



Small Manufacturers Eying the Industry 4.0 Transformation

Industry 4.0 is thought of as an event that applies to large manufacturers because it includes stepping into the realm of sophisticated technologies like AI and IoT. The truth is that Industry 4.0 is as valuable to small businesses as it is to large global corporations.

Research Industry 4.0, and inevitably prestigious corporate names appear as leaders in applying sophisticated technologies like Artificial Intelligence (AI) and augmented reality. It is difficult to find the names of small manufacturers included on the list for many reasons, such as a lack of understanding of its importance and its advantages for a competitive future. Small manufacturers that integrate Industry 4.0 technology into their operations and supply chains can attract new corporate clients by offering them what they need in data, operating efficiencies and innovation. There are challenges to overcome, including adopting a new perspective on technology's potential impact and having the resources to invest, but as technologies become more affordable, small manufacturers are taking their first steps towards joining the Industry 4.0 transformation.

Connecting Small Manufacturers to Industry 4.0

Small businesses are the backbone of the U.S. economy. It has been that way for decades and will remain so in the future. The events of 2020 that included a pandemic and social unrest re-emphasized the importance of maintaining a vibrant, innovative economy that creates new jobs and economic growth in diverse disadvantaged communities. As technology continues to march forward, the new challenge for small manufacturers is embracing Industry 4.0 – a trend that large manufacturers are already invested in.

There are many challenges small businesses must overcome that larger businesses do not. In fact, a focus group discussed the challenges in a report published by Palgrave Macmillan - "Industry 4.0 for SMEs – Challenges, Opportunities and Requirements." Six barrier categories to Industry 4.0 implementation by SMEs were identified: economic/financial, cultural, competencies/resources, legal, technical, and implementation process. Each of these barriers has a subset of challenges, like acceptance of employees, lack of technical knowledge and recognizing the ROI of technologies.

Industry 4.0 is a catch-all term that refers to the automation and real-time data exchange in manufacturing technologies. That sounds simple enough, but the technology trend includes highly complex technologies like the Internet of Things, cognitive computing, blockchain, Artificial Intelligence and cloud computing. Industry 4.0 is a transformation process for manufacturing and industrial practices.



This can be overwhelming for a small business, yet successfully joining Industry 4.0 can equate to being able to do business with medium and large-sized corporations that would be out of reach otherwise, and that in turn would promote the growth in local jobs and economic improvement of local communities. By thinking expansively, Industry 4.0 can become an economic engine for local disadvantaged communities and communities of color by identifying, assessing and scaling the enabling technologies to improve productivity, efficiency, agility, adaptability, speed, reliability, and quality. This sounds like a tall order, but the first thing needed is a change in mindset.

Not Just for the Big Companies

Say the words “Artificial Intelligence,” and the companies that first come to mind are manufacturers like Ford, Procter & Gamble, Unilever, and General Electric. These companies have huge R&D and technology budgets and highly tech-skilled workforces. They can reach out to suppliers on a global basis, putting small manufacturers in local communities at a competitive disadvantage. Something has changed, though after a tumultuous 2020. Corporate procurement operations discovered that local suppliers should be in the supply chain, along with the global suppliers, for two reasons. One is that a mix of sizes and locations of suppliers lowers the risk of supply disruptions. Another reason is that a critical principle of Corporate Social Responsibility (CSR) is helping diverse people and businesses achieve economic and social equality.

However, small manufacturers must step up and embrace Industry 4.0 to compete for new business fully. One of the first challenges to overcome is a perspective that says producing a steady supply of a quality product is enough and learning how to use complex technologies is not necessary if production is humming along. They do not have a digital mindset, a first requirement for joining Industry 4.0.

Without new technologies, Tier 3 suppliers will not be able to land new contracts in the future or move up corporate supply chains. Corporate buyers are willing to do business with small suppliers, but that does not mean they are willing to give up things like supplier efficiencies, data, interconnectivity and innovation to do business locally. They are also less likely today to have the patience to nurture small manufacturers in technology utilization when they can go global and find suppliers that can provide what is expected in terms of data, linkages, interconnectivity, tracking and innovations in product and services designs.

The message is this: Industry 4.0 is not just for big manufacturers. It is for all sizes of manufacturers.

Beyond Being Overwhelmed by Technology.

Recognizing the technologies of Industry 4.0 is critical to small business competitiveness, which in turn promotes social and economic equality; how can it be implemented in small businesses? The challenges include changing the organization’s culture and operating model, selecting the ideal technologies and developing a skilled workforce. Though these seem almost insurmountable and disruptive, the transition to Industry 4.0 is manageable when approached step-by-step.



Investing in technologies like AI, virtual reality, cloud, and data collection and storage is a major decision but not because of price. The new technologies are much more affordable than they were just a few years ago, so the mindset for transformation should move to the next step, which is selecting a technology to overlay current operations. Data collection and analytics in the cloud is a good place to start. It does not require buying new manufacturing equipment in many cases because tech companies can add data collection devices to existing equipment in many cases. Add technologies on an incremental basis with an eye towards selecting those essential to staying competitive and in business. They include technologies like the Internet of things and human-robot collaboration, smart logistics, digitization of quality control, and at some point, AI.

Developing a formal action plan and utilizing expert solutions consultants can help a small manufacturer overcome barriers to joining Industry 4.0. Some reach out to corporate procurement professionals to seek advice that lets them know they can look closer at home to meet CSR goals that include increasing local community economic growth.