Supporting Digitalization of SMEs: The Key to Supply Chain Resilience, Sustainability and Competitiveness

STRATEGY PAPER

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Foreword

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Global industrial leaders regardless of sector are consistently trying to answer the same three questions:

1. *How can I make my operations more resilient?*
2. *How can I make my organization more sustainable?*
3. *How can I make my organization more competitive?*

Resilience, sustainability and competitiveness are the three driving forces that are collectively defining the strategies of nearly every company that makes a product, moves a product or enables the production and/or movement of products. But while these questions may span industry silos, each sector and each company faces unique challenges and circumstances when trying to answer these questions. It is for this reason that in 2024 the World Economic Forum's global Community of Chief Operating, Supply Chain and Procurement Officers decided to focus our collective attention on defining the potential levers that could span industrial sectors to help answer these questions.

Before looking outward and making suggestions as to what others should do, our COO/CSCO/CPO community began the conversation by asking one another those same questions to understand what we were each doing and where bottlenecks to progress existed. What we found consistently across the community (which spans 17 industry

sectors) is that everyone is significantly investing in the scaled roll-out of technology solutions for advanced manufacturing and supply chain management.

A consistent bottleneck also emerged from the discussions: while large industrial players are investing in new technologies, achieving our aims requires the entire production ecosystem to move together, and our suppliers – who are very often small- and medium-sized enterprises (SMEs) – are not investing in new technologies at the same rate. In a world where, despite increasing geopolitical tensions, global value chains remain deeply interconnected, the slower pace of technology adoption among SME suppliers is impacting the entire ecosystem's ability to be more resilient, sustainable and competitive.

It is essential to note that while this bottleneck exists, SMEs are adopting new technologies at a slower pace not because of a lack of desire or failure to understand what is needed for the future of production, but more often because of capital and logistical limitations that are intrinsic to any small company. After all, when your focus is solely on trying to grow your business under tight economic constraints, meeting payroll and keeping the lights on, long-term and capital-intensive investments (rightfully) feel like a luxury and not a necessity.

With that said, when 90% of businesses in the world fall into the SME category, many of which are critical suppliers for large multinationals, industrial ecosystems will never reach their resilience, sustainability and competitiveness ambitions if we cannot find new and expanded ways to support SME suppliers on their digital transformation journeys.

But how?

Like most of the world's challenges, answering this will require concrete and collaborative action from both public and private sector players. But that doesn't mean we need to reinvent the wheel. By mapping the critical characteristics of existing company- and government-led efforts to support suppliers, identifying gaps in existing programmes and making recommendations to address those gaps, this paper – developed by the World Economic Forum's global Community of Chief Operating, Supply Chain and Procurement Officers – provides a strategic framework to guide the expansion of support programmes for SME digitalization so that we might help close the industrial digital divide for SMEs, thereby enabling production ecosystems to strengthen their resilience, sustainability and competitiveness.

A framework for supporting digitalization in SMEs

For industry to achieve its long-term resilience, sustainability and competitiveness goals, public- and private-sector leaders must significantly increase support to small- and medium-sized enterprises (SMEs) – which are often key suppliers in global industrial value chains – to accelerate their adoption of advanced manufacturing and supply chain technologies.

This framework, developed by the World Economic Forum's global Community of Chief Operating, Supply Chain and Procurement Officers, outlines critical aspects of both company- and government-led programmes, identifies gaps in existing programmes and provides recommendations to strengthen them.

Five critical aspects of company-led programmes to support SME digitalization

1. *Supplier training and capacity building*

   - **Workshops, seminars and on-site training**
     Large industrial companies organize workshops, seminars and supplier summits to educate suppliers on advanced manufacturing techniques and supply chain solutions. On-site training ensures that SMEs receive hands-on experience tailored to their specific operational contexts, fostering practical knowledge and skills.

   - **Joint problem-solving and knowledge-sharing sessions**
     Collaborative sessions allow SMEs to work directly with the larger company's experts to address challenges and identify improvements. These exchanges not only solve immediate problems but also build long-term capabilities with shared expertise and experience.

2. *Access to technology and innovation resources*

   - **Voluntary technology transfer**
     Larger companies can work with SMEs – through voluntary licensing or other voluntary tech transfer activities where appropriate – to help suppliers adopt advanced solutions more efficiently, which can accelerate innovation and ensure that suppliers can meet performance and quality expectations.

