ITIF | INFORMATION TECHNOLOGY & INNOVATION FOUNDATION

No One Talks About Too Much Automation Anymore

DAVID MOSCHELLA | JULY 2022

Defending Digital Series, No. 7: Remember all those breathless warnings that artificial intelligence would soon eliminate a wide range of "routine" jobs? So far, pretty much the opposite has occurred. Given today's widespread worker shortages, corrosive inflation, and vast societal challenges, America clearly needs all the automation it can get.

As with many famous anecdotes, the accounts vary. When Milton Friedman was visiting India in the 1960s, he saw men digging a canal with shovels. When he asked why the workers didn't use modern earth-moving equipment, he was told that using shovels created more jobs, to which Friedman is said to have replied: "Perhaps they should use spoons."



So it has been for hundreds of years. New technologies are often seen as job destroyers because they can impact specific individuals severely and immediately, while the benefits of new ways of working are widely dispersed across society over time. Historically, it's been manual work that has followed this pattern. But in recent years the fear that software and artificial intelligence would eliminate white-collar work—from office paperwork to the highest forms of professional expertise—has grabbed most of the headlines, with leading tech companies often criticized for developing and using automation technologies.[1]

Yet some six years into the deep-learning era, it's fair to say that few such changes have occurred.[2] We live in a world of worker shortages and unfilled job openings. Not just in physical labor, such as farming, cleaning, working in restaurants, hotels, airports, construction, deliveries and so on, but also in the white-collar world—in teaching, health care, piloting, engineering, computer sciences, and all manner of office work. Lack of automation has also increased America's economic dependence on both immigrant workers and offshore manufacturing, with the U.S. trade deficit reaching a record $1.1 trillion in 2021. More automation—and the increased productivity it enables—is the key to successfully addressing all of these challenges.

DEFINING AUTOMATION

Unfortunately, people often equate the job impact of automation with that of globalization as both can affect existing jobs. But the differences outweigh the similarities. Globalization moves jobs, skills, and activities around the world, with its advocates believing that international specialization, global scale economies, and national interdependencies will make everyone better

off. While American consumers and some low-wage nations (especially China) have benefited from globalization, many U.S. workers have not. In contrast, automation can keep work in the United States and reduce foreign dependencies by making America more competitive with low-wage nations. It's a way to both protect jobs and become more self-sufficient, while reducing America's trade deficit and international debt.

Unlike globalization, the relationship between large-scale automation and employment hasn't been fully tested since we don't live in a highly automated world. There is, of course, significant automation in manufacturing, as well as in many forms of transaction processing—online payments, renewal and reservation systems, automated toll booths, stock and other trading systems, etc. There is also considerable automation in the cloud—messaging, streaming media, information retrieval, digital advertising, fraud detection and so on. Other changes that are often referred to as automation are more accurately viewed as self-service—ATMs, grocery self-checkout, pumping your own gas, and similar tasks. However, even when taken together, these areas account for a relatively small share of the overall American economy.

More importantly, much of what is called automation would be better described as human augmentation. People drive tractors and operate machinery, and robotics are now increasingly designed to work closely with employees. Computers and AI augment human work in similar ways. Whether this work entails playing chess, flying a plane, making medical diagnoses, evaluating legal evidence, running a business, or fighting a war, the combination of human and machine capabilities is consistently superior to either approach on its own. It's hard to think of any area where this is not the case. The roots of the word *automation* come from the Greek *automatos*, which literally means "acting without the involvement of another." By this standard, truly autonomous automation is still quite limited.

As long as the vast bulk of the labor force is doing work in traditional ways it will be difficult to free up enough human capacity to take on the great challenges of the 2020s and '30s.

THE NEED FOR AUTOMATION

The vast majority of services work remains largely un-automated—health care, child care, legal services, teaching, training, accounting, customer service, lending, voting, selling, flying, policing, managing, administering, judging and legislating. These are the areas where AI enthusiasts expected rapid increases in automation. But largely without exception, progress has been slow, as it turns out that many jobs experts deemed to be "routine" are still too complex for most machines to perform without human cooperation, at least for now.

