

Digital Transformation

Digital machinations: payback time

23 February 2023

Key takeaways

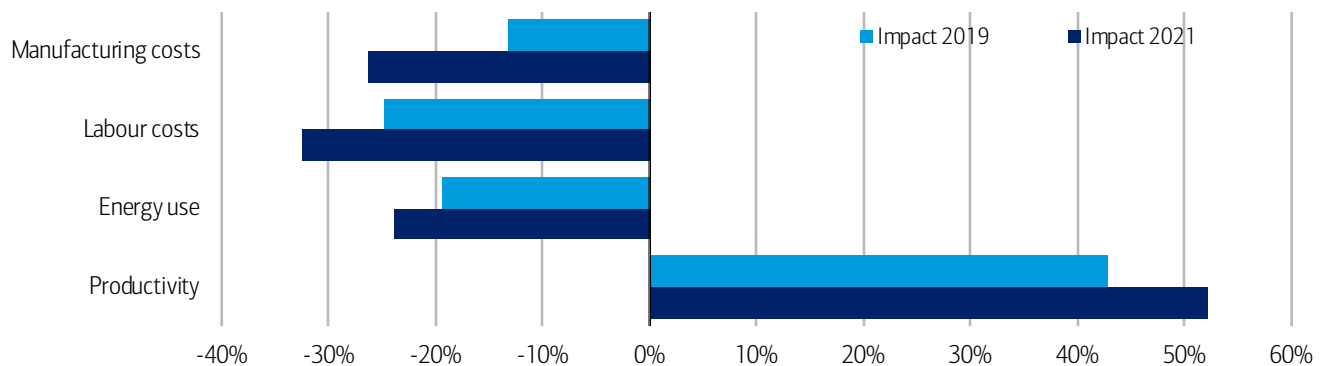
- Digital transformation is driving real-world productivity gains. The implementation of digital strategies has the potential to reduce manufacturing costs by over 25% by improving labor productivity and cutting energy use, per BofA Global Research.
- At the same time, BofA Global Research sees increased demand for cloud-based capabilities such as cybersecurity, virtualization software and remote access. While demand remains robust, there is still plenty of opportunity to adopt automated and digital solutions.
- As global supply chains shift and reshoring activity for US manufacturing surges in the post-COVID recovery, companies are likely to continue to increase their investment in automation to manage costs, inventory and complexity.

Digital transformation drives real-world productivity gains

Return on investment (ROI) is a key metric for corporate decision-makers. For real-world data on the benefits of digital transformation investments, BofA Global Research looked at the World Economic Forum’s (WEF) Global Lighthouse Network. This is a collection of 132 factories across a diverse set of industries. The impact of digital transformation in these facilities has reduced manufacturing costs by approximately 26%, labor costs by around 32%, and energy use by roughly 24%, while increasing productivity by over 50% (Exhibit 1). Ultimately, this translates into improved profit for the company and, hence, a higher return on investment.

Exhibit 1: Impact of digital transformation & Industry 4.0 analysis (%)

Energy, labor & manufacturing cost reductions of 24-32% have been achieved across the WEF Lighthouse Network



Source: World Economic Forum Global Lighthouse Network

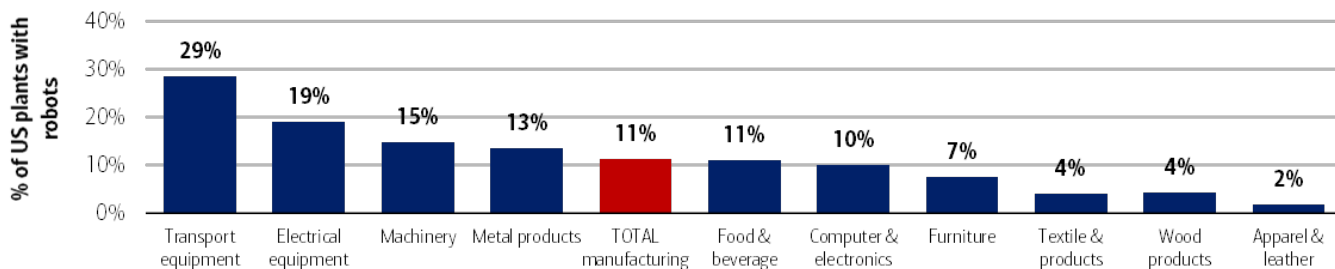
Note: Lighthouses are the factories that have decided to implement at scale 4th Industrial Revolution technology

Are the robots taking over?

