

WHITE PAPER

The strategic benefits of outsourcing manufacturing

flex

Executive summary

Unprecedented global changes are driving a new era of manufacturing complexity for brands across diverse markets. These include:



The digitization of everything

Smarter products in every industry result in manufacturing complexities that require advanced capabilities and expertise



Supply chain uncertainty

Ongoing global disruptions and complexities necessitate global scale and regionalized sourcing, operations, and delivery to mitigate risk



Sustainability requirements

Heightened urgency to address climate change and advance ethical business practices is increasing accountability from sourcing to product end-of-life

As a result, brands now require a diverse set of capabilities, scale, agility, and expertise to ensure business continuity and long-term success. For brands that historically managed the [end-to-end product lifecycle](#) in-house—from design to production to fulfillment and even after-market—outsourcing can expand access to a broader and deeper set of capabilities that deliver new forms of value. This also includes a large network of operations with advanced technologies and full product lifecycle services provided by an established, global manufacturing partner that can improve productivity, quality, efficiency, resiliency, and competitiveness. In this paper, we look at the competitive advantages brands gain when they engage with a manufacturing and supply chain partner like Flex. We discuss how brands can:

- **Tap into [advanced technologies and expertise](#), accelerate time-to-market, reduce costs, and improve quality** by working with a market-leading partner with deep manufacturing investments and a proven track record of quality innovation.
- **Quickly ramp and scale production and improve agility and resiliency** in collaborating with a manufacturer with global network, regional reach, and a [supply chain](#) with digital tools and capabilities.
- **Focus on core competencies and realize greater innovation** through working with established partners with [cross industry expertise](#), including in segments that require high reliability, compliance, and quality standards.
- **Reduce risk and a product's environmental impact** through responsible manufacturing practices as [sustainability](#) becomes more important to stakeholders and brands alike.



Introduction

As products become increasingly complex to produce, supply chains weather instability and disruptions, and sustainability becomes more crucial to both investors and end users, brands must seek different ways to reduce risk and become more adaptable, resilient, and agile to meet ever-shifting demands.

According to McKinsey & Company, “(t)he world has changed for manufacturers. Preparation for uncertainty has become an industry norm, with executives expecting the impact of disruption—whether from geopolitical tensions, climate change effects, technology breakthroughs, or supply chain vulnerabilities.”¹

Heightened pressures, fast-moving technological shifts, and global dynamics mean that in today’s world, there is no room for error in manufacturing—any mistakes or delays will cost time and money, potentially making the difference between a business that thrives and one that fails. For many brands, the challenge is understanding how to best allocate resources to quickly scale production and speed time-to-market without sacrificing quality.

Optimizing manufacturing with advanced technologies

Deloitte’s 2024 Manufacturing Industry Outlook discusses how crucial it is for brands to embrace digital transformations and advanced manufacturing technologies, stating that “The potential benefits of smart factories are vast—ranging from gains in asset efficiency, labor productivity, and product quality to substantial cost reduction, along with the advancement of the cause of safety and sustainability.”²

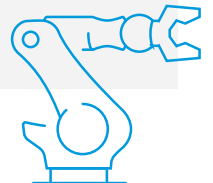
By tapping into advanced technologies and expertise, brands can accelerate time-to-market, reduce costs, and improve quality. However, undergoing a digital transformation often requires deep manufacturing investments, specialized skills, and a steep learning curve for the workforce.

Many brands do not have the full range of the required technologies, processes, and experts readily available in-house. In these cases, the right manufacturing partner—one that has already made these deep investments—can share skillsets and best practices from experience, making it easier, faster, and less costly to optimize manufacturing.

A global, end-to-end manufacturing partner like Flex has the right mix of technologies, expertise, and a trained workforce ready to go. As artificial intelligence and other advancements drive transformational shifts in the business landscape, it’s crucial for brands to adapt and move quickly, whether that means being able to iterate on product designs faster, anticipate growing power consumption requirements, or deploy more sustainable manufacturing practices.

Some of the areas where brands can reap the benefits of a focused portfolio of advanced manufacturing technologies include:

- **Simulation:** Makes it possible to visualize the product lifecycle, accelerate decision-making, discover flaws, and improve efficiency through advanced simulation and modeling techniques
- **Automation and robotics:** Can automate repetitive tasks with customized smart automation processes
- **Digitization:** Provides real-time data and insights with advanced analytics and machine learning



¹ <https://www.mckinsey.com/capabilities/operations/our-insights/adopting-ai-at-speed-and-scale-the-4ir-push-to-stay-competitive>

² <https://www2.deloitte.com/us/en/insights/industry/manufacturing/manufacturing-industry-outlook.html>

Accelerating time-to-market while reducing supply chain risk

An **energy technology company** came to Flex seeking to accelerate time-to-market in new regional markets with improved manufacturing quality and reduced business risk.

Partnering closely with the customer, we optimized production by integrating solutions that included **PCBA**, custom **plastics**, custom **metals**, and **automated product assembly** and testing. We also provided comprehensive supply chain services, including regionalized supply chains in Asia and North America, as well as forward logistics in the U.S., Europe, and China. Throughout, we supported the customer with issues pertaining to trade and compliance, tax, legal, logistics, and account management to ensure long-term business success in any region.