   - **Providing access to cutting-edge machinery or software**
     By granting SMEs access to advanced machinery, tools or software, industry leaders enable suppliers to experiment with and implement state-of-the-art solutions without bearing the full cost of acquisition. This support reduces financial risk while fostering technological progress.

   - **Innovation hubs and R&D collaborations**
     Suppliers are encouraged to participate in innovation hubs or collaborate on R&D projects, often hosted by the larger company. These hubs act as testing grounds for new ideas and promote co-development of technologies that benefit both parties.

3. *Financial support and incentives*

   - **Financial grants and loan co-signing**
     Larger companies offer financial grants or co-sign loans to help suppliers fund the adoption of advanced technologies. This reduces financial barriers and enables suppliers to invest in essential tools and processes.

   - **Co-investment in specific projects**
     Through co-investment initiatives, larger companies share the costs of implementing advanced manufacturing projects. These partnerships minimize risks for SMEs and align investments with mutually beneficial goals.

4. *Standardization and technology alignment*

   – **Setting technology standards**
   Industrial leaders establish clear technology standards to guide their suppliers in adopting compatible and efficient systems. These standards help create a seamless supply chain by ensuring consistency across all participants.

   – **Support to integrate technologies**
   Larger companies provide hands-on assistance to suppliers in integrating new technologies into their existing operations. This support ensures smooth transitions and minimizes disruptions in productivity.

   – **Support to achieve compliance with global manufacturing standards**
   Suppliers receive guidance and resources to meet international manufacturing standards, such as ISO certifications. Compliance enhances suppliers' competitiveness in global markets and strengthens the overall supply chain.

5. *Collaborative relationships and long-term partnerships*

   – **Long-term collaboration agreements**
   Long-term agreements provide stability and confidence to suppliers, encouraging them to invest in advanced solutions. These partnerships foster mutual growth and innovation over time.

   – **Joint innovation projects**
   Collaborating on innovation projects allows suppliers and larger companies to develop cutting-edge solutions together. These projects benefit from shared resources and expertise, producing results that neither party could achieve independently.

– **Continuous supplier performance evaluations coupled with feedback and support**
Regular performance assessments, paired with constructive feedback and tailored support, help suppliers continuously improve. This iterative process strengthens the supply chain and ensures that suppliers remain competitive and aligned with the larger company's goals.

Five critical aspects of government-led programmes to support SME digitalization

1. *Financial incentives/support*

   – **Grants, loans and tax incentives**
   Government programmes provide financial support through grants to offset the initial investment in advanced manufacturing technologies, loans with favourable terms to reduce financial strain, and tax incentives to encourage adoption. These measures aim to lower barriers to entry for SMEs, enabling them to compete effectively in a tech-driven landscape. Some banking institutions are also beginning to leverage internet of things (IoT) data to more accurately build risk/performance profiles for borrowers to make loans more affordable for them.

2. *Technical assistance*

   – **Consultancy on technology selection**
   Specialized consultancy services guide SMEs in evaluating and selecting the most suitable advanced manufacturing and supply chain solutions. By providing expertise in technology options and implementation strategies, these services help businesses avoid costly mistakes and ensure efficient resource allocation.

   – **Training and capacity building**
   Training programmes are designed to upskill employees and management teams

in the use and integration of advanced technologies. These initiatives ensure that the workforce is equipped with the knowledge and skills necessary to operate new systems effectively and sustain long-term benefits. A key aspect of many of these programmes is benchmarking, which allows companies to understand areas for improvement as well as development timelines.

- **Innovation hubs and R&D collaborations**
  Innovation hubs serve as shared spaces for experimentation and development, where SMEs can test new technologies without incurring high upfront costs. Collaborations with research institutes and universities foster innovation and provide SMEs access to cutting-edge research and development (R&D) opportunities.

- **Industrial technology policies**
  Digital strategies and governance mechanisms provide frameworks and standards to facilitate quick adoption of new technologies (e.g. AI and automation). By investing in open APIs (application programming interfaces) and a comprehensive digital backbone, it is possible to accelerate technology adoption and significantly lower the cost of data transmission for SMEs.

3. *Collaborative networks and partnerships*

   - **Facilitating ecosystem collaboration across academic institutions, research agencies and the private sector**
     Government programmes encourage the creation of collaborative ecosystems by connecting SMEs with universities, research institutions and private-sector partners. These partnerships promote knowledge exchange, accelerate innovation and provide SMEs with the expertise and resources needed to adopt and implement advanced manufacturing solutions successfully.

