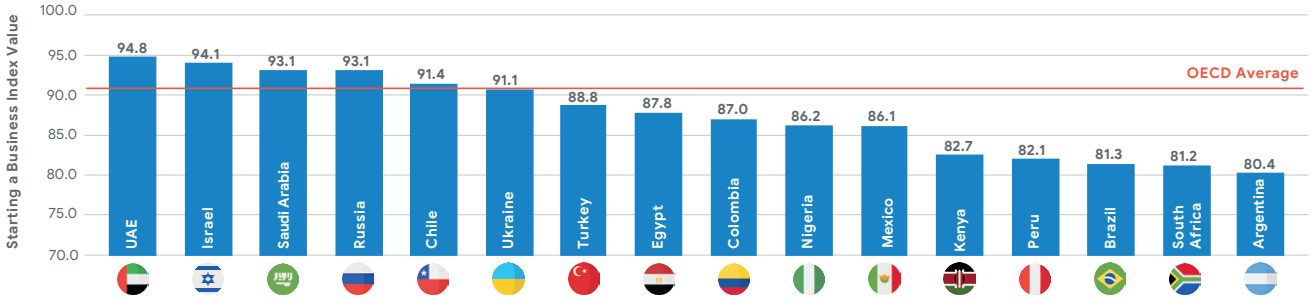
The success of startups does not depend on a single factor — talent, capital, commercial networks, and ICT resources are among the many elements required for healthy startup formation. Markets that have successfully promoted startup formation have done so by taking a **comprehensive**, **multi-factor approach**. Both Chile and Kenya provide examples of such comprehensive strategies to promote entrepreneurship.

> Entrepreneurship is born of resources that are abundant in emerging markets - creativity, imagination, drive and unmet needs.

The Kenyan startup economy

The potential for entrepreneurship is demonstrated by the Kenyan efforts to promote a startup economy. Kenya has undertaken significant structural and economic reforms since it adopted a new constitution in 2010, which resulted in sustained economic growth and positioned Kenya as one of the fastest growing economies in Sub-Saharan Africa. Advancing Kenya's entrepreneurship economy has been a key part of such efforts. Two initiatives have contributed to the advancement of Kenya's startups economy: (a) Tandaa Grants, competition-based seed funding awarded by the Kenyan Ministry of ICT in a wide range of disciplines and (b) establishment of M-lab, a first rate incubator born of partnership between iHub, eMobilis, the World Wide Web Foundation and the University of Nairobi. While these two developments had a decisive role in the success of the Kenyan startup economy, a flexible regulatory environment as well as completion of undersea fiber optic cables have likely contributed to the success of Kenyan startups. So a comprehensive effort that combined investments in grants, and incubators along with infrastructure and a flexible regulatory regime catapulted Kenya to one of the leading startup economies in Africa with 72% of venture backed startups creating jobs.

Chart 7: Emerging Markets Face Greater Unemployment (pre-COVID, 2019)



Note: The World Bank calculates the 'Starting a Business' index value by assigning a value between 0 (difficult) and 100 (easy). The value measures the regulatory ease over time by measuring 41 indicators across economies such as minimum capital, number of procedures, time, and cost. To make the values comparable across economies the World Bank uses a standard business with assumptions such as domestically owned and the number of employees. Source: The World Bank.

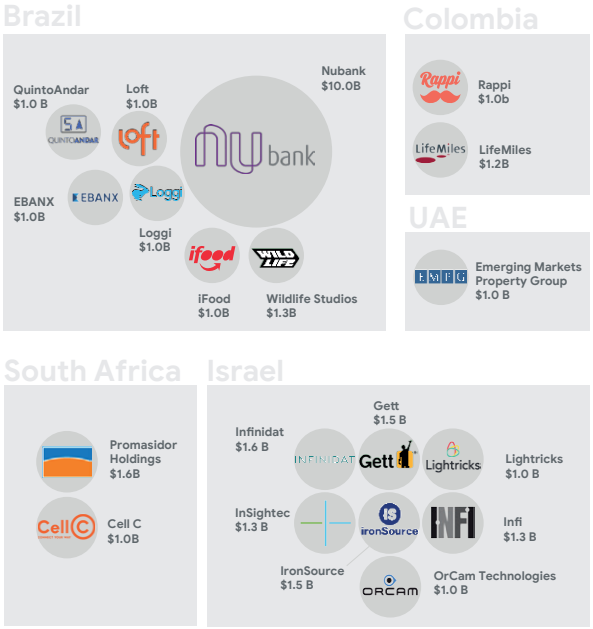
Start-Up Chile

Chile, often considered as one of the leading startup ecosystems in Latin America shows the importance of adopting a comprehensive approach in support of entrepreneurship. Start-Up Chile, which was launched as an initiative of the Chilean Government to change the nation's culture towards entrepreneurship, made considerable progress towards positioning Chile as a Latin American innovation hub. Chile's success may also be linked to the creation of CORFO, a government agency explicitly focused on promoting investment, innovation and entrepreneurship. One effective initiative led by CORFO is to provide technical assistance to Chilean companies in adoption of technology including apps, software and/or other tech solutions. This initiative has contributed to the digitalization of a diverse set of companies.

Emerging Markets Unicorns

Kenya and Chile are not the only breeding grounds for startups. In fact, numerous other startups rose from emerging markets, many reaching a global unicorn level with valuation of over a billion U.S. dollars. As Chart 8 demonstrates there are currently 19 Unicorns that started in a wide range of industries in emerging markets. These include Brazil's Nubank, and Wildlife Studios; Colombia's LifeMiles, Israel's Infidat, ironSource and gett; and South Africa's Promasidor. Moreover, to date startups have started in over 80 metropolitan areas around the globe corroborating the notion that indeed there will be at least one more Silicon Valley somewhere in emerging markets.

Chart 8: Current Unicorns started in emerging markets



Source: CB Insights.

The pandemic's particular impact on startups

As we detail below, governments have an important role to play in actively supporting entrepreneurship. The need for such action is even more critical given Covid-19's adverse impact on global startup funding. The pandemic has had profound effects on startups over 50% of which experienced a significant slowdown in funding and 74% of startups had to lay off employees since the beginning of the crisis. Prior economic crises demonstrate that the most successful startups have been actually founded during economic downturns and governments stand to gain by supporting employment through supporting startups. Kenya's emergence as an effective ecosystem for startups at the height of the global financial crisis of 2010 demonstrates that nations can indeed advance startup growth during both times of meltdown and prosperity.

