

Why aftermarket and service are vital to OEMs—and how to excel

A comprehensive approach, supported by a strong enabling organization, can help B2B industrial manufacturers tap into the value of aftermarket and service.

Simone Vesco



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Introduction

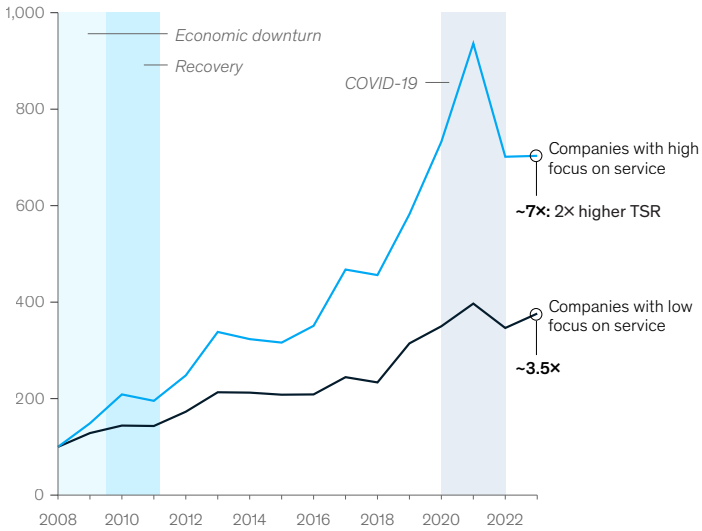
Whether manufacturers serve consumers, other businesses, or governments, the aftermarket and service matter. For many OEMs, what began as a relatively unsophisticated side business selling spare parts now contributes to a majority of their margins: these can be up to four times as high as they are for new units. This pattern is evident among top market performers, as companies that have excelled in the aftermarket and service have been strongly rewarded over the past 15 years, with double the TSR of companies that don't focus on service (Exhibit 1).

The importance of aftermarket and service has been more differentiating and acute amid recent economic conditions, in which uncertainty, high inflation, and high interest rates have pushed many companies to postpone capital investments. Generally, capital expenditures are higher when investing in new production lines compared with aftermarket and service, such as maintenance or upgrades to the existing installed base. At the same time, the increasing prevalence of firmware-driven updates across industries has further reduced the usual need for up-front capital investment required for aftermarket and service, while also limiting disruptions to activities such as manufacturing. Consequently, companies facing budget constraints may prioritize spending on aftermarket and service purchases over investing in new units, thereby increasing the importance of aftermarket and service in their overall revenue-generation strategy.

Despite its commercial and strategic value, aftermarket and service are often largely untapped. Service excellence—defined as an ongoing commitment to providing customers with outstanding and relevant support and services well beyond the initial sale—can help.

Total shareholder returns are higher for B2B services companies that focus on the aftermarket.

Cumulative TSR for companies, index (2008 = 100)



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In part 1 of this report, we offer a five-part framework for how to divide the offerings for the aftermarket and service journey, from idea to payment:

1. **Innovation-to-market stage.** This spans the development process and ends with launching an offering into the market.
2. **Market-to-order stage.** This covers the process from business development to the completion of a customer's order.
3. **Order-to-delivery stage.** This spans procurement, manufacturing, and product delivery.

4. *Delivery-to-cash stage.* This completes the journey, with credit management that smooths the flow of payments from customers to manufacturers.
5. *Enabling factors.* These ensure the success of the overall approach.

In each part of the framework, we delve into the factors that OEMs should consider then discuss the emerging trends and innovations in the field. For more on the methodology that informed this framework, see sidebar, “About the research.”

At the same time, companies that lack a strategic vision for their aftermarket and service businesses often struggle to earn acceptable returns on the substantial up-front investments required. To lay a successful path for ROI in aftermarket and service, leading OEMs use their aftermarket offerings to expand while forging deeper relationships with customers and making their products work better—to achieve, for example, higher throughput, less consumption, and so forth. In part 2, we overview the trends executives are prioritizing in this effort or might consider if they have not yet done so.

This white paper brings together the best of McKinsey’s published thinking on OEMs’ aftermarket and service, with a focus on B2B companies. Drawing on the latest and most relevant news and trends and brought to life with real examples, this report aims to be a catalyst for new, energizing ideas. It is intended for a broad audience, from CXOs to those curious about the sector and seeking an end-to-end view.

About the research

The perspectives in this report are drawn from a structured assessment of critical business dimensions to analyze company performance along the entire aftermarket

and service value chain. The research involved interviews with practitioners from across functions (such as quality, procurement, and sales).

Part 1

Service excellence

Three decades ago, the typical aftermarket offering for manufacturers was an afterthought—it was reactive and transactional.¹ The aftermarket was typically more of a simple response to customer queries, needs, or events, such as selling spare parts, conducting repairs, or providing training. While B2C manufacturers, particularly in the automotive industry, were early adopters of aftermarket and service strategies, B2B manufacturers have more recently recognized the immense potential and benefits of these offerings, especially in terms of generating stable and recurring revenue streams.

It was a gradual shift, but today B2B manufacturers are becoming true aftermarket partners with their customers—for instance, signing contracts that guarantee operational performance. Some manufacturers are even willing to share risks with customers.² McKinsey research has found that companies with a strong emphasis on becoming aftermarket providers and delivering exceptional service to their customers have achieved twice the TSR compared with their counterparts with a lower focus on service.

The frontier of aftermarket and service innovation features robust use of modern technology such as advanced sensors, big data, and AI to offer predictive maintenance services, manufacturing consulting, and options for boosting productivity. For example, measurement sensors of physical parameters (such as vibrations or temperature) can be used to create comprehensive databases on mechanical systems' state of health, helping predict failure and minimize downtime with predictive maintenance.

¹ A version of this chapter introduction was published in the following article: Simone Vesco, "Aftermarket sales and service are vital to manufacturers' strategies," McKinsey, March 2023.

² For more on OEMs' "right to win" in the aftermarket, see "Selling in the aftermarket: How to win the sales street fight," McKinsey, February 14, 2019.

In rail, a major rolling stock OEM leveraged its digitally-enabled aftermarket service platform to reduce unscheduled maintenance while improving availability. As a result, maintenance costs decreased by 15 percent, an improvement in line with the McKinsey estimate of a potential 15 to 25 percent efficiency gain in the rail sector through predictive maintenance. While this gain does not inherently have to accrue to OEMs, they are well placed to keep customers in their ecosystems by knowing the products best and offering OEM certifications.

Technological developments have also made it possible to offer product features as a service. Some car manufacturers, for example, have developed aftermarket offerings in which they will—through remote activation, for a fee—increase vehicle performance, enable its self-driving capabilities, or sell additional features or subscriptions.

A useful framework for aftermarket companies divides the offering journey into five parts: innovation to market, market to order, order to delivery, and delivery to cash, all of which are supported by a set of commonsense enabling factors.

Part 1 of this report covers each of these stages in turn.

Innovation to market

During product development, an OEM should already have a clear understanding of the role that aftermarket and service will play for the product. This includes, crucially, deciding whether such service would be a source of profitability at all based on product particulars and current customers, plus a range of factors including geographical spread, customer expectations, required investment, and cost to service. Indeed, aftermarket and service should not be viewed as a mandatory strategy to be pursued regardless of circumstances but rather as an additional lever to generate revenue.

For example, a manufacturer of highly durable coffeemakers chose not to offer aftermarket and service because its product's value proposition centered on not requiring such

support or spare parts throughout the product's extended life span. Naturally, such durability is out of reach of many industrial companies, such as aircraft, machinery, or car OEMs, for which aftermarket and service are an essential part of the customer experience. However, the durable coffeemaker's experience is a reminder that a spectrum of approaches to aftermarket and service offerings should be carefully taken into consideration.

Once the decision to move forward with aftermarket and service offerings is made, the innovation-to-market stage begins. Determining the right approach to aftermarket and service requires addressing a couple of critical factors: matching the aftermarket strategy to the product and tailoring services to customer needs.

Matching the aftermarket strategy to the product

Different products will require different aftermarket and service strategies to ensure each strategy matches customers' needs and OEMs' ambitions. For complex products and equipment such as jet engines, turbines, helicopters, and tractors, maintenance contracts can be a significant—or even the main—source of revenue. Properly structured, long-term binding contracts can be mutually beneficial for both customers and OEMs: customers benefit from OEMs' expertise in servicing their own products, which can lead to optimized maintenance costs and pricing models that are directly tied to the equipment's utilization. OEMs are best placed to be a credible long-term aftermarket provider; no one understands these machines better than the original manufacturers.³

Aeroengine manufacturers were pioneers in matching an aftermarket strategy to their original equipment by offering pay-for-use, subscription-like aftermarket care for their engines.⁴ Commercial aeroengines are regularly sold at

³ For more on how to build winning aftermarket strategies, see Harold Brink, Senthil Muthiah, and Shane Rienets, "The winning moves in project-based services," McKinsey, February 6, 2020.

⁴ Filippo Gozzi, Giulia Palombi, Giuletta Poltronieri, and Simone Vesco, "How aerospace and defense players can win in aftermarket services," McKinsey, September 21, 2022.

or below cost for new aircraft orders but with aftermarket maintenance and service contracts based on effective flying hours. This effectively turns capital expenditures into operating expenditures for OEMs and delivers steady and predictable revenues into the future.

Such contracts can be combined with other strategies to defend competitive advantage—such as patented materials, complex parts, or other features that make a machine best serviceable by its original manufacturer and reduce the market share available to other OEMs and service-only companies. However, if product complexity is created solely for the purpose of locking in customers and is not born of genuine product-related requirements, this approach is not mutually beneficial. In such cases, customers might opt for different providers of new units to avoid being locked into a restrictive service model.

