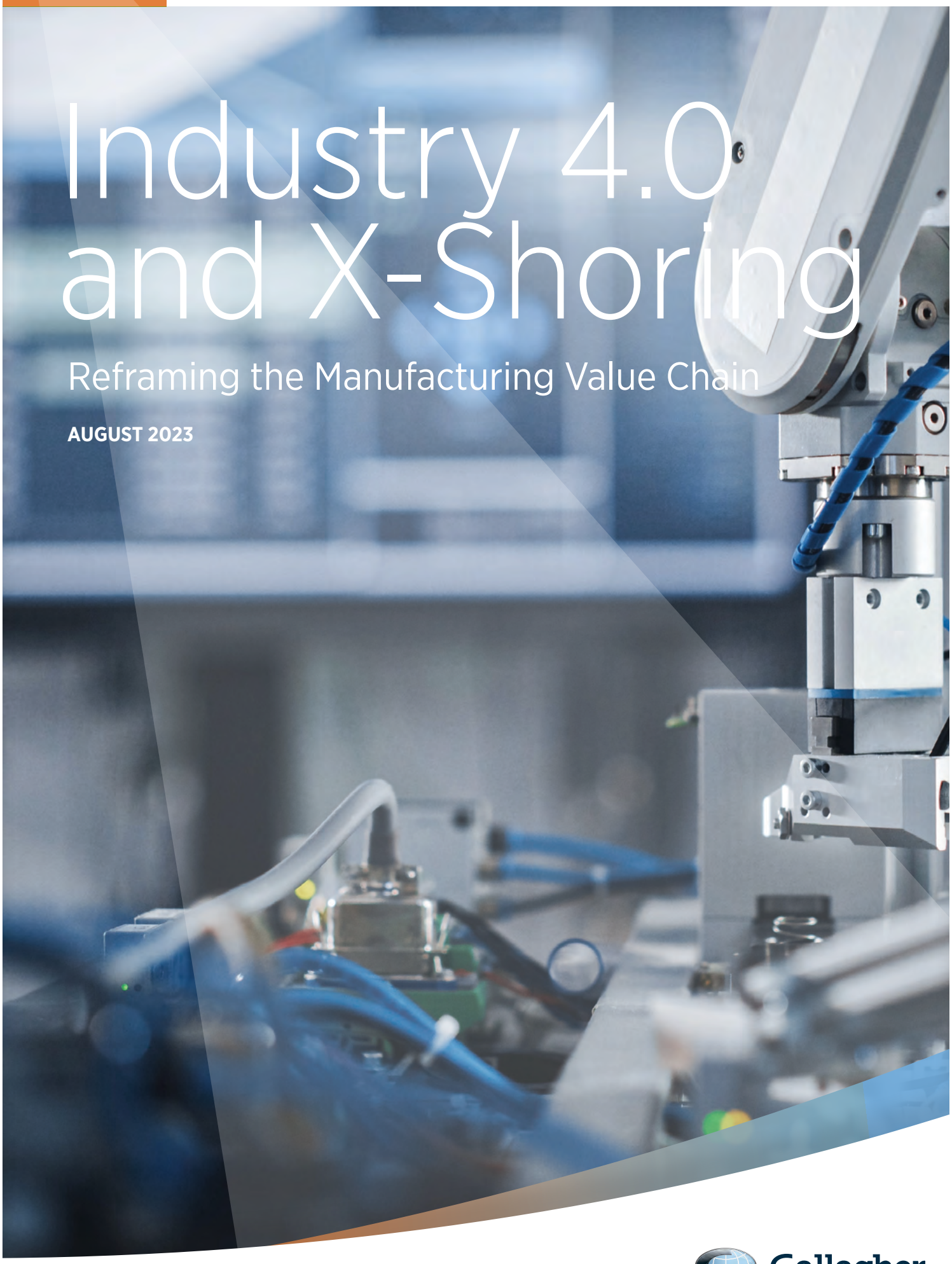
Spotlight

POWERING GROWTH



Industry 4.0 and X-Shoring

Reframing the Manufacturing Value Chain

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Gallagher

Key findings

1. **Heightened business resilience concerns following the global COVID-19 pandemic has lead to a shift in risk tolerance.** Increased agility, production efficiency and responsiveness to emerging risks are top priorities. Manufacturers are re-evaluating supply chains and reshoring operations to adapt to a changing economic reality.