This is unfortunate because as long as the vast bulk of the labor force is doing work in traditional ways it will be difficult to free up enough human capacity to take on the great challenges of the 2020s and '30s—transforming energy, transportation, and agriculture, repairing and coping with a changing environment, caring for the elderly, reducing poverty, raising living standards, improving education and health care, and many other tasks. Additionally, to remain competitive America will also need to staff up for the industries of the future, driven by new materials, biotechnology, 3D printing, personalized medicine, human augmentation, data science, and many other innovations. The only way to marshal the resources needed to fully embrace this future is to automate much of today's workload.

WORK GENERATES WORK

In the highly unlikely event that all of the above areas become automated, the idea that we will run out of work is still extremely dubious. First and foremost, human needs are nowhere near being met, and thus as long as steep recessions can be avoided, the demand for products and services isn't going away. Meeting these demands will require a growing, diverse, and highly productive economy. But the bigger and more complex economies become, the more needs they generate. Systems need to be built, deployed, maintained, expanded upon, and eventually replaced. In this sense, work creates work and supply does indeed create its own demand.

Additionally, there are many valuable tasks that people don't want to automate. Chief among these are the things that humans enjoy doing—pursuing interests, hobbies and causes, learning, playing, exercising, eating, being entertained, parenting, socializing, grooming, traveling, relaxing, serving their communities, and much more. These activities already comprise large industries, but they would grow much larger if traditional forms of labor become less necessary and people have more "free" time. In all likelihood, eliminating today's work requirements will simply create demand for new activities in *underserved* areas. It's been ever thus.

The idea that we will run out of work is still extremely dubious.

Lastly, work is not as routine as is often suggested. The world does not run as if it is on a train schedule. Typically, the things that matter most are entirely unknowable. How will the war in Ukraine end? Will there be another pandemic? Will relations between the U.S. and China improve or deteriorate? What's going to happen to global supply chains? Are we headed toward a major recession? Will battery technology improve enough to enable a rapid shift to electric vehicles? How bad will climate change be? Will democracies or more authoritarian systems prevail? These and countless other uncertainties assure that tomorrow's economy—and the jobs it requires—will be anything but predictable.

Given automation's importance to America's future, it's heartening that fear of automation has diminished, and hopefully this will continue through whatever economic downturn may be coming. Of course, complaints about technology continue to rage on in areas such as privacy, misinformation, polarization, bias, inequality, excess power, and associated regulations. But don't be surprised if the half-life of some of these issues also starts to shrink. If America ever decides that it must pursue accelerated automation to meet its current and future challenges, the other concerns about technology may also lose some of their sting.

About This Series

ITIF's "Defending Digital" series examines popular criticisms, complaints, and policy indictments against the tech industry to assess their validity, correct factual errors, and debunk outright myths. Our goal in this series is not to defend tech reflexively or categorically, but to scrutinize widely echoed claims that are driving the most consequential debates in tech policy. Before enacting new laws and regulations, it's important to ask: Do these claims hold water?

About the Author

David Moschella is a non-resident senior fellow at ITIF. Previously, he was head of research at the Leading Edge Forum, where he explored the global impact of digital technologies, with a particular focus on disruptive business models, industry restructuring and machine intelligence. Before that, David was the worldwide research director for IDC, the largest market analysis firm in the information technology industry. His books include *Seeing Digital – A Visual Guide to the Industries, Organizations, and Careers of the 2020s* (DXC, 2018), *Customer-Driven IT* (Harvard Business School Press, 2003), and *Waves of Power* (Amacom, 1997).

About ITIF

The Information Technology and Innovation Foundation (ITIF) is an independent, nonprofit, nonpartisan research and educational institute focusing on the intersection of technological innovation and public policy. Recognized by its peers in the think tank community as the global center of excellence for science and technology policy, ITIF's mission is to formulate and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress. For more information, visit itif.org.

ENDNOTES

1. ITIF has consistently disagreed with this view. See: Robert D. Atkinson and David Moschella, "The Enterprise Automation Imperative—Why Modern Societies Will Need All the Productivity They Can Get" (ITIF, November 2019), https://itif.org/publications/2019/11/12/enterprise-automation-imperative-why-modern-societies-will-need-all.

   More generally, see: ITIF's "@Work Series: Employment in the Innovation Economy," https://itif.org/publications/2015/01/10/work-series-employment-innovation-economy/.

2. In March 2016, DeepMind's AlphaGo software defeated Go master, Lee Sedol four games to one, leading many to conclude that the combination of Big Data, Deep Learning and the processing power of Cloud Computing was an artificial intelligence game changer.