It is important not to assume that the goal of an OEM should always be to lock its customers into long-term service contracts and relationships. For example, a small- to medium-size airplane manufacturer, primarily catering to tourists in remote areas of the world, has decided to use commercially available parts for all components requiring regular replacement. The use of widely available parts helps ensure the manufacturer's aircraft can be easily and quickly repaired in remote areas, from Southeast Asia to the Caribbean, where the manufacturer could not provide adequate service on proprietary components. Of course, such an approach strongly limits aftermarket and service revenue, but in this case, it delivers a desirable customer experience. The alternative to this approach is waiting for a replacement part on location or for transportation of the aircraft to the closest OEM service station, meaning the customer might have to wait days or even weeks for an aircraft to re-enter service. This delay and complexity could affect customers' willingness to buy new aircraft from the same OEM in the future.

Geographic footprint is an important strategic factor for OEMs considering aftermarket and service offerings. The business

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case for opening warehouses and service stations all over the world may not be profitable unless there is a sufficient customer base present in the targeted geographies. The above OEM optimizes its geographic footprint by recognizing it cannot provide all necessary servicing in remote areas, instead building planes with commercially available parts for all maintenance-prone components. This ensures that its small planes could easily be repaired in remote areas, where demand for such planes creates strategically important markets.

Tailoring services to customer needs

Having a compelling aftermarket and service offering is a basic requirement of the overall strategy, with customers now requiring solutions tailored to their specific needs. As an example, 56 percent of aerospace and defense executives who responded to a McKinsey survey said their customers expect need-based solutions, and 66 percent said it was a critical element of a service offering (Exhibit 2).⁵

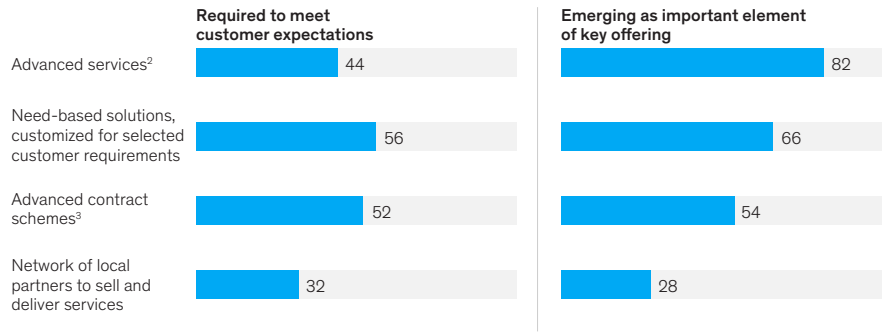
Once company leaders articulate their aftermarket strategies, they can refine their aftermarket offerings to optimize the balance of profitability, market share, and market penetration. One useful approach is to segment parts and products according to their functional and technical characteristics—for instance, whether a part is essentially a commodity, widely available on the market from various suppliers (such as the mirrors for an automotive OEM), or hard to find and mission-critical for customers (such as complex engine components for an automotive OEM).

The strategic approach for each is, obviously, quite different. Focusing on commoditized parts will likely bring lower margins per unit due to higher competition, so OEMs can optimize these offerings by emphasizing high volume and operational efficiency to remain profitable while keeping prices competitive.

⁵ For more on how to win in aftermarket services, see "How aerospace and defense players can win," September 21, 2022.

Aerospace and defense companies are beginning to provide need-based solutions because many customers expect these offerings.

Key elements of a compelling service offering,¹% of respondents (n = 50)



¹Question: "Which of the following are key elements of a compelling service offering?" Respondents were asked to think about what their customers consider to be a compelling offering, as well as what elements are emerging as important components of future offerings.

²For example, health and usage, monitoring systems for predictive maintenance, or virtual trainings and simulations.

³For example, availability- or performance-based.

Source: "How aerospace and defense players can win in aftermarket services," McKinsey, September 21, 2022; McKinsey A&D Service Survey 2022

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Another way to segment parts is to use supply and demand data of parts across products and customers, such as how often customers order a part or product, to determine which products warranted inclusion in the aftermarket and service strategy. These segmentation analyses can be complex and technical, but our experience suggests that the process tends to produce a manageable number of segments that help OEMs identify the right combination of offerings and terms. OEMs often already have the data on hand or can easily establish data collection to better understand trends.

Finally, additional services can help convert parts of an OEM's offering into an "as a service" (aaS) model—without having to completely revolutionize the product. Customers of aaS offerings do not need to ration products and services, and OEMs enjoy a more predictable stream of revenue and can plan capacity accordingly. Some industries, especially the ones dealing with low volumes and high-complexity products, still

lag behind other industries in this area for structural reasons—including long product life cycles and cybersecurity-related constraints—and perceived risks. ButaaS offerings can help companies create significant value and achieve incremental top-line growth of 10 to 25 percent while increasing customer loyalty and satisfaction.⁶

As customers and their needs vary, OEMs must look beyond their own equipment and understand the customer's end-to-end experience. These additional customer insights can inform more comprehensive value-added services.⁷

One automotive OEM expanded its maintenance and repair services by offering tailored insurance policies. The company calculated insurance premiums using existing driving analytics data, eliminating the need to install additional hardware to track key inputs. Although insurance services are traditionally outside the scope of OEMs, the innovative approach unlocked significant margins.

There are additional innovative examples across manufacturing and industrials. For example, an elevator OEM leveraged its maintenance expertise to service competitors' products. Despite strict sector regulations that typically preclude such expanded services, the company established a dedicated reverse engineering division to gain the necessary product knowledge and roll it out to a large field workforce. This strategy enabled the company to realize economics of scale from servicing a higher number of systems, expand its customer base to customers not previously using their products, and ultimately expand cross-selling opportunities across OEM products and aftermarket services. Finally, this virtuous circle also allowed the company to improve its predictive-maintenance solution by collecting more data to train predictive models, enhancing their accuracy and thereby the overall customer experience.

⁶ "How aerospace and defense players can win," September 21, 2022.

⁷ For more on leveraging digital tools and data, see "Five digital and analytics battlegrounds for B2B aftermarket growth," McKinsey, February 17, 2022.

An industrial battery-management company faced a similar situation. Its customers were facing high power-management costs stemming from large battery inventories and the numerous technicians needed for uninterrupted operations. The company implemented an Internet of Things platform enabling two-way communication between the cloud and local sites, providing identity management and insight into all the assets. This system allowed the company to understand the real operating conditions of its installed base and—through automated analyses—offer predictive diagnosis tailored to each asset and client, optimizing the battery lifetime and thus reducing power management costs.

Finally, an industrial-equipment OEM that wanted to enhance revenue from new warranty solutions introduced extended warranties on specific parts. Customers could subscribe to have covered parts replaced or repaired quickly, provided they purchased original spare parts from the OEM. This allowed the company to leverage its knowledge of the customer to forecast part repair and inventory needs while helping secure revenue and share of customer wallet. A crucial element of this approach was identifying the right parts to include in the subscription based on rate of failure and complexity of repair, selecting components that were least prone to failure but also the most complex and expensive to replace. Customers highly value this service because it protects them from major losses; meanwhile, it creates a strong lock-in on original parts at a low cost for OEMs.

Market to order

The market-to-order phase spans the pre-offer period, from prospecting, business development, and scouting to when a client completes an order. OEMs have much to consider in this period, including estimating the commercial potential of aftermarket and service, setting up and using commercial nerve centers, and pricing aftermarket offerings.

Assessing the commercial potential of aftermarket and service

Aftermarket spending is starting to account for a significant share of revenues and margins for some manufacturing companies, particularly manufacturers of large and complex products, such as aircraft engines, and construction equipment providers. These companies are using mature contract schemes to monetize their services. According to the McKinsey Service Benchmark,⁸ 65 percent of revenue in the construction equipment industry comes from aftermarket and service, just ahead of aircraft engines and mining equipment (both 55 percent) and HVAC (50 percent). As more industrial companies recognize the potential of aftermarket and service, their leaders are carefully assessing the commercial potential.

In our experience, successful aftermarket and service offerings can increase service sales by up to 40 percent in some areas in just a few years. But even early movers in the industrial space have struggled to capture the full potential of their aftermarket and service businesses.⁹

These difficulties can be partially attributed to the challenge of sizing the market and identifying relevant commercial opportunities for aftermarket and service. Indeed, only half the companies in our sample say they regularly do so. The challenge is not necessarily starting the process; it's committing to the high level of rigor and discipline required and iterating it over time. Aftermarket and service sit in the shadow of new-unit sales, which tend to be higher profile and the focus of both executive and sales teams. Overcoming this hurdle requires changing mindsets and even cultures so aftermarket and service—and specifically, sizing that business—can become a high priority.

⁸ A proprietary database that includes average and top-quintile values of share of aftermarket and service revenue for various industrial sectors, using more than 2,000 datapoints.

⁹ For more on understanding the core value in the aftermarket, see "Industrial aftermarket services: Growing the core," McKinsey, July 27, 2017.

In many companies, critical data and knowledge that could propel the success of aftermarket and service offerings or enhance existing ones are dispersed across various divisions and functions, making it challenging for companies to locate and tap into valuable expertise. Accurately assessing aftermarket and service, then, would likely require support from analytics and data management.

Company leaders could consider three steps when sizing the market for aftermarket and service:

1. ***Create a reliable data set for the installed base (units currently in use).*** This effort may require collecting, cleaning, and consolidating information from multiple sources going back as far as decades.¹⁰
2. ***Understand customer maintenance cycles.*** Targeted interviews of salespeople, experts, and customers can shed light on various aspects of maintenance, such as reliability, efficiency, and overall satisfaction.
3. ***Match past service orders with the installed base,*** which will help build a comprehensive view of actual service penetration across the installed base.

