MARKET REPORT

TERADYNE

The Automation Economy:
Human and Machine Collaboration

Automation, Robots and Jobs: Going Beyond the Headlines

"The robots are coming. And they will take your jobs."
That's what the headlines claim, at least. But what's the real story?

We are living in the golden age of automation. Despite the proliferation of robots, artificial intelligence and other emerging technologies – and the threat of job replacement that comes with them – the labor market is humming. Unemployment is historically low, even in manufacturing, where the number of workers in manufacturing jobs stood at 12.84 million in May 2019, up 1.5% from a year earlier.[1]

It's time to go beyond the headlines and shift our mindset.

There's a deeper and smarter way of looking at the robot vs. human debate:

1. This is not a man vs. machine fight. Rather, we are on the verge of tapping into the next level of the automation economy – with unprecedented value stemming from man AND machine collaboration, not one or the other.

2. The impact of the automation economy goes well beyond the labor market, with significant benefits for companies, people, the economy and society.

1 Seitz, P. (2019, May 7). Industrial Robots Increasingly Seen As Friend, Not Foe, To U.S. Workers. Retrieved from https://www.investors.com/news/technology/industrial-robots-are-friend-not-foe-of-workers/

The Automation Economy: Critical to Business Performance

With unemployment at record lows, organizations simply can't find the people they need to grow. In fact, at many points in 2019 across the U.S., the number of open jobs exceeded the number of unemployed Americans.[2]

Automation is not a job replacement story. It's a story about equipping industrial economy to grow and remain competitive – which ultimately leads to employment growth, financial stability and employee retention.

Advanced automation solutions, like collaborative robots and autonomous mobile robots, fill labor gaps by automating tedious and repetitive tasks. This is especially beneficial for the dangerous, dull and dirty tasks that few humans want to take on, such as screw driving, low-value transportation, palletizing or machine tending. Even more beneficial, when humans are freed from monotonous work, they have more time for value-orientated and human-driven activities, like product innovation, lean improvements and creative problem-solving.

Naturally, this improves workplace morale. According to Purdue University, cobot deployment leads to greater job satisfaction and employee retention by taking over the dull, undesirable and low-value tasks operators were previously tasked with handling. Robert Goosen, the University's Associate Director, Engineering and Technology Services, puts it well: "Although it is quantitatively difficult to measure the impact of cobots on employee morale and job satisfaction, the anecdotal evidence is both overwhelming and easy to understand. Put yourself in the shoes of an operator who spends an entire shift driving screws into parts coming down a conveyor belt. How bored would you be by the end of the shift? How badly would your hand ache? With a cobot doing that task, you would be free to work on something more interesting and less prone to a repetitive motion injury."

Collaboratively, the performance advantages are immense for business. When robots and people work together companies increase productivity, improve quality and lower costs. A 2019 study out of the Universities of Göttingen, Duisburg-Essen and Trier found that teams of people and robots working together outperform both robot- and human-only teams. The research team simulated a process from production logistics with a team of human drivers, a team of robots and a mixed team of humans and robots. The result: the mixed team beat the other teams both in terms of efficiency and the fewest number of accidents.[3]

2 NCSL (2019, August 2). National Employment Monthly Update. Retrieved from http://www.ncsl.org/research/labor-and-employment/national-employment-monthly-update.aspx

3 U. of G. (2019). Better together: Human and robot co-workers more efficient, less accident-prone. Retrieved from https://phys.org/news/2019-05-human-robot-co-workers-efficient-accident-prone.html

Unlocking the Power of People

Automation will change the workforce. But the numbers are nowhere near as dire as many claim. According to McKinsey, fewer than 5% of occupations can be entirely automated using current technology.[4]

Work continuously evolves. From elevator operators and toll both collectors to bankers, financial analysts and marketing specialists – technology forces positive change. A roofer's job becomes easier and more productive when equipped with a nail gun instead of using a hammer and nails. A mechanic becomes more productive when using electronic diagnostic tools. An assembly worker's job is safer when robots move the heavy packages. These are small automation solutions that significantly increase productivity and performance for both employers and employees.

In manufacturing, robots are not here to replace people – they're here to work with people, and create new opportunities by unlocking creativity, critical thinking and innovation.

The Future of Jobs Report from the World Economic Forum says that 133 million new jobs could be created by 2022 if workers receive the necessary training.[5] Diving deeper into these numbers, that's a projected 1.7 new jobs for every one job impacted by automation through 2022.

Similarly, a 2019 study from Oxford Economics, "How Robots Change the World" found that the robot revolution will deliver a $5 trillion increase in the global economy that will ultimately create millions of new jobs.[6]

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4 Chui, M., Manyika, J., & Miremadi , M. (2015, November). Four fundamentals of workplace automation. Retrieved from https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/four-fundamentals-of-workplace-automation

5 (2018). The Future of Jobs Report. The Future of Jobs Report. World Economic Forum. Retrieved from http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

6 (2019). How Robots Change the World. How Robots Change the World. Oxford Economics. Retrieved from http://resources.oxfordeconomics.com/how-robots-change-the-world

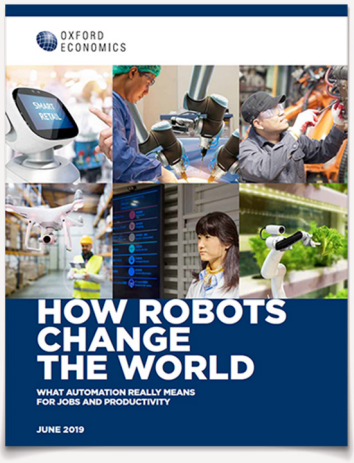
Powerful for the Economy and Society

Automation also drives significant economic growth that benefits society.

