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Initiatives: Supply Chain Head of Strategy Realization; CSCO Strategic Leadership; Manufacturing Operations; Procurement Management

A review of critical supply chains may bring some manufacturing back to the U.S. as a matter of national security. Because of a shortage of skilled talent, some industries may struggle to comply with these efforts. Supply chain leaders can use this research to find solutions for the talent crisis.

What You Need to Know

In February 2021, the Biden Administration ordered an audit of U.S. critical supply chains with the intent to secure critical manufacturing back to the U.S. as a matter of national security. However, the ambition to boost supply chain resiliency within the U.S. faces daunting challenges, notably a continued severe shortage of talent. Chief supply chain officers (CSCOs) say the gap between today's skill sets and those needed in three to five years is already enormous. Most view access to top-tier talent as a bigger barrier to innovation than access to capital.

This research provides CSCOs with guidance on how to accelerate the process of upskilling supply chain workers and finding the right talent to compete, especially if regulated or incentivized to increase domestic production.

Analysis

Recent global disruptions highlight how susceptible supply chains are in today's interconnected and interdependent value creation process. As the economy restarts following the global COVID-19 pandemic, semiconductor manufacturers are unable to keep up with surging demand. In April 2021, the White House hosted a “CEO Summit on Semiconductor and Supply Chain Resilience.” More than two dozen industry executives gathered to discuss solutions for the chip shortage, which is slowing auto production globally, as well as in other sectors.

Production has been paused at more than a dozen automotive plants in the U.S. alone, and the semiconductor shortage could result in 1.28 million fewer vehicles built this year and disrupt production for six months or longer. Additionally, shortages of semiconductors will result in hundreds of millions of dollars in impact to the broadband and cable television industry. This all adds purpose to Washington's intent to find a long-term solution, mostly by moving some critical manufacturing back to U.S. shores.
While we don’t yet know what the final readout on the critical supply chain audit will be, we do know that a dire talent shortage already exists. This enormous gap will derail the government’s intentions before it even starts if not addressed in tandem and at scale. It will cause major headaches for supply chains that are ill-equipped to cope with potential government mandates and incentives to nearshore.

More than half of supply chain leaders say that their future supply chain decisions will be impacted by pressure to increase domestic operations (see Figure 1). Yet, the labor force required to do so is scarce. In manufacturing alone, 61% of U.S.-based respondents to a 2020 Gartner Manufacturing Strategy and Implementation Trends Survey indicate that they lack the skilled workers to support digitization plans. This is among their organization’s top three constraints when digitizing manufacturing operations. How then, will they find more employees for even more smart manufacturing projects?

Paying higher wages doesn’t seem to be the answer. Only 29% of survey respondents indicate that their organization prioritizes more competitive wages to support smart manufacturing talent capabilities. Not an auspicious start for companies trying to recruit for coveted millennial and Gen Z skill sets. Today’s top graduates, and even people who look to enter the workforce after high school, typically gravitate toward tech-fun employers like Apple, Google, and Netflix. (See Supply Chain Brief: How to Compete for Millennial and Gen Z Talent).
There are some success stories of companies taking proactive measures to build and attract larger pools of talent:

- In 2019, Walmart hiked truck driver salaries to near $90,000 to fill the void of more than 1,400 truckers the business required. Many trucking firms have made similar moves. ¹

- It has been seven years since GE Appliances first sounded the alarm about a talent shortage in the greater Louisville, Kentucky area. (See A Better Future for All — Leading a Community to Develop Skilled Manufacturing Workers.) Not enough qualified candidates were pursuing manufacturing roles, especially midskilled workers and entry-level operators, to meet GE’s reshoring needs. Between 2014 and now, the firm has worked on many programs within the community to find the right skill sets after the company invested more than $1 billion to pursue digital technologies over the past five years. In April 2021, GE graduated its first engineer from its new Industry 4.0 Development Program — targeting...
The U.S. government is showing its intent to support domestic manufacturing and supply chain services. The White House requested funding to combat the semiconductor shortage as part of its budget proposal to Congress, including a request for $150 million to fund new manufacturing plants. Separately, President Biden's $2 trillion infrastructure package included an investment of over $50 billion for the semiconductor industry. Another bill proposed in the House of Representatives — the Office of Manufacturing and Industrial Innovation Policy Act — would create a new Office of Manufacturing and Industrial Innovation Policy (OMII) overseen by a Chief Manufacturing Officer in the Executive Office of the President.

Some companies are showing a willingness to invest and expand in the U.S.:

- Intel is spending $20 billion to build two new manufacturing facilities in the U.S.
- Tesla plans to hire 10,000 employees through 2022 at its new plant in Texas. It plans to deploy innovative ways to find talent by tapping into high schools using social media platforms.
- House Foods America will build a new $146 million factory in Louisville, Kentucky, which will employ plant machine operators, production workers, engineers, research and development and logistics staff.