Once these steps are complete, leaders could divide the market according to the most significant dimensions for their company—for example, by end user, product, or country. These insights could guide subsequent decisions about factors that help capture the market opportunity, such as sales targets.

Establishing commercial nerve centers

A commercial nerve center—that is, an agile, coordinated body that brings together members from across business functions such as sales, marketing, and program management—can help companies achieve their strategic goals by bringing together the necessary data and knowledge to develop and execute key strategies. These commercial nerve centers can be dedicated to helping companies achieve their top-line goals in the

¹⁰ For more on making the data as usable as possible, see “How aerospace and defense players can win,” September 21, 2022.

aftermarket, and effective commercial nerve centers can help build momentum in companies to catalyze action and deliver results quickly.

Because aftermarket businesses are closely linked to equipment in the field, commercial nerve centers that focus on this area can benefit from gaining specialized knowledge of their customers' operations, including how they manage their fleets.

Take the example of a leading equipment-solution OEM that sought to substantially boost its aftermarket and service sales by implementing a generative AI (gen AI) solution to clean sales and operations data, create a live aftermarket data lake, and generate leads. The company also used a virtual sales agent to automate personalized emails for its large customer base, increasing outreach capacity. The virtual agent could also help during the lead conversion process by recognizing customer intent and needs based on their responses to outreach, then passing those insights to the sales team. Additionally, the OEM provided comprehensive training for both inside and outside sales reps, focusing on proactive customer outreach and understanding customer needs in specific verticals. As a result of these initiatives, the company saw a 20 percent increase in generated leads, with a validation rate of more than 80 percent, indicating just how effective such an approach can be.

Another example comes from a defense-systems company that launched an 18-month effort to boost top-line growth in the aftermarket. It developed a digital solution to automatically generate opportunities and boost capability building to improve the effectiveness of its sales force. This training was essential because targets tied to new tools are often missed due to low adoption of those tools. The efforts paid off, with service orders increasing by 40 percent in one year and by 300 percent in three years.

A principal enabler for these solutions is clean and reliable data. However, OEMs often contend with scattered and incoherent client data sources, and this problem only gets worse when OEMs grow through multiple acquisitions, since databases are

often not uniform. Until a few years ago, organizing, cleaning, and integrating this data was an extremely time-consuming process that could take months or even years. But, today, service intelligence platforms have greatly simplified this practice by helping companies clean and integrate data from enterprise resource management and customer relationship management systems, and even external public documents such as environmental, social, and governance targets. The market is clearly moving in this direction, and many different platforms are already commercially available.

Pricing

There are a number of different parameters that companies can consider when determining potential pricing for aftermarket and service: the value of rapid delivery (particularly for proprietary, high-value, or specific parts or services); the value of OEMs' services; and the value of best-in-class, responsive customer support. Pricing options available to companies also vary and include (but are not limited to) the following:

Value-based pricing. In this model, pricing is correlated to the value delivered. This may look like tiered pricing based on service level, use, or outcome. Segmenting and defining parts or customers up front can help leaders determine the appropriate combination of prices and terms. For example, complementary parts of a machine would need to be priced similarly, even if demand for the parts may not be identical. In some cases, parts that may not be inherently expensive because of their materials or complexity can have an outsize effect on the overall value to the customer, especially if the parts are critical to ensuring the availability of machines and meeting regulatory requirements.

Bundling and upselling. Companies could analyze historical data to discover what parts are often purchased together; they could then sell those parts in a single bundle. Meanwhile, upselling and cross-selling can help companies maximize revenues while also streamlining their operations by making production planning and inventory management

more predictable and further ensuring competitive service to customers.

Dynamic pricing. This generally involves applying analytics and market insights to determine the price in nearly real time, using parameters such as current demand, competition, and customer behavior. The analysis should balance profitability and market share.

Another important factor to consider is the customer discount policy. For example, a helicopter OEM used to give discounts on standard aftermarket prices to more than 80 percent of its service centers and customers. While this approach contributed to high aftermarket revenue, it also led to lower profitability than expected. To address the issue, the helicopter OEM adjusted the discount strategy based on factors such as numbers of units sold for service centers and fleet size for customers. As a result, top service centers and customers continued to benefit from better pricing while others no longer negatively affected the OEM's profitability.

Regardless of the pricing and discount approach, company leaders should ensure that prices satisfy customer preferences, are appropriate for the competitive landscape, create the right profit margins, and fit within a coherent pricing architecture.

Order to delivery

The majority of modern industrial companies purchase aftermarket products from a complex global supply chain. Meanwhile, OEMs maintain design and engineering authority over the products that are sold. Consequently, the procurement processes of these products are of fundamental importance to both OEMs and customers. The order-to-delivery phase starts with comprehensive planning, encompasses manufacturing and procurement considerations, and concludes with seamless product and service delivery.

Sourcing management

When developing a winning sourcing strategy, company executives and leadership should consider an overarching procurement strategy as well as specific elements and tactics that enhance value. We have identified two critical steps to this process. The first is articulating the sourcing strategy, such as deciding the target length of agreements and whether to use requests for proposals (RFPs), auctions, or spot buys. The second step is identifying ways to use cost and quality to maximize value. For example, company leaders might outline the optimal number of respondents to engage in the RFP process to optimize competition between suppliers or decide in advance how transparent to be in supplier negotiations.

When it comes to implementing the sourcing strategy, five questions are particularly influential in the execution:

1. How critical is the supplier to the OEM's business?
2. What type of sourcing event (for example, RFPs, auctions, market buys, and so on) is preferred, and what are the criteria?¹¹
3. What is the scope of sourcing? For example, is it an entire category of materials or multiple subcategories?
4. What's the duration of the procurement agreement?
5. How and to what extent should the firm use intermediaries, such as fully outsourced procurement services, value-added partnerships for specialized services, or fully in-house procurement?

Using analytics throughout the process can optimize costs, service quality, and lead time. However, our experience suggests that many companies are underusing the valuable tools available to them, such as should-cost and cleansheet

¹¹ For more on sourcing events, see "Publishing a sourcing event (non-IT)," North Carolina Procurement, accessed June 5, 2024.

analyses.¹² This is particularly true for spare parts compared with new units; spare parts often cost much less, but even the cheapest items can represent a significant opportunity when considering the high volumes typically associated with aftermarket and service operations.

Manufacturing

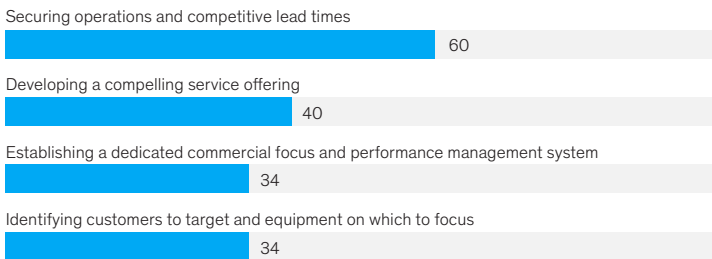
In the aftermarket, many parts, products, and services are time-sensitive, with customers often eagerly awaiting delivery—making short lead times crucial. Despite the fact that shorter lead times also mean converting orders into cash flows more quickly, long lead times remain a common challenge (Exhibit 3). A recent McKinsey survey found that the top challenge faced by aerospace and defense companies is securing operations and competitive lead times.

A comprehensive approach to identifying and mitigating production bottlenecks in manufacturing industries begins

Exhibit 3

Aerospace and defense industry players face a range of common challenges in developing an aftermarket offering.

Key challenges faced in aftermarket services,¹ % of respondents (n = 50)



¹Question: "What key challenges are you facing in aftermarket services?"

Source: "How aerospace and defense players can win in aftermarket services," McKinsey, September 21, 2022; McKinsey A&D Service Survey 2022

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¹² For more on should-cost analysis, see Mike Parkins, Mukund Prasad, and Hans Tiedemann, "In volatile markets, embedded product costs can be a hidden treasure," McKinsey, August 2, 2021.

with measuring cycle times to understand operational efficiency. Cycle times are derived from analysis and shop floor observations; they are critical inputs to overall equipment efficiency (OEE) and overall process efficiency (OPE), both of which provide valuable insights into the performance of each machine and workstation.

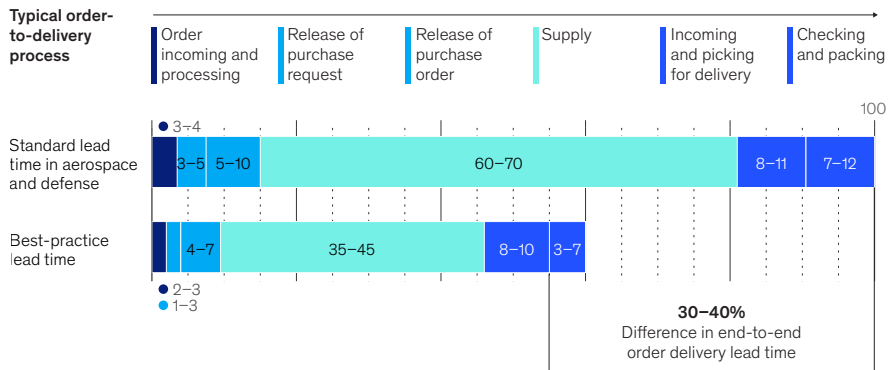
The best way to reduce lead times is to compress the duration of the entire sequence of events, from the receipt of a service request or parts to the service completion or when the parts are packed and shipped. In our experience, companies that adopt a comprehensive set of solutions showed an overall reduction in lead times up to 30 to 40 percent compared with companies that only focused on one step of the value chain (Exhibit 4).

Advanced digital tools can, of course, be crucial to the overall process. Consider quality assurance and packing, the final stage of the order-to-delivery process: remote quality checks, virtual reality, digital inventory, and 3D printing for spare

Exhibit 4

Order-to-delivery lead time in service can be reduced at every step of the process.