Role of government

While many actors are involved in the startup ecosystem, government actions are particularly important to startup creation both through rules and regulations as well as through actively supporting business collaborations and creating networks. While we recognize that these may appear to be two distinct roles, as we discussed above, in the cases of Chile and Kenya, startups are born out of successful ecosystems. And to create a successful ecosystem, governments need to take a comprehensive approach that addresses **three central pillars**: funding, human capital, and regulation.

Funding for startups

Governments can take action to ensure that funding sources are accessible through all stages of a startup lifecycle. Turkey's Business Angel Law provides an example of such actions. It explicitly provides a formal **framework for accreditation of angel investors**. The law is designed to increase the seed capital available for tech entrepreneurs by providing legal protections and tax credits. The law also allows investors to deduct investments in private venture companies from personal income taxes for two years. We recognize that providing investors an option for formal relations with tax benefits can be valuable, nonetheless we also note that if such programs create procedural burdens, formal relations may also discourage large scale participation in such programs. Turkey's Angel Law attempts to balance these two realities - facilitating entrepreneurship relations,, while also creating a structure that is not too burdensome or demanding.

STEM and entrepreneurship

To maintain a vibrant startup ecosystem, abundant talent must be made available. And emerging markets can play a role in ensuring that their workforce is ready for digital transformation through skill development. However, to ensure that sufficient talent is available for an effective startup ecosystem, governments may need to take additional steps. While the scope of such efforts are understandably wide, there are a number of programs that can advance both technical and entrepreneurial skills worth considering. Such initiatives recognize that in and of itself STEM may be insufficient to yield the type of talent that is required for entrepreneurship. Such initiatives often include systematic entrepreneurship training at colleges and high schools that include both science and managerial education.

Business Class SMBs education in Russia

The Russian Federal Agency for Tourism works to promote effective entrepreneurship in the tourism industry. The program, Business Class which is being implemented in partnership with the state-owned Sberbank, covers not only relevant digital skills, but also features commercial crisis management and soft entrepreneurship development. After completing the Business Class course, 59% of entrepreneurs have reported that the initiative helped them improve their business performance. Since 2016 more than 20 courses have been offered and over 800 thousand people registered to the program. PWC estimated that by the end of the year 2020, graduates of the program will have created over 58,000 jobs and 14,000 new small and medium size businesses.

Easing the regulatory burden

Based on measures collected by OECD, businesses in most emerging markets incur higher costs of opening a new business. These costs are not just pecuniary as the OECD also tracks regulatory uncertainty, bureaucracy and other non-monetary burdens. Governments in emerging markets with excessive regulatory burdens can facilitate new businesses creation, by cutting such red tape and lowering the costs of conducting business. In particular, re-evaluating regulations that may disadvantage online businesses relative to brick and mortar businesses may be particularly harmful. This is supported by the majority of respondents in a recent OC&C survey who acknowledged that tech startups and their needs are different to those of traditional SMEs. There are ongoing international efforts to shape digital standards and policies. And countries that are searching for ways to ease the regulatory burden of digital business may adopt **local regulations in accordance with international best practices**. For instance, in addition to the cost of starting a business (as detailed in Chart 7 above), UAE's vibrant ecosystem may be also attributed to its ease of conducting international business as the UAE outperforms OECD countries in both of these measures based on World Bank estimates.

Addressing startup insolvency

Startups do not have a perfect success record. In fact, globally only 50% of startups survive past the first five years of operations. Because of the frequent fail-and-repeat pattern of startup investments, a legal framework that enables entrepreneurs to enter into risky endeavours knowing that a failure will not preempt subsequent attempts is imperative. For this reason, emerging markets should **expand bankruptcy protections** to encourage entrepreneurial risk-taking.

> After completing the Business Class course, 59% of entrepreneurs have reported that the initiative helped them improve their business performance

Regulatory sandboxes

In addition to adopting international best practices, governments can improve coordination with startups through **regulatory sandboxes**. These enable the testing of new applications in a secure environment where their potential impact can be measured. They not only foster the development of technologies that may raise public policy concerns, but also promote cooperation between regulators and innovators to advance such goals. Israel, South Africa, and Singapore for example, have successfully launched sandbox initiatives enabling (primarily fintech startups) to test innovative products and improve regulators ability to promote consumer protection and safety. South Africa's program, which received 50 applicants in its very first cycle this year, includes all major financial regulators and licensing authorities required for deployment in South Africa, so that it can provide a comprehensive approval. Similarly, Singapore's program operational since 2016, has helped create various financial innovations such as cryptocurrencies and recently expanded the program to include a fast track Sandbox Express to accelerate approval of low-risk applications.

4. Address the gender gap

Gender inequalities as an economic burden

Inequality is not only a pressing social issue, but also inevitably an economic burden. If women, who account for half of the world's population, are systematically excluded from economic opportunities, emerging markets will be unable to reach their economic objectives. It is inconceivable that economic growth can be sustained at the same time that it leaves behind half of the population. And yet, in the Middle East, North Africa, and South Asia, less than 30% of women participate in the labor force. While we focus on gender inequality, we note the obvious, which is that any form of discrimination, whether based on gender, race or any other dimension, generates an economic burden that may prevent individuals from contributing and markets from achieving sustainable economic growth.

The economics of discrimination

Discriminatory labor market outcomes are not circumstantial. Rather, they are the result of inequality in access to finance, education and workplace promotion opportunities. And in order to avoid discriminatory outcomes and obtain pay equality all three aspects have to be addressed.

> Inequality is not only a pressing social issue, but also inevitably an economic burden.

Measurement of digital equity

It is indisputable that digital transformation has the ability to democratize. It offers wide access to information, finance, and education. And yet, deployment of technology is not above the fray: it too can be implemented in a discriminatory manner that reflects underlying inequalities. And for this reason, it is imperative that emerging markets commit to conducting continual research and engage in the many ways through which discrimination may take shape in the digital space. This is precisely why, in the hopes of encouraging a broader conversation around the pay gap — we conduct our own rigorous, annual analyses and shared its top-levels results publicly — so that our pay practices remain aligned with our commitment to equal pay practices. Governments in emerging markets should promote and, where appropriate, require that technology firms regularly measure inequality to ensure that deployment of digital products does not reinstate existing discriminatory policies.