To address the need for more skilled workers, supply chain leaders should be first-movers into local pools and pursue collaborative partnerships between private industry, public entities, apprentice and education systems, and local communities.

Many companies are already acting to improve their recruiting capabilities, although more must step up to the plate.

- Walmart, which plans to spend $350 billion on products made, assembled or grown in the U.S. over the next decade, is launching a program to bring together suppliers and government officials to discuss how to eliminate barriers to building more U.S. manufacturing. Additionally, Walmart has teamed with the MIT Center for Transportation and Logistics (MIT CTL) to create a new custom course in supply chain management for its supply chain associates from underrepresented communities who are on a leadership track.
- Amazon is using targeted micro-investments that create impact in numbers of investments. One example is donating $1.75 million toward a new STEAM (science, technology, engineering, arts and
According to a report in the Harvard Business Review, the prevalence of STEM jobs, a proxy for innovation potential, is almost five times higher in the supply chain economy than in the B2C economy. In a different strategy, Cisco implemented a focused initiative by creating the Networking Academy. Over the years, the Networking Academy accumulated donations of $2.6 billion and is targeting to reach one billion people by 2025, empowering them with problem-solving and transformative technology skills. It became a critical component of the State of Michigan's education efforts into STEM through the State Digital Acceleration (SDA) program, investing to create a new generation of a globally competitive workforce.

When it comes to the priorities for building talent capabilities to power the nation's factories and accompanying supply chains, attracting and hiring the right skills is ranked among the top three priorities by 42% of U.S.-based respondents in Gartner's recent smart manufacturing study. (See Figure 2.) Nearly three-quarters (74%) of the U.S.-based respondents report that their organization is actively collaborating with industry consortiums for smart manufacturing as an investment strategy.

These relationships will become critical opportunities to accelerate skills development and overall digital transformation and innovation initiatives. The smart manufacturing innovation centers (SMICs) spearheaded by the Clean Energy Smart Manufacturing Innovation Institute combine academia, industry and technology R&D to lower the threshold of cost for organizations to access upskilling and new ways of working. Today, SMICs exist at North Carolina State University (pulp/paper and biologics), Texas A&M (energy, oil, gas), UCLA (aerospace and defense), and Rensselaer Polytechnic Institute (advanced materials sciences and pharmaceuticals). Others are in the process of being funded. Separately, Deloitte has started a similar initiative with Wichita State University focused on smart factories.

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CSCOs should also consider the growing popularity of apprenticeship programs, particularly those modeled after highly successful German “Ausbildung” programs that are recognized globally for company-specific knowledge, theory and hands-on learning. The German American Chamber of Commerce supports many of these apprentice programs in the U.S. In 2019, Claas and Graepel Manufacturing, two German companies with operations in North America, committed funds for the three-year Industry Consortium for Advanced Technical Training (ICATT) Apprenticeship, a dual study program promoted through the Chamber. The program helps manufacturers develop a pipeline of skilled talent and train the workforce they need.

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### Top 3 Priorities for Building Talent Capabilities to Support Smart Manufacturing in the U.S.

<table>
<thead>
<tr>
<th>Priority</th>
<th>Sum Top 3</th>
<th>Rank 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing Leadership and Change Management Skills</td>
<td>20%</td>
<td>51%</td>
</tr>
<tr>
<td>Establishing Affiliations With Trade Organizations and Universities for Access to Training</td>
<td>11%</td>
<td>43%</td>
</tr>
<tr>
<td>Attracting and Hiring the Right Skill Sets</td>
<td>16%</td>
<td>42%</td>
</tr>
<tr>
<td>Broadening Skill Sets Through Rotational Programs and Apprenticeships</td>
<td>10%</td>
<td>40%</td>
</tr>
<tr>
<td>Designing Roles Based Off Digital Capability Required</td>
<td>16%</td>
<td>39%</td>
</tr>
<tr>
<td>Providing Competitive Wages/Pay</td>
<td>9%</td>
<td>29%</td>
</tr>
<tr>
<td>Developing Formal Human-Machine Collaboration Initiatives</td>
<td>9%</td>
<td>28%</td>
</tr>
<tr>
<td>Identifying Opportunities for Gig Workers</td>
<td>10%</td>
<td>23%</td>
</tr>
</tbody>
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**n = 141 supply chain professionals in the U.S.; Total, Excludes Don't know**

Q: Which of the following are the top 3 priorities for building talent capabilities to support smart manufacturing in your organization?

Source: 2020 Gartner’s Smart Manufacturing Strategy & Implementation Trends 749362_C
“You don’t need college to learn stuff.”

— Elon Musk

Tesla has relationships with Austin Community College, Huston-Tillotson University, the University of Texas at Austin, and the Del Valle Independent School District. Tesla’s approach of recruiting students who can graduate high school and start a career at Tesla while continuing their education mimics the approach of vocational training in Germany.