Calendar days, baseline indexed to 100



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parts can all support the process and the workforce. If data is incomplete or inaccurate, OEE would need to be recalibrated. A suite of sensors could help estimate OEE using equipment available time, service or production volume, and observed cycle times. The results can help company leaders identify the most important opportunities to reduce cycle time.

Stakeholders could remove bottlenecks from production lines quickly and efficiently by redistributing the workload. They could rebalance tasks among resources, an approach that's particularly effective for tasks performed by operators. The process can be meticulously modeled using spreadsheet tools, with resource allocation adjusted accordingly. Iterative testing on production lines, whenever possible, further refines the rebalancing process, optimizing both cycle times and OEE and OPE levels.

To achieve future-state objectives, cycle time reductions necessitate an examination of current-state observations and the potential elimination of tasks within each cycle—or at least a reduction in their duration. Concurrently, OEE and OPE enhancements are pursued through a comprehensive waterfall analysis aimed at reducing losses.

Operator workloads are a focal point in optimization efforts, and in response to changing production demands, careful rebalancing becomes imperative. For example, consider a scenario in which an OEM is transitioning from a seven-day to a five-day operation in one area and from five days to two days in another area: operator workloads, especially for the operators of those two areas, will intensify. This necessitates a strategic redistribution of tasks—notably, the transfer of activities such as pallet handling and manual transport to a third operator—facilitating the achievement of takt time and operational goals.

These key points are supported by lessons from the consumer goods and retail sectors, which have long been chasing faster cycle times from customer order to delivery. Although the products may differ, the strategies that have made retail successful can be applied to the aftermarket, including understanding where speed matters the most to customers

and planning accordingly, selectively investing in capacity and networks to reduce bottlenecks, and embracing real-time data analytics and automation to increase overall productivity.

Supply chain and inventory management

The most important, formative aftermarket and service supply chain decisions—from the footprint of the distribution network to sales channel strategies—vary significantly by business model, regulatory environment, and other factors. For example, in some cases, the distribution network is mandatory, with entities even purchasing spare parts and portfolios of initiatives to resell to customers. In other scenarios, the OEM directly handles sales, while intermediaries may only serve as maintainers or assemblers of parts. It is essential to recognize that depending on what the business model and sold products are, dynamics can differ greatly, and while there are key concepts to manage, companies should avoid generalizing.

Optimized networks—designed for each company’s unique situation—could balance requirements such as cost and fill rates. Similarly, while the optimal inventory levels for service parts at each stocking location will vary, having them can help minimize the lag between a customer’s order and when equipment is restored to normal working order.

Consider the number of SKUs in the inventory. New-product supply chains typically involve a known number of SKUs with known start- and end-of-life cycles. By contrast, the aftermarket involves many varied field-replaceable units with intricate relationships, which results in more heterogeneity and unpredictability.

This aspect is especially critical in sectors such as automotive, where the number of SKUs can reach the hundreds of thousands. For example, an automotive OEM was facing frequent part shortages because of reactive spare parts inventory management, which led to long delays and a deteriorating customer experience. Even with limited capital expenditures, it was possible for the OEM to implement new AI algorithms on its legacy IT systems to precisely estimate the demand of each SKU. This allowed the OEM to not only reduce

shortages by 50 percent but also keep a very lean spare parts inventory, increasing it by just 5 percent.

Distribution networks also differ significantly. New-product supply chains have multiple distribution paths, encompassing direct sales, distributors, and resellers. These distribution paths provide redundancy and are unidirectional, focused on outbound logistics. Meanwhile, the aftermarket tends to operate with a single delivery network that must respond to unpredictable demand and provide inbound and outbound logistics.

When it comes to inventory management, the focus for new products is on maximizing inventory turns. For the aftermarket, the focus is on maximizing fill rates so equipment in the field can return to regular functioning.

Obsolescence and the two-speed challenge

Producers of complex machinery, such as manufacturers of heavy equipment, encounter a frequent time horizon dilemma.¹³ The products they develop typically have a life span of 30 years or more, requiring ongoing support—including low-volume legacy parts and technical expertise—throughout the product's life. However, some of the component parts of these systems, especially newer products such as semiconductors, electronic boards, and mechanical elements, may have much shorter life spans, lasting only a fraction of the time compared with the overall system.

This “two speed” challenge can lead to difficulties in sourcing components over time and may result in their obsolescence as suppliers grapple with raw-material shortages or cease production altogether. Consequently, many OEMs devise substitutes for these outdated components, taking on nonrecurring engineering costs that escalate with the quickening pace of technological cycles and the growing interconnection of supply chains.

¹³ “How industrial and aerospace and defense OEMs can win the obsolescence challenge,” McKinsey, April 14, 2022.

The two-speed challenge puts additional loads on multiple functions:

- **Operations.** OEMs have to redesign systems around new components to replace obsolete ones. The effort often requires building out an entirely new supply chain in a relatively short period of time.
- **Inventory management.** Any product redesign from obsolescence creates a cascading effect in inventory management. Many components in the inventory for the equipment will not be compatible with the redesigned product and will be turned into scrap.
- **Commercial function, such as sales and marketing.** The new, often one-time costs of designing a new component are often passed on to end customers by necessity, which makes for a less affordable and less competitive product.
- **Service.** A discontinued component will no longer be available as a spare part. This increases the cost and complexity of delivery and reduces customer satisfaction.

A proactive, methodical approach can help OEMs address this hard-to-avoid challenge. OEMs can take three critical steps to minimize one-time engineering costs for obsolescence:

1. Identify additional, alternate suppliers for any components that are ready for installation without a redesign. OEMs, distributors, and brokers can help identify and procure the right components.
2. Identify alternatives to obsolete components that can be modified at minimal cost, avoiding a redesign.
3. As a last resort, redesign the component to minimize costs and disruptions to the design of the product or system.

Anticipating components' obsolescence can forestall equipment-level or system-level problems. One good strategy is to continually scan for problems that could come from obsolescence. Resources—specifically, funding and

processes—dedicated to strategic purposes of at-risk components can help.

Tools dedicated to consolidating OEMs' in-house intelligence with market data can create a window into obsolete or at-risk components. These tools can also provide information on alternate suppliers, alternate components that could be similar enough in form, fit, and function, and the costs associated with them. To make full use of these tools, roles dedicated to obsolescence can ensure that OEMs have champions of obsolescence-related considerations and a team that's ready to work with suppliers to refine the supply chain to counter the relevant challenges.

There are also alternative options for OEMs to ensure continued availability for the long tail of product usage. In aerospace, some original-design OEMs sell the license to their legacy parts to trusted specialist partners to continue manufacturing OEM-specific parts and providing maintenance, repair, and overhaul (MRO) services. This approach allows for support throughout the life cycle of platforms and parts that could otherwise be a lower priority for original-design OEMs and lead to poor customer experiences. This model offers benefits to both clients, who gain a focused OEM-licensed partner to deliver legacy parts and service quickly, and OEMs, which can monetize legacy parts through the licensing agreements and gain residual cash flows while ensuring continued customer support.

Finally, OEMs should consider obsolescence at the beginning and factor component obsolescence into the R&D process. This effort will require cooperation between multiple stakeholders, such as engineering functions and suppliers. Stakeholders would also likely need to standardize interfaces and modular designs and minimize the use of specialized components.¹⁴

¹⁴ For more on obsolescence, see "How industrial and aerospace and defense OEMs can win the obsolescence challenge," April 14, 2022.

Field workforce

The field workforce has traditionally been at the center of the service and aftermarket sector, especially in relation to break-fix activities. Even as some activities shift to remote services, the field service will continue to play a vital role. By evolving their field operations, OEMs can improve service levels, customer experience, efficiency, and productivity, ultimately creating value for customers and potentially transforming their field workforces into an additional sales force.

OEMs can take several approaches to improve field workforce performance and services, with the most common involving performance management and process standardization in the form of standard operating procedures (SOPs). However, SOPs are only effective if correctly applied and if technicians implement process-based workflows. In this regard, companies can enhance their service quality and procedure adoption in various ways, including creating clear progression paths toward better positions, instituting internal certifications for skill development, and establishing transparent selection criteria and incentives for employees. Linking progression to compliance with SOPs, for example, can engage field operators and improve service repeatability.

In addition to traditional levers, digital tools and analytics can strongly improve the productivity and quality of the field workforce. For example, a medtech OEM experiencing low performance and margins in its service business, mainly because of limited use of digital and analytics, increased its service engineer utilization to 75 percent, from 55 percent, in less than a year. The OEM achieved this by focusing its AI efforts on aligning field technicians to customer demand with a three-step approach: creating geographic clusters based on historical demand; calculating headcount, including both work hours and travel time; and allocating resources to properly deploy technicians and also minimize travel time. After the initial signs of success of this first AI-enabled business case, the medtech OEM rolled out a full-fledged analytics program, including spare parts inventory, remote resolution, and advanced troubleshooting.

The telecommunications sector offers another relevant case study. One telco used to reactively perform installations, maintenance, construction, and back-office work through manual work planning, but it has since transitioned to a new operating model. This model includes task intelligence—focused dashboards to enhance productivity and engagement, AI coaches to help supervisors improve workforce efficiency, and AI-powered analytics for forecasting and scheduling maintenance operations, considering both long-term capacity planning and short-term work planning. These operational process optimizations have resulted in significant improvements, including a 15 percent increase in capacity, a 30 percent reduction in required workforce, and a 10 percent increase in workforce utilization.