4. *Education programmes focused on Fourth Industrial Revolution technologies*

   - **Investment in and expansion of technical and trade school programmes**
     Successful programmes aim to integrate early education programmes all the way through trade schools, technical schools, community colleges and universities to ensure a pipeline of talent both interested in manufacturing and with the technical capacity to meet the needs of emerging roles.

   - **Demonstration of return on investment (ROI) of relevant technologies**
     Education programmes focus on demonstrating the tangible benefits of Industry 4.0 technologies, such as improved efficiency, reduced costs and increased competitiveness. By illustrating the return on investment (ROI), these initiatives help SMEs make informed decisions about integrating technologies into their operations.

   - **Business model transformation necessary to maximize Industry 4.0 technologies**
     Workshops and courses emphasize the need for SMEs to adapt their business models to fully leverage Industry 4.0 technologies. This includes rethinking workflows, embracing data-driven decision-making, and adopting customer-centric approaches to maximize the value of new technologies.

5. *SME-friendly programme design and accessibility*

   - **Streamlined application processes**
     Programmes are designed with simple, user-friendly application procedures to reduce administrative burdens on SMEs. This ensures that small businesses can easily access support without diverting significant resources from their core operations.

   - **Flexible eligibility criteria**
     Eligibility requirements are tailored to accommodate the diverse nature of SMEs,

ensuring businesses of varying sizes and industries can benefit. This flexibility helps ensure that support reaches those who need it most by not being overly restrictive of the structure of applying entities.

- **Tailored support programmes**
  Support initiatives are customized to meet the unique needs of individual SMEs, such as sector-specific challenges or differing levels of technological readiness. This ensures that each manufacturer receives relevant assistance to achieve meaningful results.

Five gaps in existing programmes, and recommendations to address them

Gap 1: *SMEs still face significant knowledge and skill gaps in managing transformation programmes and operating advanced technologies.*

- **Recommendation**: SMEs require sustained support. Larger, more experienced companies need to scale their knowledge-sharing activities, while collaborating with government programmes and local technical/trade schools to ensure SME suppliers have a network to continuously expand their knowledge base.

Gap 2: *SMEs still find it challenging to build a clear business case for technology investment and/or access or fully utilize financial support programmes due to complex eligibility requirements, inadequate capital or fear of financial risk.*

- **Recommendation**: Business case metrics need to be shared more openly; and governments and banks must design flexible and more accessible financial solutions that are tailored to the specific needs of SMEs – e.g. they can scale co-financing opportunities, simplify application processes, provide application advisory services and offer innovative finance/repayment options.

Gap 3: *Lack of sustained support after initial stages of tech adoption programmes*.

- **Recommendation**: Enhance long-term support and post-adoption assistance programmes – e.g. post-implementation troubleshooting/consulting services, maintenance support networks and peer-learning platforms – by developing programmes with industry associations, industrial clusters, etc. already serving these communities.

Gap 4: *SMEs in underserved regions find it difficult to access cutting-edge technologies, innovation hubs and collaboration networks.*

- **Recommendation**: Leverage regional industry clusters and digital collaboration platforms to make it easier for SMEs to tap into global innovation networks. It is also essential to ensure knowledge of, and access to, existing programmes of the United Nations (e.g. the United Nations Development Programme) and other non-governmental organizations.

Gap 5: *Lack of alignment or collaboration between government programmes and programmes led by corporations.*

- **Recommendation**: Strengthen public-private partnerships to align incentives for digitalization. The aim should not be deployment, rather leveraging complementarities and synergies across public and private programmes that demonstrate lean improvement.

Conclusion

Resilient, sustainable and competitive production ecosystems don't just happen – they are designed. Advanced manufacturing and supply chain technologies are reshaping these ecosystems, but if the world is to realize the potential these technologies can enable, it is essential to find ways to make continuous digital transformation accessible and common practice for manufacturing and supply chain stakeholders of all sizes.

The World Economic Forum's Community of Chief Operating, Supply Chain and Procurement Officers, in collaboration with the Forum's Centre for Advanced Manufacturing and Supply Chains, will activate their respective networks and media reach to maximize the dissemination of the lessons identified in this paper, and will look for partners from both public and private sector stakeholders to further refine and implement the recommendations.

SMEs are pivotal to any economic ecosystem. It is imperative to address the growing industrial digital divide to empower smaller suppliers and thereby enable greater resilience, sustainability and competitiveness for global production systems.

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