Not to be overlooked is building relationships with universities that offer graduate programs in supply chain management (see Top 25 North American Supply Chain Graduate University Programs, 2020). These programs offer myriad resources for skills-starved supply chain organizations. Aside from recruiting full-time employees, savvy supply chain leaders go beyond this to partner with universities for skills augmentation and project support, and for continuing education and degree programs that they can offer to employees. These holistic relationships take time to build, so it’s best to get involved early and consistently with a select portfolio of university partners.

Capturing the attention of the newest wave of supply chain professionals requires sustained relationships and resources. Even midsize and smaller supply chain organizations should be able to build and maintain relationships with at least one to two schools. Those that don’t will likely experience an insurmountable talent gap moving forward.

Recommendations

Supply chain leaders focused on innovation and building new talent pools should:

- Determine where workers are available in targeted regions by conducting due diligence about areas that provide the largest talent pools. Utilize Gartner’s TalentNeuron offering as part of this effort. Keep in mind that remote and hybrid work provides a bigger pool and more flexibility in hiring.

- Prepare now for the need to find new talent by investing in talent foundations and local communities and expanding relationships with university programs or SMICs, technical schools and local governments and nonprofits. Build a portfolio for the coming years, not only for openings that are currently “hot jobs” in your organization.

- Make initial preparations for government mandates that encourage domestic production by assigning a team member to research potential mandates ordering greater use of open standards, incentives for educational and reskilling programs, tariffs, and incentives that make domestic production more enticing.

- Collaborate with human resources, finance and supply chain leaders to determine whether you will invest to upskill current workers or hire new ones who already possess the skill sets required.
Build student awareness for your organization by speaking at and participating in events that highlight the career opportunities and supply chain’s crucial role in the global economy so students become aware of your organization and supply chain in general. Improve your LinkedIn game, as well.

Evidence

1. Walmart is Hiring Hundreds of Truck Drivers and Paying Them Close to $90,000 a Year, CNBC.

2. GE Appliances Graduates First Engineer From New Industry 4.0 Development Program, GE Appliances (Haier).

3. Upskilling, Amazon.

4. About Us: Cisco Networking Academy, Cisco.


6. News Releases | Media Center | CLAAS of America, CLAAS.

2020 Gartner Smart Manufacturing Strategy and Implementation Trends Survey. This study was conducted online between October 23 and December 3, 2020 to help develop and ratify roadmaps, assess organizations’ strategies against a collective market perspective, and ensure their strategies for recovery and renewal are as future-proof as possible. In total, 439 respondents were interviewed in their native language across North America (36%, n = 160; countries included the U.S. and Canada), Western Europe (42%, n = 184; countries included the U.K., France, Germany and Sweden), and APAC (22%, n = 95; countries included Australia, New Zealand and Singapore).

- Qualifying organizations operate in the manufacturing industries and report enterprise-wide annual revenue for fiscal year 2019 of at least $500 million (at least $1 billion in the U.S.) USD or equivalent. Companies must have a smart manufacturing strategy or plans to deploy.

- Qualified participants have a role tied to a supply chain function and are in director or above roles. All respondents are involved in their company’s decisions regarding manufacturing operations and/or overall manufacturing strategy.

The study was developed collaboratively by Gartner analysts and the Primary Research Team.

Disclaimer: Results of this study do not represent global findings or the market as a whole but reflect sentiment of the respondents and companies surveyed.

2020 Gartner Future of Supply Chain Survey. In September and October 2020, Gartner Supply Chain Research sent invitations to complete an online survey to its community members, to Gartner clients, and to a wider group of practitioners in supply chain and other functions globally. We received 1,346
completed responses during the survey period. We had participants across industries, e.g., high tech (20%), healthcare & pharma (14%), CPG (11%), industrial (10%), food & beverage (9%) and retail (9%), and mostly worked in supply chain related functions, e.g., supply chain (49%), logistics/transportation and distribution (9%), purchasing/procurement (9%) and operations (7%). Of the respondents, 57% were from North and South America, 29% were from EMEA, 13% were from Asia and Australia and others were from the rest of the world. Additionally, 63% of the participants were from $10 billion plus companies, and 62% of the participants were at VP/director level or above.

**Recommended by the Authors**

Supply Chain Brief: Semiconductor Shortages Must Drive Greater Collaboration for Resilience

The Impact of the U.S. Executive Order to Secure Critical Supply Chains and How It May Affect You

Top 25 North American Supply Chain Graduate University Programs, 2020

Competing for Digital Skills: Unconventional Tactics for Sourcing Supply Chain Talent

Top 25 North American Supply Chain Undergraduate University Programs, 2020

Supply Chain Brief: How to Compete for Millennial and Gen Z Talent

Gartner TalentNeuron: Trusted Labor Market Insights