OEMs can achieve further optimization by leveraging gen AI, as in the case of a European machinery distributor that implemented a comprehensive solution to drastically reduce unplanned downtime and customer costs. The solution consists of two main blocks: a platform that integrates all service-related information and a module for a language learning model (gen AI). The platform serves as a centralized hub where technicians can access manuals, procedures, and guidelines, streamlining the troubleshooting process. AI chatbots, or “copilots,” act as conversational orchestrators of the service, providing live collaboration through insights, recommendations, root cause analyses, reports, and documents. The implementation of this solution resulted in a 10 percent increase in first-time-right resolutions, significant cost savings for clients, faster problem identification, and improved accessibility and efficiency for technicians.

Last, field workforces and technicians can become a powerful extension of the sales team. By being in close proximity to clients and interacting with them and their products on-site, the field workforce is uniquely positioned to identify client needs, solve existing issues, and prevent future issues. Given

the right tools, they can build stronger and more profitable relationships with clients, adding value to the organization.¹⁵

Delivery to cash

The delivery-to-cash phase, the final segment of the journey for aftermarket and service, is primarily focused on the importance of cash management. Many industrial companies operate with around 90 days of outstanding receivables in terms of cash. While chasing receivables is often not the top priority of a company, reduced cash flows from nonpayment of receivables can nevertheless cause significant issues if not addressed.

There are two priority delivery-to-cash activities that OEMs should consider: structural interventions that can help avoid or at least minimize past-due credits and the processes through which past-due credits are collected. Addressing receivables can be complicated and span the finance, commercial, and sales organizations, given the complex contractual terms and conditions often facing industrial companies. This includes complex processes that involve multiple intermediaries, bespoke contracts, and a significant number of invoices over a long duration.

The most important actions to optimize the cash collection process in aftermarket and service for industrial companies include the following:

- defining target terms and conditions to be used in contract negotiations
- implementing comprehensive and simplified checklists to facilitate credit collection
- developing training programs (including digital tools) and updating employee incentive schemes to increase focus on cash collection

¹⁵ For more about turning the field workforce into part of the sales force, see Markus Forsgren, Sören Jautelat, Arno Montenbruck, and Maximilian Titze, “Industrial services’ overlooked sales force: Their technicians,” McKinsey, May 18, 2021.

These interventions are more relevant for aftermarket and service businesses compared with selling new units because of the higher volume of invoices and lower average transaction value in aftermarket and service, especially for spare parts. The complexity is further increased when intermediaries, such as spare parts distributors, are involved, which is a common situation in manufacturing industries.

No single solution can effectively streamline the delivery-to-cash process, but companies could understand the specific factors behind their organizations' long delivery-to-cash times. These factors could include unfulfilled deliveries to customers' practices, incomplete documentation, and more (Exhibit 5).

Exhibit 5

Understanding the cause of payment delay is crucial to accelerate collection.

Illustrative company example

	Not agreed with end client	Agreed with end client	Paid by end client to intermediary
Invoice agreed or issued	●	●	●
Invoice past due	●	●	●
Conditions to pay recognized by client	⊘	●	●
Paid by end client	⊘	⊘	●
Cashed in	⊘	⊘	⊘
Total past due credits	55–60%	30–40%	5–10%
Examples of root cause	<ul style="list-style-type: none"> Late deliveries leading to litigations on the application of penalties and other "complications" Unfulfilled or partial shipments (also due to client delays) Missing or incomplete documentation (eg, missing certificates) 	<ul style="list-style-type: none"> Client's standard practice is to pay with significant delay vs invoice past-due date Missing or incomplete documentation to be received from client (eg, missing letter of acceptance) Critical geopolitical context 	<ul style="list-style-type: none"> Specific problems related to the presence of intermediaries also acting as agents

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After assessing the factors behind their delivery-to-cash performance in detail, companies could identify the best ways to speed up cash flow and free up working capital.

One solution is to launch credit collection campaigns, which can effectively reduce past-due credits as long as stakeholders systematically track past-due credits and their causes. The resulting insights could help mitigate future delays.

Enabling factors

To achieve service excellence, organizations need the right structures, performance management systems, and digital capabilities—all aligned to their strategies and business needs.

The organization

As with any business, optimizing the aftermarket and service business requires the right talent and the right organizational structure. In fact, across industrial companies, several common but suboptimal practices can lead to revenue losses of up to 10 percent, such as the following:

- viewing services as cost centers rather than full-fledged business opportunities
- maintaining siloed processes for design and service, with products and services treated as separate entities
- allowing disjointed service sales and delivery departments, causing the sales team to overlook possible leads from field-based technical insights
- enabling excessive decentralization of delivery, leading to higher costs because of unnecessary geographical redundancy of functions.

Due to the impact of organization on the performance of aftermarket and service businesses, company leaders would need to clarify their stance on two things: level of integration and service function centralization.

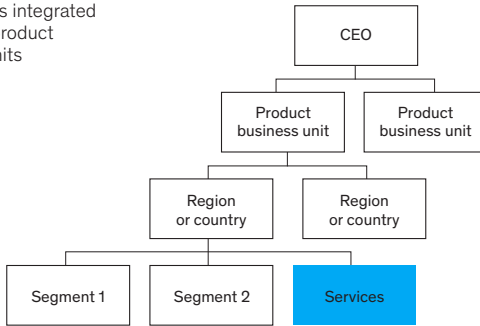
Level of integration. The first conclusion leaders should come to is how integrated the aftermarket organization should be

with the core business—that is, the aftermarket division's structure and how it relates to the rest of the company, the degree of influence it has, and how to set up the aftermarket division to minimize redundancies. There are three archetypes currently in use among aftermarket and service companies: fully integrated, hybrid, and separated unit (Exhibit 6). Each has distinct benefits and risks:

- In the fully integrated model, sales and services are integrated within the product business units. This organization structure offers businesses a holistic view of their products and services, enabling better planning and optimization. It also facilitates faster decision making and closer alignment with customer needs, leading to improved satisfaction and competitiveness. However, leaders must navigate the risks, including a lack of accountability for services versus products, challenges with divergent methodologies and technologies, and missed synergies between business units.
- The hybrid model features a separate services business unit that assumes full ownership of service delivery while influencing services sales through a center of excellence. This approach has several benefits, including scalability, consistency across methodologies and technology, and maintained sales proximity to the market. Risks include reduced flexibility in addressing specific business-unit needs, potential organizational inconsistencies that slow down decision making and time to market, and the need for additional processes to ensure coordination.
- In the traditional separated-unit structure, a distinct services business unit maintains full ownership of its own profit and loss. This model provides organizational focus and scale, increased efficiency, fair pricing for services, and professionalized product development, making it particularly suitable for services with multiple business units. Risks include losing sight of the full project life cycle, diffusing accountability, creating duplications, and making it harder to align the sales business unit's goals with those of the service business unit.

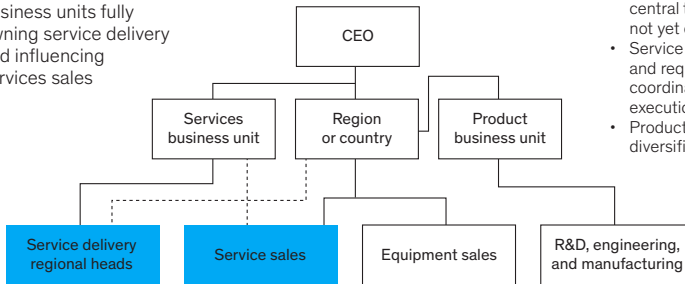
There are three main archetypes for organization and steering among aftermarket and service players.

Fully integrated: Sales and services integrated within the product business units



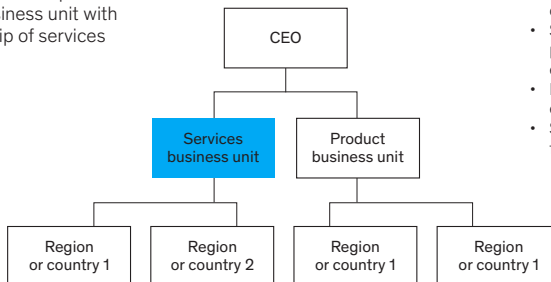
- Products are at the core of a business
- Service is mature and can be managed effectively within the product business units
- End-to-end ownership exists elsewhere
- Products are highly diversified
- Customers are the same for both initial and service sale

Hybrid: Separate services business units fully owning service delivery and influencing services sales



- Service is becoming more central to a business but is not yet core
- Service is not fully matured and requires central coordination to drive execution consistency
- Products are highly diversified

Separated unit: Separate services business unit with full ownership of services profitability



- Service is at the core of a business
- Service is immature and needs profit-and-loss focus to drive execution excellence
- Products have common elements
- Service customers are different from initial-sale customers

In choosing the right organization model, companies must consider several factors, such as target customers, workforce mindset and skills, leadership involvement, potential cannibalization, and the emphasis on new business development (Exhibit 7). While there is no single recipe for success, major companies have generally favored freestanding service and aftermarket business units to ensure agility and relevance to the unique characteristics of such a business.

Service function centralization. The second area to consider is the level of centralization across various service functions. Centralized models involve managing tasks and responsibilities from a single responsible center, providing standardized

Exhibit 7

The extent of organizational integration depends on aspects such as customer interactions, employee skills, and leadership attention.

Considerations for deciding on whether to integrate or separate solutions and services sales



Customers	Selling to same clients within existing customers	Selling to different clients within existing customers	Selling to new customer base
Employees skill and mindset	Same skills and mindsets required as selling existing products	Complementary skills and mindsets required as selling existing products	Different skills and mindsets required as selling existing products
Leadership attention	No extraordinary senior leadership time required	Some extra senior leadership attention and steering required	Heavy senior leadership time required
Cannibalistic nature of business	Minimal cannibalization of existing business for customers and sales people	Some cannibalization and overlap with existing business	Huge cannibalization of existing business for customers and sales people
Business development	Minimal focus on new business development	Some focus on new business development	Large focus on business development

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services to multiple locations or business units. This approach offers several advantages, such as economies of scale; standardization; specialized talent; cross-fertilization of data, knowledge, and expertise; and more-effective prioritization of resources. It may also result in a lack of proximity to business units and a shortage of region-specific offerings.