Financial inclusion policies

Nearly a billion women do not have a bank account. In countries where women are unable to open a bank account, their ability to open a business, take a loan or achieve independence is limited. Digital finance can be used to address many of the barriers that prevent women from obtaining access to bank accounts and financial products. And we cover the ways in which governments can promote digital finance in the digital payment section below.

Digital proficiency for women

In addition to financial inclusion, equal access to digital skills must be ensured if women are to have meaningful access to the digital workforce. Equity in skilling should not be limited to initial programs that provide an entry-level opportunities. Rather, it should include managerial and soft skills that any woman, or man, need in order to advance and develop a career in technology. Google has invested in several such upskilling programs including Women Will and Woman Teachers. Another Google initiative named IamRemarkable, empowers women and underrepresented groups to celebrate their achievements in the workplace. It advances career development by offering workshops that focus on self-promotion and highlight its importance as workplace skill. So far 120K people were trained globally.

5. Promote the adoption of Artificial Intelligence

Increasing use of AI

Artificial Intelligence relates to the ability of machines to acquire and apply knowledge by performing a broad variety of cognitive tasks such as sensing, processing language, pattern recognition, learning, and making decisions and predictions. Advances in AI are no longer confined to labs. Today, AI technologies are being applied across a wide range of industries to develop machines and software that are increasingly autonomous and continuously learning.

AI in emerging markets

While we may not yet grasp the full promise of AI, it is not unimaginable that in the near future AI-powered machines might regularly care for the elderly, analyze medical images to develop treatments, or discover game changing new pharmaceutical drugs. AI nonetheless is not confined to advanced economies alone. In fact, emerging markets are already using AI to solve development challenges such as assessing credit rating or improving farming precision. The implementation of AI solutions to credit scoring and targeted advertising, for instance, has enabled platforms such as M-shwari in East Africa to expand traditional banking services to previously underserved households.

Similarly Google's TensorFlow, a leading open source machine learning platform, enables innovators from any corner of the world to access, share and develop artificial intelligence tools. It has several features that make Tensorflow particularly effective in emerging markets including optimization for mobile devices, light computing power requirements, and a large global community. Accordingly, numerous machine learning innovations based on Tensorflow have emerged from emerging countries. These include Tambua Health, a Kenya-based organization that is using TensorFlow to determine the likelihood of respiratory diseases in patients. And Rainforest Connection is using TensorFlow to detect and prevent illegal deforestation across Africa, Brazil, and Southeast Asia. Over the next five years, Rainforest Connection aims to contribute to the reduction of global warming by protecting and monitoring over 100,00 square miles of rainforest. Similarly PlantMD, an app developed by two high school students using TensorFlow, enables farmers around the world to detect diseases in plants using a mobile phone.

UAE and Saudi Arabia AI Strategies

UAE and Saudi Arabia exemplify the type of efforts that emerging markets, at an early stage of AI investments, can undertake. Both countries have high-level political backing for AI development. Both are gaining head wind by proactively investing in policies and national strategies that promote the development of AI. The UAE has crafted a national AI strategy, created the UAE AI Council, and appointed the world's first **Minister of State for Artificial Intelligence**. The UAE's national AI strategy builds on a fact-based inquiry that identified nine industries with the greatest AI development potential. Saudi Arabia has announced ambitious plans for an **AI-powered city in the desert**. Its Public Investment Fund is a lead investor in Softbank's Vision Fund, a US$100bn venture capital fund with a strong AI focus. And, Saudi Aramco, the national oil and natural gas giant, is using AI to optimize well placement, and determine risk factors associated with each well—ultimately utilizing AI to optimize discovery and minimizing costs. A recent report, estimated that by 2030, AI alone may add up to $122bn to the UAE economy and $200bn to the Saudi Arabian economy alone.

The potential role of government

Governments in emerging markets should consider a variety of approaches to encourage the responsible development and use of AI. Although these are not unique to emerging markets, and in fact have been successfully implemented in established markets, they can advance the use of AI in emerging markets, which will in turn contribute to its development. These include the following:

- Governments may **encourage the funding of AI research** in both the private and public domains. Such initiatives may include subsidies to support the infrastructure underpinning AI, including critical cloud infrastructure. It may also support in-country AI startups by developing government-backed funding mechanisms.
- Governments should **encourage responsible data sharing** and lead by example, including by sharing robust, quality publicly funded research and datasets, particularly in priority subject areas for innovation. It is also important to ensure that these datasets are machine-readable and "clean" (accurate and well labeled); ideally datasets are also accompanied by a Data Card, which describes the composition, method of collection, and annotation of the dataset . Others in the private sector can then use these datasets to develop valuable services. Governments and businesses can also look to open datasets (e.g.,on Google Cloud, Dataset Search) to promote AI innovation and development.
- Governments should **promote a constructive governance framework** to manage risk and promote the development of AI. Designing such a framework may not only provide much needed transparency, but also promote reliable AI applications. The framework may provide general guidance on good AI processes; focus on applications rather than basic research; and reference international industry standards. Google has committed to AI Principles to promote innovation and address the potential challenges that AI deployment may raise. Such principles can be used as a basis for collaboration with emerging markets on balanced regulatory approaches.
- Governments should **prioritize opportunities to utilize AI**. Opportunities can include pilot programs to accelerate the use of AI that provide beneficial services to citizens. Governments should also look for opportunities to boost internal AI expertise, including through partnerships with experts from industry, academia, and international organizations. The "fAIr LAC," an initiative by the Inter-American Development Bank to foster the use of AI in Latin America provides an example of such government collaboration with experts. The collaboration, which includes entities from the private sector, civil society and academics, has provided an important forum for public debate about the ethical implications of AI in Latin America and a platform for future regulatory principles.

6. Promote innovative uses of data

The emergence of data

We noted earlier that within a single decade nearly a third of humanity has gained high speed internet access. As remarkable as the growth in connectivity has been, it is actually overshadowed by the emergence of big data and the rate at which data has grown through digital technologies. In fact, as humanity shifts more activity online, the data that is currently collected in a single day exceeds the data that has been collected since the dawn of civilization through the end of the 20th century. And today it is estimated that we have 44 zettabytes of data (the number 44 followed by 21 zeros).