As a result, the customer was able to:

Expand sales

into 61 countries while improving stock price threefold

Improve quality

resulting in 99.7% product yield

Confidently manage

25% of quarterly demand variation

Extend

their warranty service

Achieve

significant savings in import costs

Scaling production and improving resiliency with global scale and regional reach

Another benefit to outsourcing is being able to tap into a manufacturing partner's broader scale and reach—which empowers brands to quickly adapt to shifting forecasts and scale up or down across one or many global sites— as well as a supply chain with robust capabilities and digital tools to support improved decision-making. This is necessary in a climate where supply chain challenges have arisen from increases in labor cost, geopolitical instability, tariffs, natural disasters, components, and other factors.

A survey of supply chain leaders found that disruption has reshaped almost every supply chain, with 97% of respondents stating that they have already introduced new measures—including inventory increases, dual sourcing, and regionalization—to support business continuity and boost resilience.³

Moreover, with 80% of customers citing sustainability reasons when they change purchase preferences⁴, and investors are becoming increasingly interested in how brands are reducing their environmental footprint. Shorter and more sustainable regional supply chains are even more attractive and can make a company more competitive in the long run.

Engaging a manufacturing partner with a global, diverse supply chain network can empower brands to determine a regionalization strategy that allows for flexible sourcing and the building of products in strategic regions close to their end market. When disruptions occur, brands that have chosen a partner with greater global scale and regional reach can adapt, rapidly shifting production to other locations around the world as demand shifts, geopolitical situations evolve, or regulations change.



³ <https://www.mckinsey.com/capabilities/operations/our-insights/taking-the-pulse-of-shifting-supply-chains>

⁴ <https://www.bain.com/insights/how-to-talk-to-consumers-about-sustainability-infographic/>

In one case, Flex worked with a provider of complex capital equipment to optimize their supply chain. We were able to develop a highly complex configure-to-order product with a ~560,000 part count, and to help the customer confidently manage a supply chain of 700 unique suppliers.

The other key to supply chain resiliency and improved planning is having the digital tools and network in place to capture real-time data and insights. In their Supply Chain 2024 report, S&P Global stated that its research “found examples of firms that have saved millions of dollars in logistics costs through systems consolidation, centralized planning and improved visibility.”⁵ However, the same report cautioned that “delivering successful technological improvements through the supply chain is highly complex, with long lead times and organizational changes required.”

For brands seeking to move faster while reducing risk, a manufacturing partner with advanced digital tools can provide the visualized data landscape required to properly evaluate, manage, and make informed decisions.

Supply chain network design and optimization

We worked with a customer with centralized manufacturing in Asia for highly complex product and assembly processes who needed to reduce excess inventory in U.S. hubs while mitigating tariffs and outbound freight costs.

With **SimFlex**, our proprietary advanced supply chain and network design modeling platform, we analyzed the customer’s supply chain and developed a three-step plan over a two-year time frame that included a second manufacturing site for the non-U.S. market, vertically integrated manufacturing for mechanical parts, and a centralized in-region hub for inventory and storage.

As a result, the customer was able to:

- Reduce total cost of ownership by 7% in step one and by 11.5% in step two
- Speed time-to-market with a three-week reduction of supply chain lead time
- Reduce emissions by 30%
- Increase inventory turnovers from two to five



⁵ <https://www.spglobal.com/en/research-insights/featured/special-editorial/look-forward/look-forward-volume-2-2024>



Tapping into deep domain expertise and experience

Outsourcing goes beyond moving production lines away from in-house manufacturing. It enables brands to focus on their core competencies and realize greater innovation through working with established partners that bring deep domain expertise and experience across diverse industries.

In today's rapidly evolving business landscape, remaining innovative and competitive requires greater agility, cross-industry knowledge, and technical expertise than ever before.

As products in every industry become more complex—from advanced power and compute in cars to auto-injecting medical devices and smart home appliances—brands can strengthen their competitive position by engaging a manufacturing partner with existing expertise in user-centered product design and engineering, as well as the latest manufacturing technologies and techniques required to build and deliver products requiring the highest levels of durability with the quality to meet the most stringent safety standards and regulations.

Flex's areas of domain and technology expertise include (but are not limited to):

- **Human-machine interface (HMI)** technologies that enable products as diverse as cars, security systems, and smartphones to intuitively respond and interact with the user.
- An integrated **Internet-of-Things (IoT)** strategy, that could include rapid IoT development and end-to-end IoT management through a secure, reliable core platform that can quickly trigger action across connected devices.
- **Sensor fusion technology** that captures, synchronizes, and processes data in real-time to provide more intelligence and improve the user experience.

In one example, a customer came to Flex with a home appliance that was producing noise that negatively impacted the customer experience. Our audio team's expertise and technology allowed us to simulate structural changes to the product's design and noise-cancelling capabilities. This resulted in a 10-decibel reduction in the product's noise level, and we went further in our due diligence to simulate the supply chain so that the customer understood any potential supply risks associated with the changes.

