

## JAMES MANYIKA KEYNOTE

### DIGITIZATION, AI, AND THE FUTURE OF WORK: IMPERATIVES FOR EUROPE

Your excellencies, ladies and gentlemen,

I am honored and delighted to be addressing you today on the occasion of the European Union's Digital Summit in Tallinn. I am especially pleased that we are in Estonia, one of the most digitized countries in the world and in many respects has been showing the way in terms of what digitization can do for its economy and society.

I will focus my remarks in 4 key topics:

- 1) The digital opportunity that is here today – with emphasis on Europe
- 2) The rapidly emerging opportunity from AI and Automation
- 3) Implications for the future of work
- 4) The imperatives for Europe as I see them

[Chart 2]

#### **1. Digitization is a large and unrealized opportunity today**

Digitization is everywhere, from smart phones, the mobile internet, and ecommerce, to cloud-based services. Moreover, big data, advanced analytics, and the Internet of Things and Industry 4.0 are transforming businesses and industrial processes. And digitally enabled business models are reshaping industries such as retail, transportation, finance, and manufacturing, and will likely transform many more.

Digitization is also transforming globalization. Traditional globalization flows may have plateaued, but digital globalization continues to accelerate.

[Chart 3]

The amount of cross-border data flows has grown 45 times larger since just 2005 and is projected to increase by an additional nine times over the next five years. Europe represents a disproportionate share of the world's cross border digital flows. Data flow don't just transmit valuable streams of information and ideas in their own right, they also enable the movement and reach of goods, services, finance, and people. Digital globalization has enabled small and medium-sized enterprises around the world to export at far higher rates and reach customers and suppliers in ways only large companies were able to do previously.

Yet in the face of these apparent opportunities, we find that the digital adoption and transformation is uneven across companies, sectors, and economies.

[Chart 4]

Various assessments suggest that the degree of digitization varies across companies, even those in the same sector, and even across large established companies.

[Chart 5]

We find the same across sectors -- that a few sectors are highly digitized, for example financial services, media, and the tech sector itself. The rest are much less so. They include asset-heavy sectors such as

manufacturing, public and quasi-public sectors such as health care and education, and large but fragmented sectors such as hospitality and construction.

These differences in the degree of digitization matter:

[Chart 6]

Companies that are digital leaders have faster revenue growth; they improve profit margins three times more rapidly than average and, more often than not, have been the fastest innovators and the disruptors of their sectors—and in some cases beyond them.

The most digitized sectors have higher productivity growth and wage growth. Sectors lagging in digitization tend to be the largest by output and employment—and often have relatively low productivity growth.

At the country-level, most countries have not reached their potential.

[Chart 7]

We estimate that Europe has captured roughly 12 percent of its potential from digitization. The US is not doing much better at 18 percent. Through further digitization, Europe could gain an additional €2.5 trillion of GDP in 2025, according to our estimates, lifting GDP 10 percent above baseline projections for that year.

[Chart 8]

## **2. Accelerating progress in AI and automation brings further opportunities for business and the economy**

We have seen an amazing breakthrough progress in Automation to Machine Learning and AI

We have seen spectacular demonstrations from Driverless Trucks

[Chart 9]

To DeepMind's AlphaGo winning in the ancient game of Go where the possibilities exceed the number of atoms in the universe.

[Chart 10]

Companies that successfully adopt these evolving technologies will significantly enhance performance and gain a competitive advantage. Some of the gains will come from labor substitution. But there will be other gains, too that go beyond simply labor substitutions and may include discovery of novel solutions and possibilities beyond human capabilities.

For national economies, these technologies will give a much-needed boost to productivity, especially when most advanced economies in Europe and elsewhere are aging and have falling birth rates.

AI technologies could also help tackle some "moonshot" challenges, including climate science or curing disease.

[Chart 11]

Investment in AI is growing rapidly and today is dominated by a handful of US and Chinese companies. European companies including ABB, Bosch, BMW, and Siemens are investing in AI, but overall Europe is behind both the United States and China.

[Chart 12]

### 3. What does this mean for work and jobs?

By looking at the constituent activities that make up each occupation and assessing the automatability of these activities, we find three classes of activities have a significantly high potential to be automated.

[Chart 13]

These highly automatable activities make up roughly half the activities carried out by workers today have the technical potential to be automated – roughly 2.7trillion in wages for the US.

[Chart 14]

For Europe's five largest economies—France, Germany, Italy, Spain, and the United Kingdom—we estimate that about \$1.9 trillion in wages and 62 million workers are associated with technically automatable activities.

[Chart 15]

The highly automatable activities are more prevalent in some occupations and in some sectors than others – for example in manufacturing, transportation and warehousing, and retail trade.