According to the 2019 Annual Business Survey (US Census), adoption rates for representative automation technologies remain relatively low, with less than 11% of US plants using industrial robots (Exhibit 2). While not a perfect representation of the state of factory automation given the growth in digitalization capabilities over the past few years, these low adoption rates suggest there is still plenty of “white space” left in developed markets such as the US.

Exhibit 2: Robot adoption among selected US manufacturing industries

Only one in nine US manufacturing plants had adopted robots according to 2019 survey



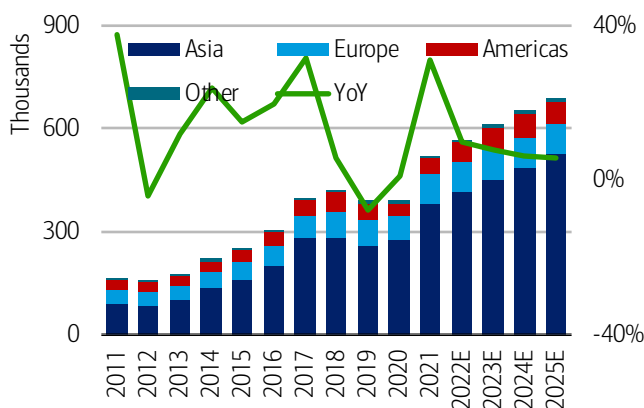
Source: US Census, Annual Survey of Manufacturers (2019)

However, according to BofA Global Research, robotics demand in 2022 should have increased by about 13% year-over year (YoY) to around 584,000 units and the 2023 installed base should grow by around 10.5%, similar to what was seen in 2020.

Exacerbated by wage increases and worker shortages, global installations of industrial robots started to rise in 2021 (Exhibit 3), with further growth expected in 2022-25E per International Federation of Robotics (IFR). Similarly, the collaborative robot (or “cobot”) market accelerated to ~50% YoY growth in 2021, from ~25% in 2020 (Exhibit 4).

Exhibit 3: Global annual installations of industrial robots 2011-21 and 2022-25E per IFR ('000 of units)

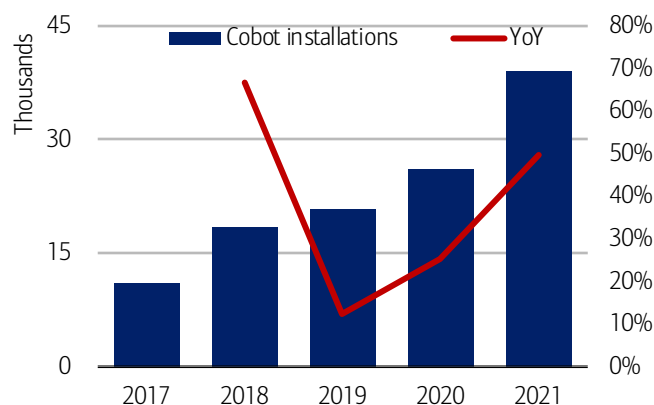
After plateauing in 2018-20, installations started to rise in 2021, with further growth expected in 2022-25E



Source: International Federation of Robotics (IFR) World Robotics

Exhibit 4: Global annual installations of cobots (subset of industrial robots) 2017-21 per IFR ('000 of units)

Cobots continued to grow their share of the market



Source: International Federation of Robotics (IFR) World Robotics

Floating in the industrial cloud

BofA Global Research believes that working from home will continue to have far-reaching effects for the industrial world, as well as the more office-bound professions. For the first time, many factory-based supply chain systems and working practices were forced into the cloud and off-premises by lockdowns.