A regional model, in contrast, involves situating service functions in specific regions or countries, offering local expertise, flexibility, proximity to business units, and regional capacity. However, the regional model may face challenges with standardization, leading to fragmentation and duplication of efforts.

An organization's choice between the centralized or regional model depends on various factors, including product regional differentiation, the distribution of the customer base, the average size of client companies, production's business unit footprint, and regulatory differences within the company's footprint. (Exhibit 8).

A notable example is the supply chain, in which companies can take on a number of different forms. To determine the right structure, leaders could consider the scope of the aftermarket supply chain, how difficult it would be to centralize the supply chain management function, and the most appropriate kind of supply chain for the company. For instance, a global company that works with complex parts for machinery may lean toward a decentralized structure to better manage regional variations in demand and to have a buffer against supply chain disruptions. On the other hand, a company with a smaller geographic footprint and simpler products might find a centralized structure more efficient and easier to manage.

Other measures to increase working capital could include negotiating and enforcing more-stringent payment terms, offering incentives aimed at pushing credit collection, and providing employee training for best practices for monitoring and managing past-due credits.

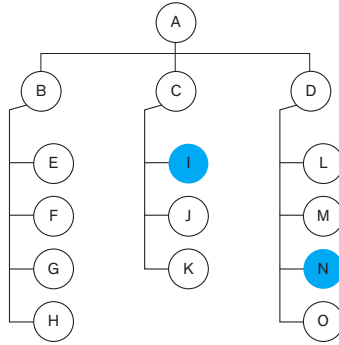
There is no one-size-fits-all model for service organizations, which can be structured centrally or regionally.

Central

● By subregion

Why choose it?

- Global customer base who interacts with multiple regions
- Significant operational overlap among regions



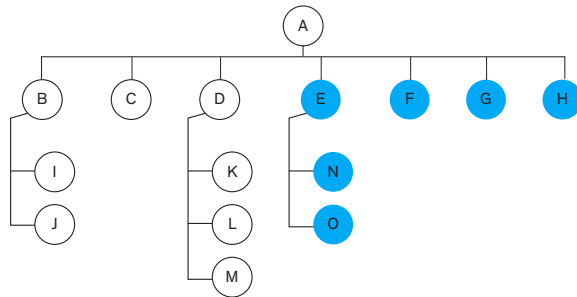
A. CEO of services B. Product C. Sales D. Delivery E. Pricing F. New hardware offerings (including engineering) G. Digital offerings (including digital labs)	H. Marketing sales and support I. Parts sales J. Service and repair sales K. Contractual sales L. Parts and supply chain (dedicated to aftermarket) M. Procurement (dedicated to aftermarket) N. Service centers	O. Planning and scheduling
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Regional

● Profit-and-loss ownership

Why choose it?

- Products are highly differentiated across regions
- Region-specific expertise can provide better customer service and provide a quicker feedback loop to product and commercial teams



A. CEO of services B. Sales support C. Digital D. Supply chain E. Americas F. Europe	G. Middle East, North Africa, and Türkiye H. Asia-Pacific I. Pricing J. Sales analytics and sales operations	K. Parts procurement L. Repair centers M. Parts warehouse N. Sales O. Execution tech force
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Performance-management systems

Many aftermarket organizations have distributed structures and many layers. This means company leaders would need to put in continuous effort to communicate and ensure that the entire aftermarket organization understands its performance management system.

For instance, aftermarket and service businesses' productivity and cost efficiency could be measured through KPIs such as the number of panels produced per work week per full-time employee. Deviations from benchmarks and the ratio of used hours to sold hours (such as time spent repairing a part compared to the time sold to a customer to complete that repair) can be helpful measures of efficiency. In some cases, the effectiveness of quality and service delivery might be measured by the number of service cases per 100 installations, shedding light on the efficacy of service delivery. Safety might be measured by the number of site visits or the time elapsed since the last recorded accident, customer satisfaction measured with a customer satisfaction score, and employee engagement and organizational health measured by scoring workforce pulse surveys.

Digital tools and capabilities





Digital tools have been unlocking value for industrial companies for the past few decades and have done so more recently in service and aftermarket. AI, particularly gen AI, has the potential to reinvent how services are delivered, with a number of use cases emerging in recent years (for examples, see Exhibit 9).






Industrial companies can apply these use cases across all steps of the service and aftermarket excellence journey, with the following examples being some of the most impactful:

- ***Innovation to market.*** Companies can implement digital twins to reduce development lead time and can reduce physical testing time in favor of virtual simulations (for example, replicating years of deterioration of a spare part in minutes).

Generative AI has reinvented how B2B services are delivered.

● Generative AI-enabled

	Key functions	Traditional world	Tech-enabled world
Product management 	Offering design	Customer focus groups	● Customer insight collected across full installed base
	Marketing	Standard broadcast material	Offering design informed by customer profiling and voice ● Auto-generated dynamic content for targeted segments
	Price setting	Cost-plus pricing	Deal-scoring engines and dynamic pricing ● Real-time negotiation guidance and predictive pricing
Sales 	Granular opportunity view	Manual lead generation and qualification using outdated or incomplete data sets	Granular view of installed base AI-driven lead identification ● Generative AI-powered lead prioritization
	Sales pursuit	Customer outreach mostly via sellers, focused on largest customers	AI-powered lead-generating models ● Virtual sales assistants with hyperpersonalized content
Customer experience 	Customer experience	Traditional, mostly reactive customer experience management	Customer experience metrics tracked live Real-time tracking of parts delivery and repair ● 24/7 customer care
Field service 	Demand planning	Analysis of historical job data	Intelligent forecasting using multiple data sources for optimal accuracy
	Scheduling and routing	Periodic job allocation subject to dispatcher judgment	Real-time intelligent job allocation
	Job delivery	Jobs done based on individuals' expertise	● AI-recommended next steps and synthesis of technical documents
	Inventory management	Expert-guided spare parts selection and replenishment	AI-guided inventory replenishment Proactive part validation for specific jobs

	Key functions	Traditional world	Tech-enabled world
Failure root cause 	Predictive maintenance	Analysis of historical failure data	Real-time predictive analytics based on usage patterns (failure modes)
Self-service 	Equipment-based support	Control panel displaying fault code	<ul style="list-style-type: none"> Step-by-step instructions for customer self-diagnosis of simple issues Accelerated technician servicing
	OEM platform	Online platform with FAQ and search bar for troubleshooting guides	<ul style="list-style-type: none"> AI-enabled knowledge management (eg, intelligent search bars)
Remote first 	Remote monitoring	Real-time condition monitoring	Equipment self-healing based on condition
	Remote troubleshooting	Phone-guided or remote troubleshooting	<ul style="list-style-type: none"> Remote troubleshooting via augmented and virtual reality
Support services 	Administrative processes	Manual paperwork processing	AI-automated order tracking
	Back office	Manual paperwork processing	<ul style="list-style-type: none"> Automated consolidation of sources, research, and documents in desired formats
Performance management 	Scheduling and routing	Weekly huddles using historical performance data	Holistic performance feedback, informed by performance metrics and unstructured data

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- **Market to order.** Companies can leverage AI to anticipate customer needs based on several factors, such as maintenance cycles and products usage, and can support the sales force to close better deals (Exhibit 10).
- **Order to delivery.** Companies can develop a remote offering for field services using augmented reality, often reducing both costs and lead time of intervention because no travel is needed.
- **Delivery to cash.** Companies can create dynamic digital platforms to monitor the cash flow situation at the item level (often many contracts with lower values) and the latest interactions with customers and suppliers for better follow-up.

Exhibit 10

AI-enabled aftermarket and service organizations support the sales force across commercial capabilities.

<p>1</p> <p>Granular view of opportunity at customer level</p> <p>Granular view of installed base and penetration by customer and asset</p> <p>AI-driven sales leads</p>	<p>2</p> <p>Offers that meet clear customer needs</p> <p>Mapped customer needs and willingness to pay</p> <p>Offering design informed by voice of customer</p>	<p>3</p> <p>Sales force relentlessly pursuing top opportunities</p> <p>Best-of-breed digital stack to automate customer outreach tasks</p> <p>Live digital dashboards for sales managers to coach reps</p>	<p>4</p> <p>Right price to maximize value</p> <p>Deal-scoring engine to support decisions on large parts deals</p> <p>Dynamic parts pricing to maximize value</p>	<p>5</p> <p>Outstanding customer experience</p> <p>NLP-powered¹ virtual assistants answering customer questions on parts deliveries and services</p> <p>Seamless e-commerce storefronts for parts</p> <p>Customer experience metrics tracked live</p>
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¹Natural language processing—powered.

While the benefits may be obvious, deploying, using, and harnessing digital tools can be challenging. Many industrial companies are struggling across the board—for example, in areas such as data preparation, cleaning, and warehousing—and many lack the required internal capabilities and expertise to deliver effective digital capabilities, such as cybersecurity and software development. In a McKinsey survey for industrial companies conducted in 2022, respondents revealed that their most pressing concern involved identifying the right software partners within the ever-growing landscape of established businesses and new, more agile start-ups.¹⁶ Because the importance of digital capabilities will continue to grow, this area will likely require even more attention in the future.

¹⁶ “How aerospace and defense players can win,” September 21, 2022.