2. **As inflation, geopolitical tensions and supply chain bottlenecks continue to dampen growth,** manufacturers are exploring new opportunities to reduce costs, including where Industry 4.0 technologies can help to close the labor price gap. Technology and digitization of production look set to become a game changer for the manufacturing sector, globally.

3. **Industry 4.0 and investment in IoT and AI-led** technology to drive efficiency is influencing the trend to re-shore skilled labor and manufacturing operations in highly technologically developed locations.

4. **In McKinsey's annual survey (2022), tracking the progress of Industry 4.0[6] within the manufacturing sector,** 94% of the respondents said that digital transformation and automated production kept their operations running while 56% said Industry 4.0 technologies had been critical to their COVID-19 crisis response.

Introduction

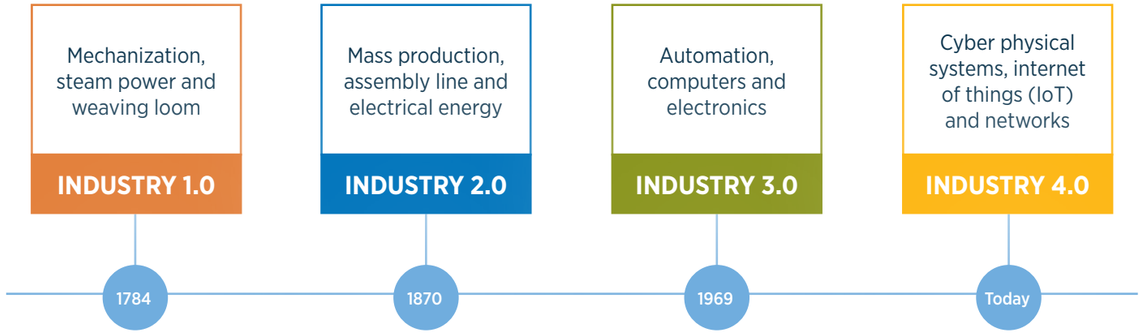
Referred to as the fourth industrial age, Industry 4.0 relates to digital transformation through the use of advanced manufacturing technologies such as artificial intelligence (AI), big data analytics, robotics, cloud computing and the Internet of Things (IoT), enabling the creation of connected, 'smart' production systems that speed up production output and increase efficiency.

X-Shoring explained

X-Shoring focuses on creating sustainable and resilient supply chains with the objective of reducing operating costs, optimizing processes and maximizing the efficiency of available resources.

Emerging in the early 2010s, X-Shoring has become a go-to strategy for manufacturing sector operators looking to navigate evolving risk exposures, drive productivity improvements while delivering a positive end-experience for the consumer.

The path to Industry 4.0—1784–2023[1]



Spotlight

Industry 4.0 transformation: Digitization, convergence and producivity

The manufacturing sector has been through the mill in recent years. With global supply chains steadily recovering, and raw material shortages and diplomatic tensions continuing apace, 2023 continues to be a year of structural change and economic rebalancing.

Beginning in the mid-2010s, Industry 4.0 is globally transforming operations and the future of production. Multiple industries and sectors have moved from linear, sequential systems to interconnected, sustainable ecosystems. Machines communicate in real-time across geographies, data is harnessed and analyzed simultaneously, and autonomous systems drive productivity with minimal human intervention.

Digitization, AI and integrated tech platforms are bringing increased convergence to the manufacturing sector, streamlining operating process and production and connecting transportation, payment and workforce resourcing, creating a new generation of 'smart factories'. When it comes to powering growth, productivity and efficiency are the currency of success.