Data as a resource

While data is not a natural resource and although in and of itself it may not provide intrinsic value, the process of collecting information, placing it into relevant structure, interpreting it to form knowledge and conducting analytics certainly creates value. And data-driven innovations unlock uses that were never available before such as improving health care outcomes, educational achievements, and the allocation of public resources to name just a few. Moreover, as internet use is increasingly taking place in developing countries, the prevalence of such data and the potential for data-driven innovations is also shifting to developing and emerging markets.

Importance of data policy and privacy safeguards

The benefits of data and the need for strong privacy safeguards are not mutually exclusive. Robust privacy safeguards and user controls can protect users while at the same time enabling the use of data to develop new products and services. As more consumers move online, privacy safeguards and interoperable data standards are increasingly necessary to ensure that emerging markets can strike such balance between user needs and growth. The two objectives do not conflict, since user trust and consumer loyalty are fundamental for continual use of digital technologies, privacy safeguards are also essential for maintaining continual consumer confidence and digital growth.

To promote greater reliance of digital data, governments should:

- Adopt privacy and data security standards that **promote interoperability**. Currently, many information systems in emerging markets lack the common standards that allow for even basic interoperability. For instance, the lack of common standards in many emerging markets limit the ability to access geospatial data; thereby limiting the use of global shipping or precision farming developed outside such markets .
- Governments in emerging markets should encourage businesses, public sector, and non-profit organizations to enter into **data sharing initiatives**, when such initiatives reduce data fragmentation and promote data comprehensiveness. For example, major pharmaceutical companies have begun sharing historical clinical trial data to accelerate drug development. Such initiatives should be permitted only if they do not undermine competition between participants or lead to infringement of proprietary data. One legal construction that may be particularly useful is a data trust, which has been recently used by private-public partnerships in the U.K. government as an effective data sharing mechanism.
- As we further detail in the e-government section below, adoption of an **open-by-default** approach to public data sets can play a meaningful role in promoting the use of data and deployment of data-driven innovations.

Data is a natural resource in driving economic growth in the twenty-first century. As digital technology enables the measurement of human behavior in unprecedented ways, it is imperative that emerging markets adopt policies that safeguard privacy and ensure sufficient data protections. At the same time such policies should not prohibit the deployment of AI and other data-driven technologies. Common international standards that promote Interoperability, open-data and data sharing initiatives have been proven to accomplish such balance.

7. Encourage movement to the cloud

Access to computing infrastructure

Until recently, the most cutting-edge computing technologies were only available to large sophisticated enterprises, concentrated in established economies. Cloud computing has radically expanded access to computing infrastructure by enabling enterprises large and small in both emerging and incumbent economies to utilize the very same applications and services. As such, cloud computing can be a game-changer for emerging markets.

> As internet use is increasingly taking place in developing countries, the prevalence of such data and the potential for data-driven innovations is also shifting to developing and emerging markets.

Computing as a service

Cloud computing is a service model that provides companies with on-demand access to a range of online computing resources including software applications, storage capacity, networking and computing power. Users of cloud computing do not have to make upfront, capital-intensive investments in information technology infrastructure but, rather, can pay for computing resources in a pay-as-you go model. This allows companies to **rent the infrastructure** thereby increasing the affordability, availability, capacity, and ubiquity of computing resources. Such resources often make it possible for companies to drive higher productivity within their organizations and identify new areas of value.

Cloud as a competitive advantage

By enabling companies to rent on demand IT infrastructure, cloud computing also lowers entry barriers for new businesses. And by so doing, it encourages innovation and supports the development of new products and services. Because it lowers such barriers, cloud computing can also facilitate online collaboration with foreign entities. And It is particularly transformational for SMBs, by enabling them to utilize IT resources that they could not previously afford because of upfront capital investments. Given its broad ability to elevate such a diverse range of businesses, cloud computing infrastructure can provide a competitive edge for emerging markets that are trying to keep-up, participate and lead the global digital economy.

> In the area of privacy, robust protections are needed for cloud computing to be widely used.

Deployment challenges

Cloud computing, however, faces wide adoption challenges in emerging markets. In the area of privacy, robust protections are needed for cloud computing to be widely used. And cybersecurity and risk management needs to be provided at a national level, particularly for SMBs who may not be able to independently manage such risks. Furthermore, as the effectiveness of cloud computing requires always-on, everywhere-available high-speed connectivity, emerging markets' governments would need to address access challenges as we detailed in the section above.

Governments leading the use of cloud computing

Governments typically rank amongst the largest users of IT infrastructure and as cloud computing has the potential to significantly reduce costs, many government agencies have launched public cloud computing initiatives. One successful approach to cloud adoption pursued by several governments has been a "**Cloud First**" policy, which mandates government agencies to evaluate cloud computing service options prior to making any new large investment in IT. The policy specifically holds that public cloud services take precedence over solely on-premise and private cloud solutions - provided that the necessary security requirements and international standards are met by the Cloud Service Provider (CSP).

Saudi Arabia's Cloud First

Saudi Arabia provides an example of efforts to prioritize cloud services in government procurement. The Kinitially advanced such efforts as part of Vision 2030 — a broader initiative aimed at reducing the Kingdom's dependence on oil and diversifying the Saudi economy. The vision included programs, such as Cloud First aimed at digitizing the public sector in Saudi Arabia and enhancing the performance of government agencies. The program reflects an effort to prioritize cloud services in government operations while at the same time ensuring that privacy and security concerns are met through requiring CSPs to comply with international standards.

Singapore's Cloud First

In addition to Saudi Arabia, Singapore has adopted a similar Cloud First program in an effort to leverage the potential of the public cloud and to digitize government processes and services. Singapore is deploying a commercial cloud program that permits government agencies to individually select public cloud services, and provide pre-approved procurement and security assurance. Since 2018, when the government of Singapore announced a five-year plan to migrate most of its information technology systems from on-premise to the cloud, it has moved more than 150 systems to the commercial cloud. And in 2020 alone over $870 million of contracts have been earmarked to double the number of systems already on the commercial cloud. Similarly, the Philippines is building on cloud-based productivity services such as Google Workspace as part of its GovMail program to allow employees to work remotely, securely, and collaboratively.

Permit the Free Flow of Data

The security and data protection capabilities of cloud services providers are typically more robust than their on-premises counterparts, mainly, because of the reliance on globally distributed infrastructure. Typically, data no longer resides on a single hard drive or server rack, or even in a single data center. Instead, it is shared, encrypted and distributed throughout the network and made available in a way that allows it to be accessed easily by users at different locations. Modern internet networks increasingly transmit and store data, often moving it seamlessly between data centers and across borders in order to ensure security, promote data integrity, and improve efficiency. This technological reality underscores why it is important that legislative solutions should **not require data localization** as a restriction to cloud adoption.