Tech-driven trends and innovations

In an era dominated by technological innovation, tech and tech-adopting companies have emerged as trendsetters and reshaped the landscape of services across industries, from manufacturing to consumer goods. Harnessing and implementing new digital tools can help to grow revenues by 30 percent.¹⁷

The pioneers' experience offers ten pivotal lessons, illuminating how those companies are forging a new paradigm for the future of service industries:

1. *Offering a B2C-like customer experience.* This includes expanding the product portfolio to encompass postsale products and services that are useful and offer easy-to-use experiences.
2. *Exploring “servitization.”* This entails offering products as services, including through ongoing, performance-based contracts.
3. *Collecting, analyzing, and monetizing data.* For example, companies can leverage data to drive predictive maintenance regimes and offerings.
4. *Pursuing “softwarization of features.”* This involves improving product performance through a state-of-the-art service offering.
5. *Accessing new value pools through sustainability.* This is increasingly a requirement from both customers and regulators.
6. *Expanding on higher-than-expected maturity in “remotization.”* Companies can leverage in the new normal the remotization maturity developed during the pandemic.
7. *Leaning into the localization paradigm.* This ensures a consistent delivery model everywhere and resilience to supply chains disruption.

¹⁷ Guy Benjamin, Markus Forsgren, and Nicolas Guzman, “From defense to offense: Digital B2B services in the next normal,” McKinsey, August 28, 2020.

8. *Establishing online marketplaces.* Such marketplaces are redefining the standard in terms of on-time delivery of quality products and can also be considered in a B2B context.
9. *Building ecosystems around products.* Through ecosystems, users can fulfill a variety of needs.
10. *Handling disruptions to the service workforce.* Disruptions push organizations to rethink their talent strategies.

Offering a B2C-like customer experience

There is a fundamental paradigm shift under way in aftermarket and service, characterized by the imperative to replicate the personalized experiences typically associated with B2C interactions. This sectorwide transformation has required companies to recalibrate their focus and allocate time and resources to providing more postsale products and services such as maintenance, accessories, product upgrades, and training. These services, like those commonly available and expected in the B2C spheres, are already helping B2B businesses maintain and enhance their product portfolios while providing customers with more-satisfying experiences.

A 2023 McKinsey survey of B2B companies across sectors and geographies identified the implementation of the personalization (and hyperpersonalization) of marketing, sales, and products, akin to B2C experiences, as a primary differentiating feature for winning companies. More than half of companies involved in the survey that saw their market share grow by more than 10 percent had invested in tools, customer journeys, and products to deliver B2C-like personalized experiences for their B2B customers.¹⁸

For example, some leaders now offer specialized maintenance, cleaning, and restoration services, accompanied by bundled accessory offerings. Additional services, such as product engraving and customization, elevate the customer experience.

¹⁸ "The multiplier effect: How B2B winners grow," McKinsey, April 13, 2023.

Training sessions, both in person and virtual, empower customers to understand their product's full potential. And the introduction of upgrade options and vintage product trade-ins reinforces the commitment to long-term customer satisfaction and retention.

These initiatives can also help improve internal processes. A leading heavy-equipment OEM, for example, developed dedicated digital apps to streamline communication with dealers (such as communications regarding virtual showrooms, financial quotes, and the resale of used items), resulting in an up to 80 percent reduction in order deviations. This saved the company time and money in complaint handling.

Exploring 'servitization'

Servitization enables companies to convert the one-off sale of products into recurring sales or subscriptions to better utilize those products, such as the leasing of machines, critical components, tools, or traditional services. Put another way, servitization is providing access to capital-intensive products for an agreed period of time. This transition offers profound value for businesses that goes beyond the typical aftermarket propositions of simply selling spare parts or basic servicing.

The provision of products as a service helps players expand their scope along the value chain and life cycle. One of the most prominent examples is the transformation of Rolls-Royce from selling aeroengines to selling pay-by-the-hour contracts for engine operations. While servitization is a relatively straightforward concept, it can take on many different forms based on capabilities, products, and customer needs.

Servitization has enabled players to broaden their reach into previously untapped customer segments, particularly those that have a temporary need for the product or a shortage of resources to afford the full capital investment. Products sold as a service are generally bundled with additional features and services. For example, a subscription-based rental of heavy machinery often includes periodic maintenance, installation, and upgrades and can transform costly capital expenditures

The rise of servitization underscores the importance of a customer-centric approach to the aftermarket.

into operating expenditures financeable through cash flows rather than debt. Remote monitoring and predictive-maintenance service offerings also benefit OEMs—through predictable future cash flows and data that can be leveraged in R&D—and customers, who can devolve maintenance responsibilities to another organization with an expert maintenance workforce without having to manage one directly.

Indeed, the rise of this model underscores the importance of a customer-centric approach to the aftermarket. Shaping the appropriate product-as-a-service and commercial structure requires a strong understanding of customers' needs and purchasing behaviors; otherwise, there is a risk of losing rather than gaining competitive advantage.

Furthermore, servitization offers the potential for a more stable and recurring revenue stream, shifting from one-time product sales to ongoing service contracts. End-of-quarter fire sales could then fade in intensity, smoothing cash flow and allowing for adjustments in pricing or pausing payments—flexibility that can create added value for customers. An IFS survey across the industrials sector found that manufacturers that offer planned maintenance and service contracts were mostly likely to have profitable aftermarket services, with 62 percent reporting profitable service businesses.¹⁹

One leading industrial equipment manufacturer began offering hardware-as-a-service, when traditionally it had been sold as a product. This European OEM develops, installs, and operates compressor systems at customer sites, providing maintenance and repairs bundled for a fixed fee. With ultimate control of compressors in the hands of the company instead of customers, faults decreased, improving security, and costs decreased thanks to better predictive maintenance.

In general, many companies in many industries could benefit from embracing servitization. Recently, B2B companies that needed to automate their operations but were hesitant about

¹⁹ Charles Rathmann, *Industrial servitization and field service technology*, IFS, April 13, 2022.

the investment opted for subscription models for autonomous robots in warehousing, mobile picking, delivery, and logistics. This commercial model gave these companies the flexibility they needed to adjust to changes in demand, reduce upfront costs, and stabilize ongoing costs thanks to the periodic subscription plan.

As industrial companies expand into servitization, some have introduced advanced contract schemes, such as performance-based service contracts (the exact KPIs of which may differ but often relate to availability). About half of respondents to the McKinsey A&D Service Survey 2022 consider these contracts to be critical elements of a compelling offering.²⁰ Done right, these contracts can foster better equipment and platform performance at lower and more predictable costs for end users while enabling companies to achieve higher margins, sign longer contracts, and improve their knowledge of end users' needs.

However, there are many challenges in the servitization journey, including risk aversion, incomplete service solutions, suboptimal risk and contract management, underpricing, outdated commercial engines, and internal alignment issues. Addressing these hurdles will be pivotal as organizations navigate their unique path forward using all the potential commercial models at their disposal.

Collecting, analyzing, and monetizing data

Data collection, analysis, and monetization have proven transformative to the services sector and are likely to remain a crucial pillar of future successes across the industry. Predictive maintenance exemplifies the potential of data-driven strategies. For instance, using AI to predict failures and minimize downtime in electrical systems, such as ball mills, is becoming increasingly commonplace for new sales and installed additions to legacy equipment. This process involves several important steps, including analysis to identify failure

²⁰ "How aerospace and defense players can win," September 21, 2022.

probabilities, the evaluation of sensors to pinpoint those with the highest correlation to time to failure, and the establishment of a predictive model using algorithms such as heat maps and power variance.

A tier-one aerospace supplier providing aftermarket components and MRO services for aircraft employed an AI model to project ten years of repair events creating aftermarket MRO demand. This model allowed the supplier to tap into uncaptured MRO revenues and build accurate long-term plans that reduced time spent on nonpriority components.

Another prominent industrial manufacturer has taken the technologies, tools, and learnings from using predictive maintenance to increase the uptime of its own advanced manufacturing production lines and created a new business offering for other manufacturers. It now offers sensors and a cloud-based analytics platform to develop predictive-maintenance regimes for third parties, with pricing based on the value of increased production uptime.

Predictive maintenance is one of many applications of AI that can cut costs in not only services but also operations. In many areas—including manufacturing, distribution, and inventory management—data-enabled operations optimization can enhance service performance at every step of the supply chain. Such optimization entails supply chain transparency for superior planning, improved forecast accuracy drawn from existing data, and streamlined field-service input costs through analytics-driven staffing and scheduling solutions aligned with real demand.²¹

‘Softwarization’ of features

Just as servitization involves the transition of products into services, “softwarization” refers to the transformation of technology that is traditionally associated with hardware and

²¹ For more on harnessing data for analytics-based maintenance, see Harold Brink, Adam Krych, Orlando Ramirez Cardenas, and Sanchit Tiwari, “Establishing the right analytics-based maintenance strategy,” McKinsey, July 19, 2021.

physical infrastructure into software-based solutions. This concept can offer significant benefits, including flexibility, scalability, and cost-efficiency.

Car manufacturers, for example, are investing heavily in the transition from a focus on mechanical features to differentiating electronic features. Not only has this helped to reduce costs overall, but it has also been driven by customer sentiment, with more than 80 percent of customers willing to pay for mobile services. This transition has ranged from replacing traditional physical buttons for user functions with a touchscreen to some OEMs exploring pilots of autonomous vehicles. In the service arena, this shift has resulted in an evolution of the skills needed to maintain cars, such as interrogating analytics rather than disassembling an engine, as well as the use of software rather than hardware updates or physical replacements to fix faults.

Tesla has been a pioneer in this area, using softwarization as a strategic tool to retain clients and expand postsales revenues. Tesla's value proposition revolves around electronic features that enhance the customer experience, differentiating the company from competitors. The much-discussed Autopilot, a signature feature of Tesla vehicles, exemplifies this differentiation. All cars from 2019 are designed, from a hardware perspective, to include the autonomous-driving options. Customers can decide to purchase a car without any self-driving option installed initially and then later install the required software through their personal Tesla account.