With this comes an additional benefit: If a manufacturing company can build premises and install production lines using Industry 4.0 strategy, geographical flexibility is possible to determine where manufacturing happens.

The evolving 'shoring' era: Early origins to driver of change

The contemporary concept of offshoring started in the 1960s. Lower-cost transportation, salaries and land values along with major economies relocating production to lower-cost markets such as China, Malaysia and Vietnam were able to grow markets at pace. Manufacturers were able to mass produce to serve emerging and existing markets, capitalizing on reduced operating expense and increased profitability when compared to home based production. Offshoring aspects of manufacturing operations became the established model over the next three to four decades.

A combination of Industry 4.0 advances and the global pandemic shifted thinking from operational efficiency to customer experience. Disrupted supply chains and an overnight switch in consumer demand highlighted systemic vulnerabilities in the global supply chain model as bottlenecks in transportation, logistics and production quickly appeared.

As major manufacturing operators implemented social distancing and COVID-19 response measures, with some forced to shut down production lines altogether, businesses across the globe were left scrambling for alternative suppliers.

Rising geopolitical tensions, the Ukraine war and the fall-out from the global pandemic has switched the focus to re-shoring or near-shoring operations to resolve supply chain bottlenecks and 'friendshoring', basing operations in geographies viewed as economic and political allies.

Post-pandemic landscape

Post-pandemic, the X-Shoring trend continues unabated. Technology is making relocation more feasible; in Gartner's 2020 Future of Supply Chains survey, 56% of manufacturers[2] believed that bringing existing operations onshore will become economically viable with the introduction of Industry 4.0 and automation. However, there are additional factors behind a broader shift towards X-Shoring:

Geopolitical tensions: Supply chain reorientation driven by regional conflicts, political and social instability, and turbulent capital markets is being shaped by diplomatic tensions between some of the world's major nations. The Ukraine-Russia war, ongoing US-China trade tensions and the looming concern as to how the situation in Taiwan will play out have all led to heightened market and inflation uncertainty and shifting trade alliances.

Manufacturing repatriation: With a number of countries considering potential repatriation of manufacturing and supply chains to break the supply chain stalemate, bringing operations closer to home appears to be a realistic expectation, aided by technological advances and the emergence of new markets. Protectionist trade policies have influenced many organizations to prioritize resilience over short-term profitability.

Over-reliance on third parties: Responding to the growing risk of over-relying on a single vendor, country or logistics partner, some companies have opted to restructure their vendor partnerships and simplify the supply chain, whether that be domestically or internationally, to be better equipped to deal with unprecedented roadblocks.

Production delays: Shifting availability of resources during the pandemic and the Ukraine-Russia war have led to production delays—disrupting supply chains that historically supported a 'just-in-time' manufacturing operating model. Having increased control over the production model will help to mitigate the risk of scheduling delays.

Transportation cost base reduction: Rising marine cargo and transportation costs (air, road and rail) have led to manufacturing operators looking to reduce the distance goods must travel, further supporting decarbonization efforts where possible.

Are we on the cusp of a major re-engineering of the global supply chain?

Glocalization (adapting global scale to fit local/regional needs) and technological advances are two forces currently driving the X-Shoring transition. In a 2020 Thomas Industry Survey regarding manufacturing operations response to COVID-19 disruptions, 64% of US manufacturers[3] were reported as being 'likely to bring manufacturing production back to North America.'

One of the potential winners in this move is Mexico, where industrial developers are struggling to keep up with demand. Tesla, Unilever and Mattel have all announced in recent years that their manufacturing operations will move to Mexico in an effort to bring supply lines and production operations closer to home.

The BCI Global Reshoring and Footprint Strategy 2022[4] report backs up this finding, showing that 61% of supply chain decision makers surveyed expected to move some or all of their operations from Asia to Europe and the US.

In terms of the US, almost 60% of companies looking to x-shore were either 'very likely' or 'likely' to bring some or all of their operations back to the US.[4] And Mexico, as mentioned above, is also benefiting: 44% of US businesses considering reshoring are 'very likely' or 'likely' to relocate some or all of their facilities here.[4]

This could be a positive development for Europe. Germany is at the forefront of digital transformation initiatives and looks set to become an innovation hub, as well as one of the leading countries set to benefit from European X-Shoring.