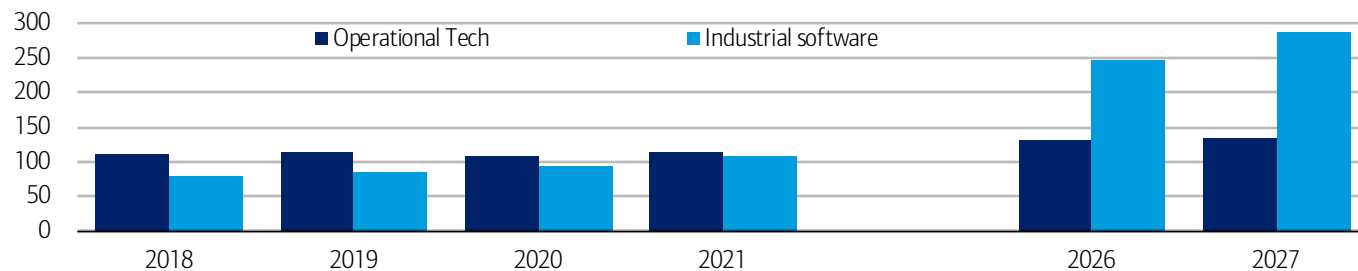
In fact, according to BofA Global Research, close to 50% of the global workload is expected to be cloud-based in three years' time (from 42% today). The platforms offered by cloud vendors offer a place for smaller, independent companies to develop their offerings. Growth is complemented by the portfolio capabilities the cloud vendors bring to the table such as cybersecurity, virtualization software and remote access.

Industrial software: an area of considerable growth

The more generic tools and Internet of Things (IoT) platform software appear to offer the fastest growth as enterprise software firms expand their offerings to the industrial world. This is most apparent in cloud infrastructure and the ongoing shift in control, processing power and analysis to the machine level or edge, as well as in the growth in data and analytics run on the cloud. BofA Global Research and IoT estimates the industrial software market could be worth over \$250 billion in annual sales by 2027 (Exhibit 5).

Exhibit 5: Operational Tech and Industrial Software market, according to IoT Analytics (\$, billions)

The compound annual growth rates are 3% for the Operational Tech market and 18% for industrial software from 2021-27E



Source: Internet of Things (IoT) Analytics, Dec 2021

Software-as-a-service models reduce up-front costs of adoption

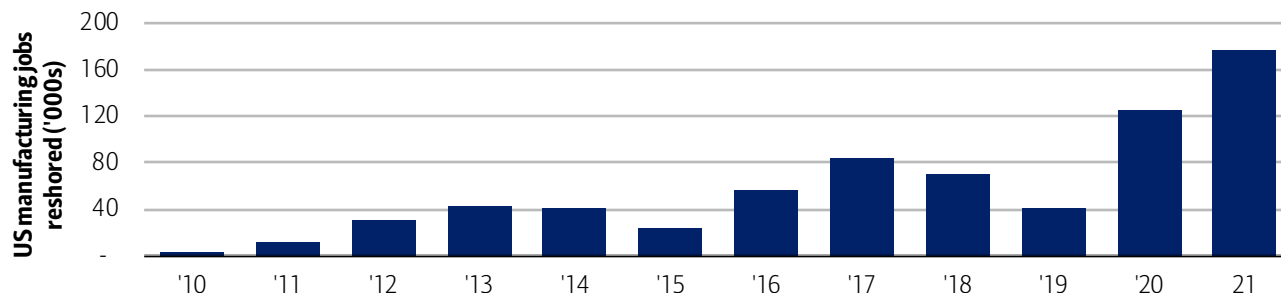
Many vendors are now transitioning to software-as-a-service (SaaS). Under the SaaS subscription model, clients pay a monthly subscription fee to use the software, which differs markedly from the perpetual licensing model with a significant one-off purchase of a license at the inception of the contract. With reduced up-front capital costs and greater flexibility for customers old and new, the SaaS model is driving faster adoption rates. In the case of economic recession, subscription cancellations are less likely than postponement of license renewals.

Increased reshoring activity leads to automation demand

For the first time since the 1970s, US industrial production, manufacturing employment, and capital expenditures have all exceeded prior peaks. In 2021, jobs tied to reshoring activity also surged to a record high, reaching nearly 180,000 (Exhibit 6). Reshoring is on track to add 1.5% to US manufacturing employment in 2022, according to the Reshoring Initiative.

Exhibit 6: US manufacturing jobs from reshoring activities

2021 was a record year for reshoring



Source: Reshoring Initiative

How does this translate into automation demand? Automation has seen strong demand in the post-COVID recovery, with shifting supply chain trends and US reshoring activity being key factors. Despite demand remaining robust, there is still plenty of opportunity to adopt automated and digital solutions. These solutions lead to energy-efficiency improvements by giving companies access to improved business data. Such data is necessary to monitor and quantify energy needs, predict shortages and faulty machines, reduce costs, and optimize overall systems.

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