The Philippines' Cloud First policy, explicitly addresses free flow of data by distinguishing between classified data for which residency or other controls may be required, and all other data exempt from such requirements. As an alternative to data localization, data sovereignty concerns can be addressed by technology. For instance, Google's data sovereignty capabilities — which feature encryption keys held by the customer — provide sovereignty and control over data access no matter where the data is stored.

> A national cloud strategy, in collaboration with the private sector, can provide a cost effective, resilient cloud infrastructure.

Promote international standards

To ensure that public sector agencies maximize privacy and security protections, a cloud policy might also define **principles to guide their CSP selection process**. One way to do this would be through setting a minimum set of internationally recognized standards the CSPs need to be certified against, as well as applicable voluntary industry codes of conduct. This approach could help guard against over-certifying and discourage agencies from requiring additional national/regional certifications. If new national and regional certifications were to be developed, they would need to be aligned with the existing international norms. A framework for a risk assessment that a public organization would follow as part of their public procurement process may need to be defined.

Promote environmental sustainability

Environmental sustainability should be **a criteria in selecting cloud service providers**. One way to do it would be to require that the CSPs applying for public sector contracts demonstrate a commitment to environmental sustainability. And emerging market government agencies could be required to publish reports on energy consumption of their own data centers and as part of their cloud outsourcing process.

A national cloud strategy

A **national cloud strategy**, in collaboration with the private sector, enables government and business to work together to increase competitiveness and collaboratively innovate more quickly. This also enables the public and private sector to work together to provide cost effective, efficient, scalable and resilient cloud resources that benefit their citizens.

The Colombian cloud strategy

The Colombian National Development Plan 2018-2022 shows how a national policy aimed at advancing digital transformation through prioritizing cloud computing. Leading from the top government ranks, the plan was launched with a clear statement to incorporate digital technologies as a key component in each government agency's plan. The initial statement was followed by a more detailed regulation designed to facilitate the adoption of cloud computing in government agencies, which creates the right incentives to ensure the national policy can be implemented.

8. Enable an inclusive digital payments ecosystem

Financial inclusion

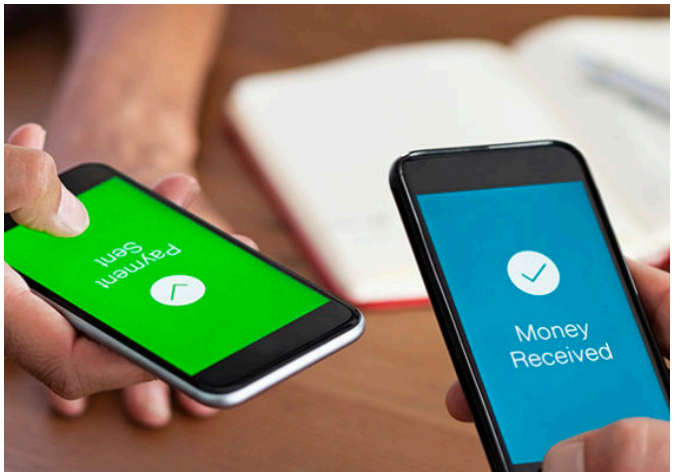
Financial services are needed for economic development. They help people escape poverty, manage financial emergencies and plan for their retirement and education. And yet today, two billion individuals and 200 million businesses in emerging economies lack access to savings and credit. Moreover, many that do have access, can only use a limited range of products at relatively high intermediary costs.

Inclusion through digital finance

Digital finance offers a transformational solution for financial inclusion. It delivers financial services over digital infrastructure—including mobile and internet—with little use of cash or traditional brick and mortar branches. By doing so, digital finance can be deployed rapidly and without the need for costly investments in retail locations or infrastructure. Banks, telecoms and other providers are increasingly deploying ICT technologies and leveraging existing mobile networks to offer widespread financial services in emerging markets. Using digital channels, rather than brick-and-mortar branches is particularly effective in rural areas or low-income segments where there is little competition between retail banks. Such solutions offer not only new levels of convenience, but also efficiencies, security and transparency in ways that may be unattainable through traditional payment systems.

Deployment challenges

While digital financial services can help address financial exclusion, there are two key barriers to their deployment. First, there is a lack of **interoperability** between services and providers, which keeps customers in silos and puts a limit on the system's transaction volume. Second, there are the costs of developing **proprietary networks**, which often means that either providers end up passing through costs by charging consumers high transaction fees, or not building any networks at all.



Diverse payment systems and interoperability

Due to the inherent complexities in financial systems and the diversity of potential technologies, there is no one-size-fits-all model for digital finance. Rather, there are multiple models of digital payment solutions, from card networks in the developed world to closed loop stored value wallets and Real-Time Payments (RTP) systems. And as business diversity can benefit consumers by offering more choices, governments should prioritize models that both provide comprehensive coverage and enable competition. As we note below, RTP systems often accomplish both of these goals.

RTP systems

Real Time Payment systems, where both the transmission of a payment message and the availability of final funds occur in real time, are the foundations for modern payment infrastructures, offering near-instant transactions with a minimum friction for all parties. They fundamentally change how payments are made and how they can become embedded in the new digital economy. They provide a foundation on which groups can build new services that evolve and improve payments for consumers, merchants, financial institutions, and governments. Indeed, as of 2020, more than 50 countries (including most Emerging Markets) have rolled out RTP systems.

Mojaloop

One interesting initiative is Mojaloop - an open source software that enables countries to set up real-time national payment systems. Mojaloop, named after the Swahili word for "one," is designed to loop financial services providers and customers together in one inclusive system. Mojaloop, where Google is an inaugural sponsor, addresses both the barriers typically faced by payment systems. It can power an interoperable platform that saves providers from having to build their own and bridges their services with all other services in the market, including mobile money wallets, bank accounts, and merchant accounts. Because Mojaloop is open source, anyone in financial services is invited to explore and use the code. In particular, it enables central banks, market infrastructures, payment processors, and fintech firms to accelerate the creation and deployment of interoperable payment platforms that can scale. Moreover, Mojaloop provides a great example of how open-source RTP can in fact promote innovative new financial products by tech platforms, which would otherwise not have been able to compete in such space.