Is skilled labor availability the driving force behind X-Shoring?

Poland and the Czech Republic are two destinations of choice for European Union manufacturers exploring the option of reshoring their workforce. This is influenced by several factors, including:

Industrial knowledge: Central European countries have a longstanding reputation for skilled labor availability, enabling the operation of new facilities in this region with relative ease.

Labor cost: Referencing Poland as one example, while the average hourly rate for Polish labor would be roughly 40%–50% higher than contracting outsourced labor in China, it is only 40% of the EU average wage and a nearly 70% lower hourly rate versus a German worker.[5]

Workforce reskilling and talent shortages in new technological fields, including complex data analysis as well as adapting operations to new geographies, is often challenging. Cybersecurity, with increased connectivity and digitization through the Internet of Things (IoT), requires organizations to implement robust risk controls and stringent vendor due diligence to protect commercially sensitive data, IP and competitive advantage from cyber attack vulnerability.

Technology and efficiency versus labor cost and operating expense: the 4.0 balancing act

The scale of investment and set-up costs associated with implementing new technology and relocating operations is considerable.

While the adoption of Industry 4.0 strategy can help manufacturers to build increase supply chain resilience, access to investment capital may become a roadblock given the current interest rate and inflationary environment, particularly for small to medium-sized operations.

If Industry 4.0 is the key to the manufacturing sector achieving higher productivity levels and operating efficiencies, then this may offset the labor cost benefits of offshoring. Furthermore, rising labor costs in 'traditional' offshoring countries and the reduced proportion of labor costs relative to total production costs through Industry 4.0 advances, also limit the previous advantage of labor savings.

For manufacturers, achieving longer-term growth and resilience, digitization is a necessity. In a McKinsey survey[6] of more than 400 global manufacturing companies, 94% of the respondents said that digital transformation and automated production kept their operations running—and 56% said these technologies had been critical to their crisis responses—during the COVID-19 crisis.

What's next for Industry 4.0?

The dismantling of globalization was never going to be easy. While X-Shoring may be the answer for some, it is by no means a panacea despite its growing popularity over the past decade.

Manufacturing sector operators implementing an X-Shoring strategy will drive local/regional employment and contribute to domestic economic growth, encouraging diversification and exploring alternative markets to de-risk production capacity and material supplies should another global supply chain crisis occur again in Asia.

A contrasting perspective has also emerged that suggests a careful balance is required, and that governments and companies need to responsibly consider the big-picture impact of onshoring multi-market manufacturing operations. Not doing so has led to accusations of protectionism and further exacerbated current trade tensions and geopolitical divides. There is also the risk of creating pockets of unemployment and economic decline.

The road to 2030: A step change for the manufacturing sector, globally?

Buoyed by technological advances, spurred into geographical relocation to rebalance post-pandemic, what will the near future manufacturing landscape look like?

Industry 4.0 in the post-pandemic era will increasingly bring products and customers together in a more streamlined and dependable manner, with manufacturing companies holding more control over capacity, speed and quality of output. This transformation is happening right now—and picking up pace—accelerated by the growing opportunity and normalization of X-Shoring.

One thing is for sure: change has become the new stability, and agility and a willingness to adapt and evolve will be essential for manufacturing operators for the foreseeable future.

Citations

[1] Industry 4.0 is here - is your company ready? Croft Filters.

[2] Gartner: Future of supply chains survey 2020 - resilience, agility, sustainability and technology.

[3] Thomasnet.com: Manufacturer response to COVID-19 disruptions - increased Interest in automation and reshoring.

[4] BCI Global: Global Reshoring and Footprint Strategy.pdf

[5] Reuters Events: Can Poland become the beating heart of European manufacturing?

[6] McKinsey: How the pandemic transformed digital manufacturing - and vice versa (January 2021).

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