Additionally, as consumers come to expect products that are smarter and more connected, brands can benefit from a broader range of capabilities and perspectives across different industries. We see this in the significant advantages medical product companies gain from partnering with global manufacturers that offer end-to-end capabilities and insights across other industries. Flex is currently helping wearable medical device customers adopt best practices, technologies, and processes from the consumer industry to deliver products to market faster to meet rapidly growing demand.

Leveraging domain expertise in wearable medical devices

A medical device company needed to develop a wearable electrocardiogram (ECG) tracker with integration of different measurement sensors. Flex provided compliance device design services, leveraging domain and cross-industry expertise to develop the system, electronics, software, and mechanics.

The final design included technologies that Flex had expertise in, including PCBA, custom Bluetooth antenna, and biocompatible materials. Additionally, we provided support for mold design, verification, and validation, which meant that the customer did not have to overcome the learning curve for various complex technologies and manufacturing methods on their own.

As a result, the customer was able to:

Develop units that were verified and approved for functionality with their custom sensors

Integrate operational wireless communication for the wearable device

Improve user experience and comfort while lowering manufacturing costs

Reducing risk and a product's environmental impact

The benefits and urgency of prioritizing sustainability are myriad, as consumers, investors, and regulatory agencies hold the brands they support to a higher standard. But brands may struggle with the learning curve and investments required to achieve responsible sourcing, design, manufacturing, fulfillment, and after-market services.

In these cases, it can be prudent to work with a partner with a track record of responsible manufacturing practices and capabilities. As a report from Gartner states, sustainability will continue to be a rising area of focus, with “organizations... making aggressive and strategic sustainability goals to improve their brand reputation, ensure regulatory compliance and improve resource efficiencies.”⁶

A manufacturing partner like Flex can help brands find innovative solutions to extend their product lifecycles. Our customers benefit from various integrated reverse logistics and circular economy services that are supported by intelligent reporting and measurement tools, knowledge of compliance regulations, and a global and regional presence. These benefits include:

- Quantification of how circular interventions can reduce emissions and drive resource productivity through **sustainability analytics tools**
- Enhanced customer experience, returns visibility, and maximized value recovery through a trusted **reverse logistics, returns, and screening process**
- The ability to maintain products and prolong their lifecycle through configurable and scalable **repair and refurbishment services**
- Valuable metals and components harvesting to enable spare parts logistics and product reuse for new revenue streams while contributing to a zero-landfill strategy through **asset recovery, resale, and reuse**

⁶ <https://emtemp.gcom.cloud/ngw/globalassets/en/doc/documents/744756-sustainability-a-customer-priority-and-provider-imperative.pdf>

Advancing sustainability through circular economy

Flex worked with a leader in the floor care space to develop an aftermarket solution to support retail, consumer, and distribution product returns in the U.S. and Europe.

Our circular economy solutions for the customer consisted of:

- Re-routing defective units from the customer's end-consumers to post-sale service facilities in Juarez, Mexico, and Budapest, Hungary
- Facilitating an end-to-end solution that included returns management, warranty validation, spare parts planning, product screening, testing, parts harvesting, and refurbishment
- Providing calculations to measure environmental impact reduction from the implementation of circular solutions
- Overhauling operations by introducing repair, harvesting, recycling, and reselling opportunities

This helped our customer further embrace sustainability practices while lengthening the lifespan of their products at scale.



Conclusion

Strategic outsourcing provides myriad benefits, from time-to-market to sustainability.

Ultimately, working with the right manufacturing partner can alleviate the burden on brands by offering a broad set of manufacturing solutions and services that enable them to:

- Tap into advanced technologies and expertise, accelerate time-to-market, optimize costs, reduce risk, and improve quality by working with a partner with deep manufacturing investments.
- Quickly ramp and scale production and improve agility, and resiliency in collaborating with a manufacturer with global network, regional reach, and a supply chain with digital tools and capabilities.
- Focus on core competencies and realize greater innovation with established partners with cross-industry expertise, including in segments that require high reliability, compliance, and quality standards.
- Reduce risk and a product's environmental impact through responsible manufacturing practices as sustainability becomes more important to stakeholders and brands alike.

By engaging a partner with decades of experience and investments in advanced manufacturing technologies, supply chain networks, and sustainability practices and research, brands can get to market faster. Tapping into a partner's expertise helps answer difficult questions, like the best place to manufacture a product, how to incorporate the most sustainable materials and optimize next-generation products for disassembly and reuse, how to identify the most sustainable supply chain decisions, and which technologies will create the greatest competitive edge.

About Flex

Flex is the manufacturing partner of choice that helps a diverse customer base design and build products that improve the world. Through the collective strength of a global workforce across 30 countries and responsible, sustainable operations, Flex delivers technology innovation, supply chain, and manufacturing solutions to diverse industries and end markets.

Let's work together to create the extraordinary

Contact us today to discuss how we can partner to make products that create value and improve lives.



For more information, visit flex.com/connect

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