Sustainability as a key to unlock new value pools

Sustainability has emerged as a pivotal key to unlocking new value pools, ushering in innovative approaches and practices. Companies are focusing on minimizing the carbon cost of products and are interested in increasing the circularity and overall materials cost. Two illustrative examples underscore this transformative shift in the service landscape.

Sustainability is expected to become a defining theme in the automotive aftermarket, with a focus on “green parts” and sustainable material sourcing. Initiatives such as recycling programs for lithium-ion batteries, boasting recycling rates of up to 95 percent, are emblematic of this commitment. The adoption of remanufactured parts further contributes to reducing CO₂ emissions, energy consumption, and the use of natural resources, aligning with strong regulatory mandates in the European Union. This is an area in which OEMs are well positioned, with many automotive customers still preferring OEM parts over substitutes and more than half of customers open to refurbished or remanufactured parts. Green logistics practices, including more-efficient distribution and lower return rates, promise to spur sustainability even more. Green workshops are becoming qualified to handle new technology incidents, enabling over-the-air updates and recalibrations to enhance efficiency. Leveraging analytics and technologies, such as digital twins and machine learning, aids in forecasting vehicle failures, optimizing maintenance effectiveness, and advancing sustainability in the automotive aftermarket.²²

The second example illustrates the paradigm shift in the healthcare sector, particularly with the next generation of anesthesia machines. These innovative machines are designed to adapt to evolving clinic needs and offer a compact and cost-effective solution, enhancing workflow for medical professionals. The approach prioritizes flexibility, enabling the addition and customization of applications per physician requirements. This approach minimizes environmental impact by reducing the use of disposables and cuts development costs via the utilization of existing components. Notably, the product boasts more than 90 percent recyclable parts, significantly lower manufacturing costs, and sustainable materials, further exemplifying the fusion of innovation and sustainability in the service sector.

²² For more on the trends in the automotive aftermarket, see Daniel Christof, Jonas Hofmann, Denis Hörner, and Sebastian Kempf, “Making every part count: A component view on disruption in the automotive aftermarket for light vehicles until 2030,” McKinsey, May 17, 2021.

Higher-than-expected maturity in ‘remotization’

A notable trend in the future of the services sector is the continuously growing maturity in the “remotization” of offerings. This has been particularly prominent in workforce management (WFM), including both strategic and operational planning aspects. WFM covers a range of functions, such as forecasting, scheduling, and the optimization of labor-related business processes, all of which have been affected by the remotization trend.

This development is applicable across diverse workforces, ranging from store associates and call center representatives to field technicians and construction engineers. WFM processes have traditionally been predominantly manual, relying on statistical models rooted in historical trends and often subject to manual overrides because of entrenched practices. Errors in WFM can have significant business repercussions, including over- or understaffing, compromised service levels, excess idle time, and increased overtime costs. The COVID-19 pandemic has exerted substantial pressure on WFM while simultaneously opening new opportunities for innovation.

Changing workforce dynamics and the evolving nature of work require more-complex forecasting models that consider multiple variables to comprehend underlying drivers. This, in turn, has paved the way for innovative service models, harnessing sophisticated WFM tools.

One compelling facet of this evolution is the emergence of fully remotized offerings for field services, with leaders implementing three main technologies: assisted activities, featuring interactive step-by-step guidance for complex interventions and voice-controlled interfaces for hands-free operations; remote support, facilitated by video connections and augmented reality instructions; and video tutorials, available to the workforce on open platforms. These advancements not only enhance operational efficiency but also ensure consistency and broad reach across the workforce, reflecting the maturation of remotization in the services sector.

One compelling facet of remotization is the emergence of fully remotized offerings for field services.

Localization paradigm

The localization paradigm is gaining prominence in the service business, with customers increasingly looking for local service providers for global brands.

This trend toward localization may be new for many manufacturers, but it has been a familiar paradigm in the automotive industry for much of its existence, with OEMs building symbiotic relationships with their independent dealer networks in local communities across the world for years. The lessons learned from these partnerships, which involve developing integrated strategies to create seamless customer experiences, are valuable for other industries as localization becomes more important.

To deliver standardized aftermarket services through local workers or partners, companies are increasingly investing in extensive training programs. To ensure a consistent delivery model across various locations, this training can be in-house or for dealers and can be provided online or at dealer campuses. Additionally, companies forge partnerships with professional training vendors to provide comprehensive training solutions, while certification courses align with customer expectations gathered from surveys and other expressed customer needs. This localization approach ensures standardized excellence in service delivery across the board.

Online marketplaces

Taking cues from B2C spheres, online marketplaces for B2B business have been growing in volume and breadth as well. The importance of B2B online marketplaces has helped to redefine customer journeys and open new sales channels.

Companies such as Aero-Bay are pioneering innovative platforms where end users, MROs, and OEMs can seamlessly trade aftermarket parts for a variety of aircraft and components. These digital marketplaces are streamlining the procurement and distribution of critical components, fostering greater efficiency and transparency. Such platforms

offer a centralized hub for buyers and sellers, facilitating cost-effective transactions, reducing lead times, and enhancing the overall supply chain ecosystem.

As online marketplaces continue to evolve, they are expected to play a pivotal role in shaping the future of various service sectors, optimizing operations, and fostering collaboration. These marketplaces can create both opportunities and threats. On the one hand, they offer additional sales channels and opportunities to sell into the aftermarket; on the other, they make it easier for sellers of non-OEM refurbished parts (for example, used-serviceable-material parts in aviation) or substitute parts (such as parts-manufacturer-approval parts in aviation) to find and sell to customers. It's therefore important to participate in these marketplaces with the OEM's differentiation at the forefront of the conversation.

Building ecosystems around products

Many leading companies are investing in building ecosystems for their aftermarket offerings. These ecosystems are made up of interconnected sets of services that enable users to meet diverse cross-sectoral needs within a unified, integrated experience. Within these ecosystems, value creation occurs through the integration of customer journeys, addressing critical pain points with tailor-made solutions.

This approach to building ecosystems around products has gained traction across various industries. For instance, telcos across geographies have made efforts to cultivate vibrant ecosystems around social networking, messaging, gaming, entertainment, financial services, and business tech solutions. These interconnected ecosystems keep customers engaged with the telco conveners, keeping them relevant and providing additional revenue streams beyond the core offering.

In mobility, there has been growth in the use of digital platforms that facilitate the trading of repairs and spare parts. These platforms streamline the entire customer journey, enhancing the overall experience. Some automotive players are offering subscription-based services that provide all-inclusive

packages (such as maintenance, tire changes, and insurance) that goes beyond the traditional car-buying offer. They also offer third-party services, such as connections to mobile phone operating systems, mobile data subscriptions to power infotainment systems, and charging network and fuel subscriptions. While these might not all be core offerings for OEMs, they are relevant services for which OEMs have a right of first refusal to keep within their own ecosystems.

Even the agricultural sector has embraced digital platforms. Manufacturers are now providing farmers with a wide array of administrative, consulting, and financial services within a cohesive ecosystem, leveraging their deep and trusted relationships with customers.

This shift toward building ecosystems around products reflects a profound transformation in how industries deliver value, enhancing customer experiences and fostering integrated, cross-sector collaborations. It does, however, require increased attention toward the selection of the most appropriate partners or the development and integration of additional business units.

Considering disruptions to the service workforce

Significant disruptions are anticipated in the service workforce, spurred on by the continued rapid development of technology. It is important to note that jobs themselves will not disappear but rather will likely undergo a transformation, with a change in focus and required skills. Many leaders identify having a skilled workforce as the primary barrier to implementing growth strategies, highlighting the critical role of finding the right talent.

Automation, by leveraging existing technologies, has the potential to partially replace a number of aspects of current aftermarket service jobs. This includes a reduction in the required effort for diagnostics and fault finding, as well as administrative functions. On the other side, increased digitalization is expected to change existing jobs and create entirely new jobs. This global change across industries will

likely necessitate a shift in the skill sets required from the workforce. Therefore, the current workforce will need to transition to different occupations or undergo significant upskilling or reskilling within the next decade. Most global executives concur that upskilling and reskilling of existing employees should constitute a substantial part of their strategy to address skills gaps.

Given the scarcity of in-demand technology-based skills (which are often two to four times undersupplied), and in light of the costs and uncertainty associated with hiring and with shifting workforces, the business case for up- and reskilling employees is increasingly appealing—especially with the costs for providing such training decreasing. The continuing influx of millennials and Gen Z into the workforce brings in fresh skills, attitudes, and expectations, shaping the workforce of the future. Considering these recent developments, large tech firms invested significantly in the rollout of reskilling programs through digital training and learning platforms to ensure that their workforce is future-proofed and that critical capabilities, such as technological, social, and emotional skills, are available internally.

The rapid spread of gen AI has accelerated the need to onboard tech-related skills, but it also provides a great opportunity for efficiency in aftermarket processes. Two main use cases apply to industrial companies:

- content generation to enable fast and automatic generation of contracts and reporting, with personalized communication advertisement reducing internal manual work and potentially speeding up processes
- customer and operator interactions to improve agent productivity and the quality of answers, referencing all internal technical reports (both software- and hardware-related) to significantly increase first-time-right responses

Again, the workforce required might be reduced, but on the other hand, setting up and maintaining these disruptive technologies will require workers in highly skilled roles.

Conclusion

For manufacturers of durable goods, the aftermarket has emerged as a crucial driver of growth and overall business success. By offering parts and services to customers after the initial sale, companies can tap into a lucrative revenue stream with profit margins that can be up to four times as high as they are for new units. A robust aftermarket strategy can not only increase operational cash flow but also mitigate risk and improve the customer experience. However, each company must tailor its approach based on market dynamics, the competitive landscape, desired customer relationships, and the ability to seamlessly integrate aftermarket offerings into core operations. As companies develop their overarching business strategies, it is essential to consider how aftermarket services align with their goals and make informed decisions accordingly.

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