> Kenya's M-Pesa provides an example of how leveraging mobile deployment can lead to innovative platforms.

Mobile fintech platforms

As millions of individuals gain access to mobile devices, many countries are **leveraging mobile deployment** to develop innovative finance platforms. For these newly banked consumers and merchants, no physical cards are needed — just a mobile device. In fact, the growth of mobile devices now means systems in many emerging economies are poised to leapfrog digital payment platforms used in the USA and Europe. Kenya's M-Pesa provides an example of such potential. Launched in 2007 by Vodafone and Safaricom, the largest mobile network operator in Kenya. M-Pesa quickly expanded to Tanzania, Mozambique, Ghana, Egypt, and South Africa. Powered by high penetration of mobile devices in Sub-Saharan Africa, M-Pesa and other payment platforms achieved remarkable scale - resulting in nearly half of global mobile users and the vast majority of global transaction value.

India's RTP

India is a prime example of such an opportunity. Since launching its ambitious plan to use digital payments to transform its banking system, the country's RTP system is now one of the world's leading models. The decision to include third parties in the development of the model was key to this growth and has helped spur innovation and adoption on a massive scale. Google, for instance has worked with the top 4 Indian banks, along with the Indian National Payments Council and the Reserve Bank of India to build Google Pay, an instant payments product on top of the real-time UPI system. Since the launch of Google Pay in 2017, India's monthly UPI transactions have experienced remarkable growth. And the number of transactions that rely on mobile UPI today passed the number of credit card transactions in India within just a couple years.

To address barriers to implementation of digital payments, emerging market governments should consider adopting the following recommendations:

- Governments must rework regulations, define technical standards and protocols, invest in technology, and align financial institutions with the needs of merchants — in particular small businesses — to **deliver a regulatory ecosystem that facilitates RTP** adoption.
- In order to leverage mobile networks to launch payment platforms, building an **open layer on top of any RTP system** to allow for third parties to initiate payments is also recommended. By "open", we mean that they should encourage all qualified participants to join, both by removing regulatory hurdles and easing the technical effort needed to join the system.

9. Adopt balanced competition policies

A framework to advance competition

Competition policy has a very specific role - to protect the competitive process and prevent the exclusion of rivals. As such, competition policy should be designed to advance competition, not competitors. As competitors frequently either benefit or lose from enforcement actions, they often have self-serving interests to pursue the scrutiny of rivals. Administration of competition law should not set the protection of rivals as an objective because actions that are intended to protect rivals, as opposed to competition, may actually harm consumers.

> Competition policy should be designed to advance competition, not competitors.

The objectives of competition policy

Competition policy gives enforcers with extensive authority to intervene in the market, block transactions, and even break up companies. That authority should be exercised only when warranted: when firms exclude competitors or pursue conduct that is anticompetitive. Policies that are designed to improve competition or reshuffle markets without being explicitly tied to any conduct are often destined to fail, as they do not address the underlying cause that may have prevented competition. Similarly, other policy goals, such as privacy and intellectual property protection, are not necessarily linked to conduct that harms competition and hence best addressed by other regulations.

Risk of over-regulation

New entrants and smaller players often cannot afford (or are technically unable) to comply with costly regulations. For that reason, heavy regulation can entrench incumbents. For digital economies to grow and foster robust competition, regulatory barriers should be low. Experts identified America's pro-innovation legal and regulatory regime as one of the key pillars for Silicon Valley's meteoric rise.

Participative antitrust

For emerging markets to participate in the digital economy, a balance of promoting competitive markets and preventing anticompetitive conduct needs to be upheld. A legal framework in line with the participative antitrust concept coined by Nobel-winning economist Jean Tirole, may be an effective approach to achieve such balance. It calls for competition agencies to rely on evidence-based feedback from market participants and administer antitrust by clarifying standards rather than "setting rules in stone."

Evidence-based enforcement

Government agencies and courts should decide on cases based on objective and evidence-based economic analysis, for instance whether there is reliable evidence to corroborate what competition would hypothetically look like at the absence of a certain conduct. They should not resort to speculative judgments about a company's size or the appropriateness of given conduct. This certainty, objectivity, and predictability, together with clear procedural rights, will give companies the comfort and clarity they need to invest and innovate without fear of being unfairly sanctioned.

10. Enable the platform economy

The platform economy

Digital technology has also given rise to what is frequently coined as the "platform economy," in which intermediaries, or "platforms," connect between multiple groups of users, publishers, retailers or other actors that share information online. What is unique about such platforms is that they rely on technology to deliver benefits, not only by attracting a large volume of users, but also through advanced matching technologies. Digital platforms are not limited to established economies. In fact, a vibrant platform economy has emerged in emerging markets as well often generating platforms that are more specific to local preferences and needs. These platforms include MercadoLibre, OLX and Rappi and Gett.

> With the right regulatory frameworks in place, internet platforms can be used to foster productivity, advance new innovations, and promote entrepreneurship.

Platform-specific regulatory framework

And as new platforms in multitude of segments keep appearing, from social and special interest networks to transportation and on-demand jobs, the potential for such platforms is far from exploited.

With the right regulatory frameworks in place, internet platforms can be used to foster productivity, advance new innovations, and promote entrepreneurship. For instance, during the Covid emergency, the positive contribution of Internet platforms became even more obvious. As such platforms not only provided a medium for social networking, but also facilitated remote work, connected people with critical health developments, and enables job seekers to obtain access to relevant job postings, skill training and benefits.

Intermediary safe harbors

The evolution of internet platforms advanced an important debate about how to balance the need to prevent illegal content with the wish to promote free expression, diversity and innovation. In many cases, countries have implemented intermediary 'safe harbor' laws. These appropriately distinguish between the platforms and the author or publisher of the content. Platforms are simply an intermediary on which users can share content; those who create illegal content are liable for it. This means that platforms are not at risk for the activities of their users and they are empowered to moderate such activities. On YouTube, this allows us to remove content that violates our policies.

> The evolution of internet platforms advanced an important debate about how to balance the need to prevent illegal content with the wish to promote free expression, diversity and innovation.

Youtube

On YouTube, an average of 500 hours of content are uploaded each minute. Our Community Guidelines draw a line between what content is acceptable to upload or not; a combination of machine learning, human review, and user flags help us to identify the content that violates our policies, which we then promptly remove. For example, in the second quarter of 2020 alone, we removed over 11.4M videos for violating our policies, plus another 1.9M channels and 2.1B comments.