To be clear, to say that half the activities are potentially automated is not to say that half the jobs will disappear.

[Chart 16]

We find that roughly 5% of occupations consist of nearly 100% of their activities that can be automated with currently demonstrated technologies. But 60% of occupations have 30% of the activities that can be automated.

This means that more jobs will change than will be disappear, and more people will work alongside rapidly evolving machines and likely require new and rapidly evolving skills.

It is important to note that adoption of automation will depend on several factors in addition to factors technical feasibility of automation. The other factors include: the cost of deploying the technologies, the labor-market dynamics, the benefits beyond labor substitution, and social factors (for example social acceptance). If all that mattered was technical feasibility, we should have seen electric cars on the road nearly 50 years ago.

One clear way to mitigate the effects of automation on work is to ensure economic growth that also generates labor demand. Such growth in turn also depends on productivity growth which in turn benefits from automation.

However, even with growth and demand for work, the complex transitions will be unavoidable. The sectors and occupations where new jobs are created may not be the same as where the old ones are lost. Different skills and capabilities will be required to thrive in this shifting environment of new and evolving occupations and work alongside machines. Wages will be under pressure for some categories of workers, especially those with skills not well adapted to the new environment.

The transition challenges for workers at all skill levels are likely to be significant and felt especially across the advanced economies.

#### **4. Imperatives for Europe**

I see two categories of imperatives for Europe: First, what can be done to capture the digital opportunity; Second, how we can prepare for the future of work. Five ideas in each of these.

*How to capture the digital opportunity?*

1. Governments should lead by example. That means setting ambitious digitization targets for their own public sectors to raise efficiency and improve citizen interaction and delivery of citizen services. Policy makers must embrace the digital opportunity and make the case more clearly that digital technologies will be a force for greater prosperity, even as they maintain a high level of data protection and digital rights.
2. It is essential to complete the Digital Single Market. The Commission has been driving this effort and making progress, for example with recent efforts to frame a model of talent mobility and data flows. But more can be done: For example, common legal and regulatory frameworks will enable digital companies to scale within and beyond individual countries.
3. Embrace and enable the growth of large-scale digital platforms and digital innovators: Digital platforms are powerful tools to boost cross-border commerce. They give small and mid-sized companies global reach. They also facilitate job matching. In many ways, they are the real engines in the digital age. At the same time, their winner-takes-all dynamics also require careful monitoring and, possibly, regulatory frameworks evolved for the digital age.
4. Investment. Europe's future as a thriving economy will depend on its ability to step up investments in digital infrastructure and digital skills and to deepen and expand its digital ecosystem. Europe needs to continue

attracting digital foreign direct investment that complements and enables homegrown digital innovation and talent.

5. Experiment more boldly with AI and other new technologies. Europe has many AI and next generation startups, with vibrant ecosystems in the making in cities including Amsterdam, Barcelona, and Stockholm. But there is still considerable scope to support the development of these companies in terms of incentives and access to capital.

*What should be done to prepare for the future of work?*

1. To ensure strong employment, you need strong growth. Sustaining aggregate demand and restoring investment in Europe will be critical to ensure sufficient incremental labor demand in this time of automation. Our research shows that European companies are holding back on investment because of lingering uncertainties about the economy and worries about the stability of the Eurozone. But most are eager to digitize and want greater European economic integration.

2. Along with a stronger economy, you need entrepreneurs and a dynamic business scene where companies large and small can invest and create jobs.

3. Education, training and lifelong learning will be essential in the years ahead. This will especially critical for mid-career and middle skill workers who will need to transition to new occupations and to different types of work alongside machines. Schools and other education providers will need to improve science, technology, engineering, and math (STEM) skills through school systems, but also put a new emphasis on creativity as well

as critical and systems thinking, which will be the skills of the future – and not just coding.

4. In a time of complex workforce transitions, it will be more important than ever to improve how labor-markets work and enable more diverse forms of work. Greater mobility and better matching of workers with opportunity is needed across Europe to increase fluidity. This is an area where digital platforms can play a role, opening up opportunities for individuals to earn income outside of traditional employment contracts. But it is also important to build in worker protections including portability of benefits.

5. The time may have come to rethink worker support. The European welfare state dating back to the days of Bismarck will need to adapt to become more resilient. If automation—whether full or partial-- does result in a significant reduction in employment and/or greater pressure on wages in some strata of the population, some ideas such as conditional transfers, adapted social safety nets, different forms of taxation, or even universal basic income may need to be considered and tested.

As I said, these are very exciting times—but also challenging ones. The technology is arriving very fast; the policy needs to follow without too much of a lag in order for Europe to reap the full benefits of our new automation age.

Thank you for your attention.