When companies thrive, they offer more opportunities for workers, and communities at large. Jim Bessen, Executive Director of the Technology & Policy Research Initiative at Boston University School of Law puts it succinctly: "New technologies do not just replace labor with machines, but, in a competitive market, automation will reduce prices. In addition, technology may improve product quality, customization, or speed of delivery. All of these things increase demand. If demand increases sufficiently, employment will grow even though the labor required per unit of output declines."[7]

Even more compelling than the job creation numbers, Oxford Economics notes the societal benefits and value of the "robotics dividend"—lower prices for manufactured goods, higher real incomes, and stronger tax revenues.[8]

While there will be ups and downs along the way, the automation economy is a winning proposition for all, with benefits — including net new job creation, economic growth and societal improvement — that far outweigh any potential downside.



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Robotics Dividend

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7 James Bessen, AI and Jobs: The Role of Demand, Boston University School of Law and Economics Research Paper (2017). Available at https://scholarship.law.bu.edu/faculty_scholarship/271

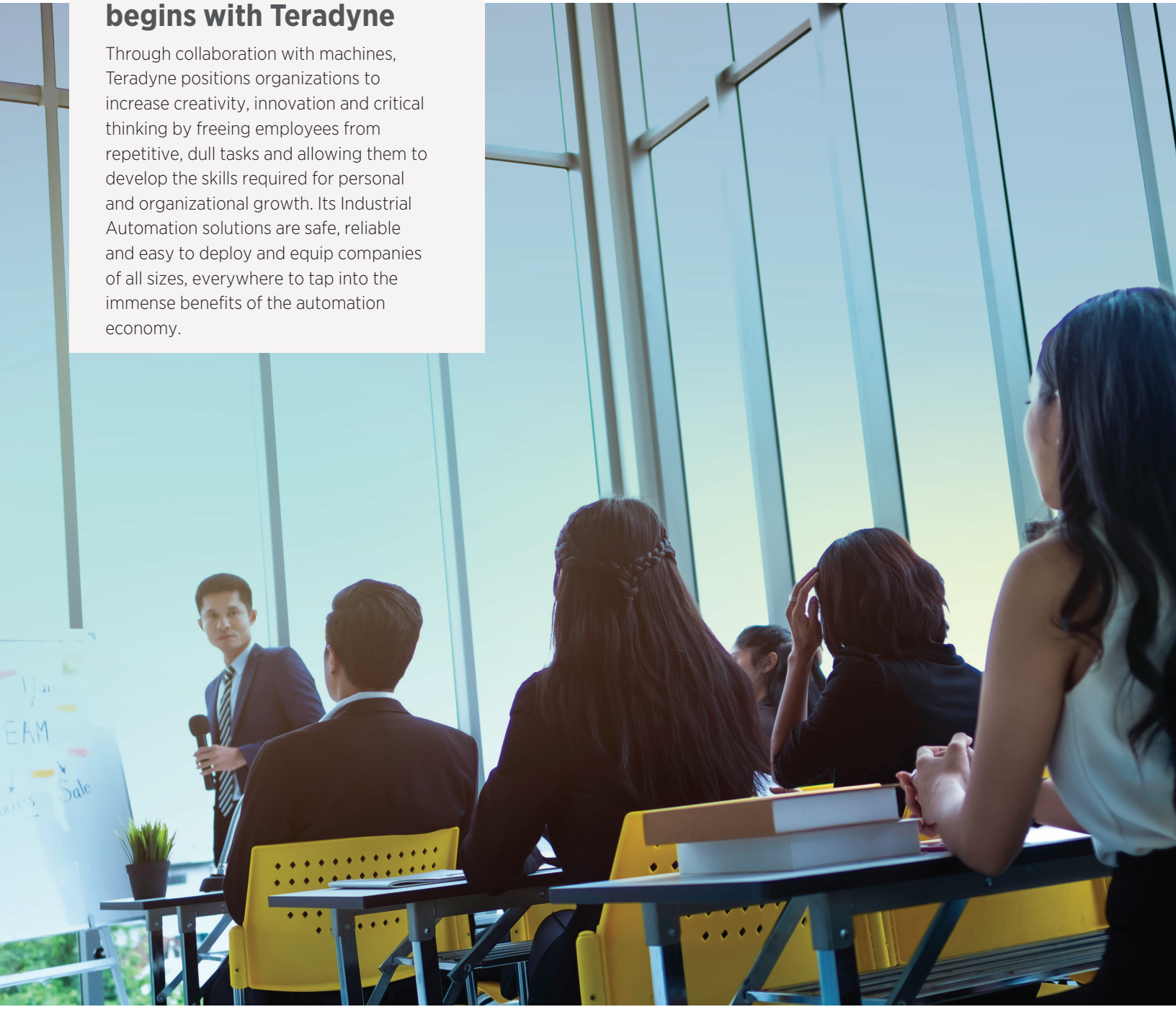
8 (2019). How Robots Change the World. How Robots Change the World. Oxford Economics. Retrieved from http://resources.oxfordeconomics.com/how-robots-change-the-world

Teradyne: Driving The Future of Automation

Teradyne's industrial automation portfolio equips people and organizations to reach their potential.

Advanced automation begins with Teradyne

Through collaboration with machines, Teradyne positions organizations to increase creativity, innovation and critical thinking by freeing employees from repetitive, dull tasks and allowing them to develop the skills required for personal and organizational growth. Its Industrial Automation solutions are safe, reliable and easy to deploy and equip companies of all sizes, everywhere to tap into the immense benefits of the automation economy.



What's Next

See how Teradyne helps transform industrial automation with advanced, robotic innovations.

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