These types of safe harbor frameworks, which encourage platform economies while incentivizing responsible behavior, have had distinct economic benefits. For instance, eliminating such frameworks may cost the U.S. up to 4 million jobs and reduce GDP by nearly half a trillion dollars over a decade based on recent estimates. Emerging market governments should put these frameworks in place so that they can provide the necessary clarity and flexibility for businesses. And for Internet platforms to act on illegal content, without undue risks to fundamental rights. Safe harbor frameworks will help avoid the creation or continuation of frictions that inhibit the free flow of information and commerce online that have proven so beneficial for societies and economies the world over, and which will likely deliver much more in the future if harnessed properly.

11. Adopt tax policies for a digital economy

Need for a balanced and consensus-based approach

Corporate income taxes are an important that companies contribute to the communities where they do business. A tax system not only needs to fund public services, but it also needs to promote economic activity. For emerging markets to take advantage of the economic opportunities digital tools and services can provide, a thoughtful tax policy is a vital part of the digital policy equation.

For over a century, the international community has relied on rules to tax foreign firms in a coordinated way. While the tax system needs to evolve to fit the ongoing digitalization of the global economy, we hope that governments can reach consensus around a new framework for fair taxation, giving companies clear rules that promote economic coordination. These reforms to corporate income taxation, when combined with sensible indirect tax regimes, can allow governments and companies to forge a new and lasting global tax system.

The benefits of multilateral agreements

Some countries are circumventing the multilateral process around corporate income taxation by pushing unilateral digital tax measures that target foreign companies. These unilateral tax proposals undermine the tax and legal benefits that underpin the legitimacy of the international tax system. Under such unilateral measures, governments are in effect laying claim to income currently due in another country, in violation of the network of tax treaties that facilitate cross-border economic activity. These types of unconventional tax policies, such as digital services taxes or equalization levies, **operate as trade barriers that undermine** the tax system, trigger tit-for-tat tax approaches and increase trade tensions. Such dynamics are adverse for consumers, companies and taxing jurisdictions.

Consumption taxes

Emerging countries should update their consumption tax regimes to ensure that cross-border e-commerce transactions are properly taxed. Consumption tax regimes should be based on best practices endorsed by the OECD and implemented by many countries that are both members and non-members of the OECD. Value added taxes (VAT) or goods and services taxes (GST) should apply to cross-border and domestic business-to-consumer transactions regardless of where the seller is located. A recent OECD study indicates that developing countries that adopt indirect taxes such as VAT experience 40 to 50 percent less tax revenue volatility than countries that do not.

Egypt's indirect tax initiative

Egypt's efforts to reform indirect taxation in close collaboration with the OECD provides an example of efforts to address cross border e-commerce. The Egyptian government is seeking to replace a complex and inefficient legacy of different stamp duties and exemptions, with an electronically administered VAT system, which will apply a uniform VAT rate of 14% across the board. A bill, pending parliamentary approval, by the Ministry of Finance to amend the existing tax code, includes the application of VAT to digital services. A recently issued directive clarifies how VAT is to be applied to digital advertising - differentiating between "intermediary" goods and services used as inputs to produce ads (subject to VAT) and fully finished outputs - i.e. ads broadcasted directly to consumers (exempt from VAT).

> These types of unconventional tax policies, such as digital services taxes or equalization levies, can operate as trade barriers that undermine the tax system, trigger tit-for-tat tax approaches and increase trade tensions.

12. Commit to open digital trade

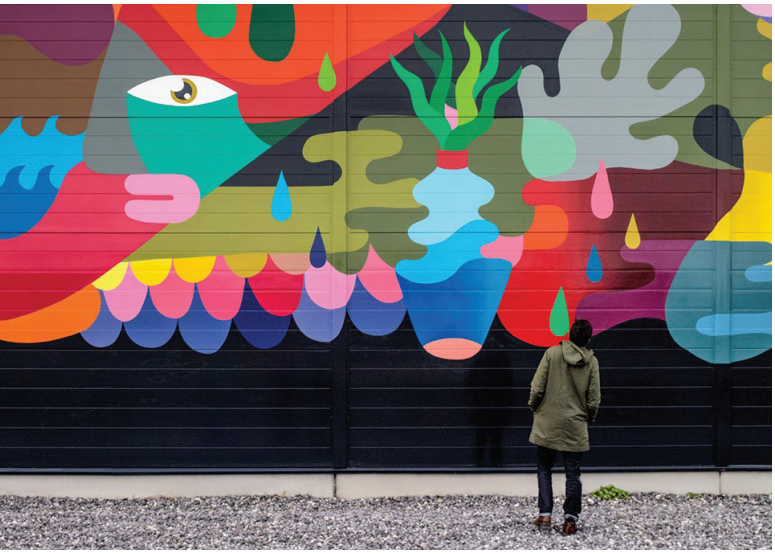
Accessing foreign markets through digital trade

Only two decades ago, international trade was accessible only by multinational firms with offices around the world, upfront capital, and global supply and distribution chains. Today, digital trade has lowered entry costs, offering emerging markets an opportunity to advance. Emerging markets, and small businesses in those economies, can utilize digital tools to participate in global trade and access new markets without needing to make investments in physical supply chains, ships, ports, and other traditional trade infrastructure. Digital goods and services can make their way from rural areas in one country into urban centers in another at real time speed. SMBs, sometimes referred to as "Micro-multinationals" can use the Internet to tap into global communications and computational infrastructure, and scale up quickly to a global operations base.

Role of domestic trade laws

Domestic laws and regulation of the digital economy play a crucial role in harnessing the potential of digital trade. Rules that facilitate trading across borders are core criteria for a countries' ease of doing business ranking as well as foreign direct investment. Unlike the resource-heavy trade in goods, digital trade can be enabled through relatively few but cross-cutting rules that enable companies to take advantage of global data flows and a global export economy.

> Digital goods and services can make their way from rural areas in one country into urban centers in another at real time speed



Role of regional trade agreements

Regional trade agreements like AfCFTA, the Pacific Alliance, and Mercosur can be powerful vehicles to set standards for regional economic growth. AfCFTA could become a market of 1.7 billion consumers by 2030 with a combined GDP of up to $3.4 trillion. Digital trade can play a key role in boosting regional trade and economic growth, and these and other trade agreements in the emerging world should put enablement of digital trade front and center.

In mid-2020, the governments of Chile, New Zealand and Singapore signed the Digital Economy Partnership Agreement (DEPA). As small, outward-facing and trade-dependent countries, DEPA offers them the opportunity to harness the benefits of digital trade by agreeing to key digital standards that have been central to the growth of the modern economy. DEPA empowers businesses and consumers to take advantage of the numerous opportunities presented by the digitalization of trade.

Similarly, Mexico played a key role in establishing next-generation digital standards and innovation-oriented copyright measures in the US-Mexico-Canada Agreement (USMCA). Other emerging markets in Latin America have been at the forefront of ongoing digital trade negotiations. Chile, together with New Zealand and South Korea, reached the first fully digital free trade agreement. There is much that other countries considering regional trade agreements can learn and borrow from USMCA, DEPA, WTO e-commerce negotiations, and other forward-leaning digital agreements.

Digital-first trade agreements

A collective effort to **drive digital-first trade agreements** can help emerging markets shape and take advantage of digital standards around the world. Economies at different stages of development and digitalization can use these agreements to boost exports while securing high standards of consumer protection, security and market access. Incorporating into trade agreements the recommendations from other chapters of this paper could be a highly effective means of addressing a wide range of development policies. Digital trade standards can be structured along the following lines:

- Cross-border data flows, privacy, and modern use of data such as text- and data mining, open data & standards, and e-payments;
- Open digital markets through up-to-date liability protections, balanced intellectual property rules, and sufficient flexibility to support the growth of AI and emerging technologies;
- A growth-oriented agenda on eliminating tariffs on electronic transmissions, strict non-discrimination of digital businesses through competition or tax policies, and rules to facilitate digital exports.

13. Advance a digital government

E-government as a strategic choice

A digital government is more than a government website. In fact, digitalization of government services can have significant economic spillovers for two key reasons: it can improve **provisions of public services** and enhance the **transparency of government actions**. Estonia provides an example of how governments can improve provisions of public services through digital platforms - as 99% of all public services in Estonia are available online 24/7. In fact, marriages, divorces and real-estate transactions are the only services that require Estonians to get out of the comfort and safety of their homes. While delivery of online services improves convenience, the true economic potential of digital governments stems from the vast amount of information that government agencies generate — ranging from detailed traffic volumes and public healthcare outcomes to government budgets and regulatory enforcement actions. Sharing such information can not only empower constituents, but also make governments more accountable.

Digital government and crisis management

As the Covid-19 pandemic has made clear, governments play a critical role in managing both health and economic crises. Given the social distancing measures implemented around the world, many government agencies were racing not only to manage a severe crisis, but do so remotely, often delivering services through digital means for the very first time. This created a challenge of multiple dimensions. And as governments around the world were scrambling to face the challenges imposed by the crisis, their success depended, among other things, on their ability to leverage smart digital technology.

> Digitalization of government services can have significant economic spillovers.

Provision of digital public services

Emerging markets can promote digital government services by **moving more public services** online — including licensing, permitting and other services. The time and cost reductions generated by doing virtual appointments, may provide great benefits to citizens. Similarly, moving numerous government interactions with citizens to a virtual environment could lead to more effective interactions and streamline services.

Information as a byproduct of government work

In order to make the most of the wealth of information collected by government agencies, government agencies should **promote the use and provide access to public data**. Interoperability of government data is essential so that information is not only collected and maintained, but is also accessible to the public. Standards for government agencies on open data and web APIs may be effective at achieving this goal. Public agencies can also Invest in shared data platforms, both within and across government agencies, to streamline public access and reduce fragmentation of various sources of government information.

> Interoperability of government data is essential so that information is not only collected and maintained, but is also accessible to the public.

Israel's Data Gov.

Continual efforts by the Israeli government to develop and share public data exemplifies the clear benefits of data accessibility. In 2010, Israel's Information and Communications and Technology authority launched the Data Gov website to consolidate all available public data in a single source and to promote their use. The initiative was part of the government's efforts to enhance government transparency and to promote freedom of information more broadly. It was intended to enhance access not only to constituents, but also to entrepreneurs, researchers and public servants. The Israeli government followed such initiative by adopting an unprecedented standard that requires access to all government data by default and sets a timetable for agencies to ensure that such data is made publicly available. Data Gov continues to update its datasets and currently offers over 800 different data sources covering a wide range of information from local traffic and industrial pollutants to public vaccinations and local rental rates.

Israel's Mosaic

With respect to healthcare data, the Israeli government expanded its public data efforts by investing in Mosaic, a national healthcare data infrastructure that includes historic discharge and treatment records at the individual patient level. The objective of this unique initiative is to advance personalized medicine by providing a comprehensive infrastructure that lends itself for large data analytics and AI. It is an exceptional example of a government agency funding a data infrastructure to not only promote healthcare outcomes through personalized analysis, but also advance R&D capabilities in genetics and healthcare that may be developed commercially by Israeli startups.

6

Conclusion

As we detail above, emerging markets are facing a **watershed moment**. Covid-19 and the economic crisis that it triggered has impacted nearly every household, business and government in emerging markets. And such markets are not only facing the extraordinary challenge of coping with the pandemic, they are also facing a digital crossroad that was apparent even prior to the pandemic — whether digitization can be leveraged to close the increasing economic gap with more established markets.

And while the Covid pandemic requires significant resilience and enormous creativity, it would be misguided to assume that recovery efforts cannot be **leveraged into addressing long-term economic challenges** faced by emerging markets prior to the crisis — such as improving physical capital, empowering human capital, advancing technological leadership and maintaining a national competitive edge.

In this context, a crisis is indeed an opportunity. And the focus on recovery provides an opportunity to advance an agenda that promotes sustainable growth. We highlight above that for growth to be sustainable it has to be inclusive. Racial, gender and geographic barriers inhibit economic growth and undermine the notion that a recovery can be sustained. Indeed, universal access to the internet, digital skills development and an entrepreneurship infrastructure are some of the key areas that need to be addressed for emerging markets to promote economic mobility and inclusion. It is unlikely that any single economic actor, private or public, can advance these goals independently. And our most successful emerging markets stories have been the result of our collaboration with local businesses and governments.

This recognition — the importance of partnerships for economic development — is at the very basis of the framework that we layout in this report. And so, this report is merely meant to provide a starting point in an ongoing conversation with governments and business partners in emerging markets.