



RESEARCH
REPORT

THE
**ADVANCED
SERVICES**
GROUP



Building Resilience through Advanced Services



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Introduction

The global economic impact of Covid-19 has reinforced how vital it is for organizations to adapt quickly to market disruption. A sudden shift in demand can upend cash flow, balance sheets, profitability, and business continuity. Businesses need to be able to bounce back, to be resilient. For the manufacturing sector, advanced services can build this resilience.

The Manufacturers Alliance for Productivity and Innovation (MAPI) collaborated with the Advanced Services Group of Aston University in the UK (ASG) on a survey to understand industrial manufacturers' current state and readiness to build business resilience from advanced services.

We compared organizations generating a significant share of revenue from services (above 10%) to those that are not. Extensive research at ASG has revealed which elements are important for success in developing advanced services. This report provides key findings in this emerging and fast-evolving area, together with insight and guidance for manufacturing executives seeking to transform a product-centric model. Companies well-positioned to build resilience develop advanced services in three ways:

Servitization is not about shifting to providing services alone, but rather using the product as an enabler of services that ensure customer success.

1. **Customer intimacy,**
2. **Co-creation of new sources of value,** and
3. **Remote monitoring of their products in service.**

An Accelerating Shift Toward Services

Many large manufacturers have achieved success through sales of their products. Their expertise in design and production has resulted in highly efficient and effective machines. However, the rise of globalization has introduced lower cost machines with equivalent capabilities being manufactured in different countries. The resulting commoditization undermines the sales and profitability of the original manufacturer. Those companies that persist in a product-centric view may reduce their manufacturing costs and bolster profits by acquiring companies in adjacent markets. Both these approaches only obscure the threat to their core business. Adverse economic conditions can limit funds available for investment and amplify the forces threatening the core business.

It is not unusual for a manufacturing company to offer services to support its product. Since the early days of modern manufacturing, services have been available—whether those services are spare parts or break-fix.

By contrast, advanced services are services that guarantee the outcome delivered by a product. A jet engine delivers thrust; a truck delivers the movement of goods; a tire delivers safe and economical travel. Advanced services require a shift from product-centric thinking to customer-centric thinking to build resilience. *Servitization is not about shifting to providing services alone, but rather using the product as an enabler of services that ensure the customer is successful.* For example, a partnership between a manufacturer of trains and the train operator is focused on the passenger. The hallmark of advanced services that lead to business resilience is a well-designed value network of organizations focused on delivering a service that promotes the success of the customer or of the customer's customer.

Sources of Resilience: Customer First

Business resilience is the ability of an organization to react quickly to changes in market conditions. The word resilience means, “the capacity to recover quickly from difficulties; toughness” and “the ability of a substance or object to spring back into shape; elasticity” (Oxford Languages).

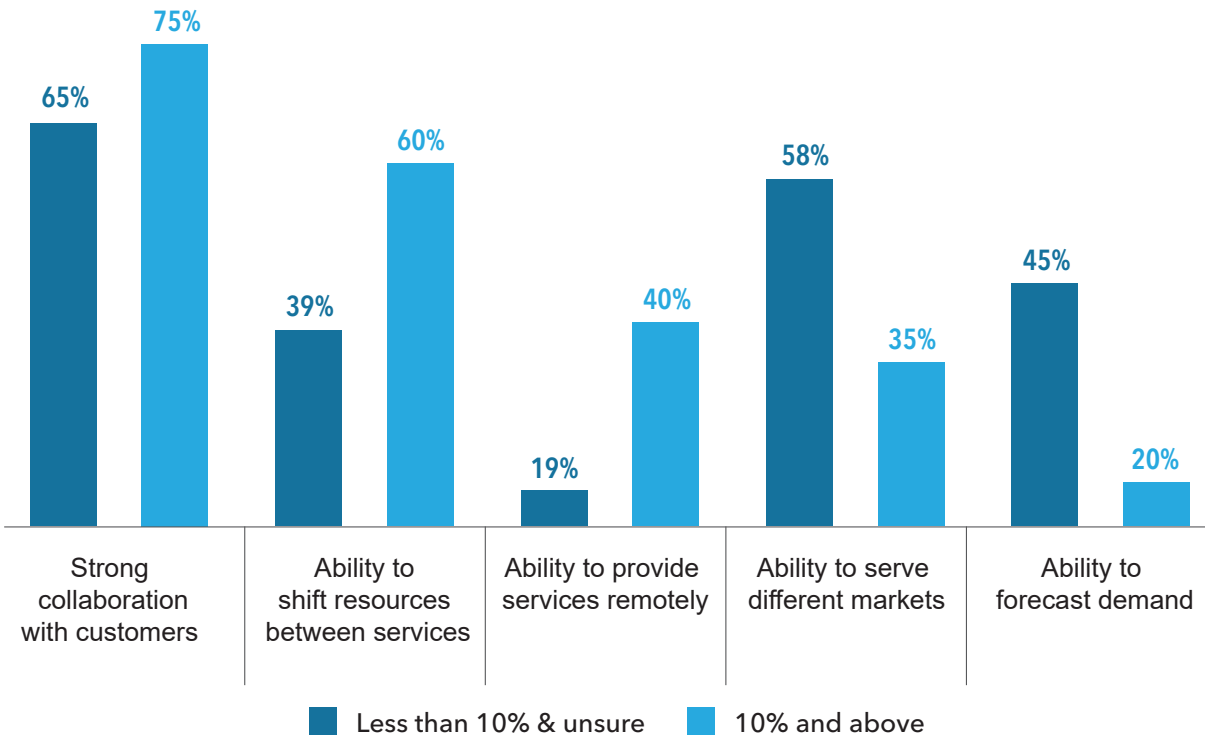
Looking first at elasticity, the more services-oriented respondents to the MAPI and ASG survey rank shifting resources highly on enabling resilience, but second to strong customer collaboration.

How to Read the Charts in This Report

In all charts, the dark blue results represent organizations that self-report generating less than 10% of annual revenue from services, while the light blue bars show results for organizations generating more than 10% of annual revenue from services.

Strong Customer Collaboration Tops Key Enablers of Business Resilience

What do you consider to be the most significant enablers of business resilience?



The strength of response of strong collaboration with customer—for both groups—suggests that many organizations are already moving toward a customer-centric approach. Organizations that receive more than 10% of revenue from services are less likely to report the need to predict changes in demand. Instead, they are flexible and shift resources between services.

Another strong response from respondents already providing services is the ability to provide services remotely. Remote services rely on one or more of the following capabilities:

- Monitoring product performance;
- Predicting the need for maintenance or upgrade;
- Predicting and then ordering consumables as needed;
- Offering advice on product use and being able to make changes to product configuration.

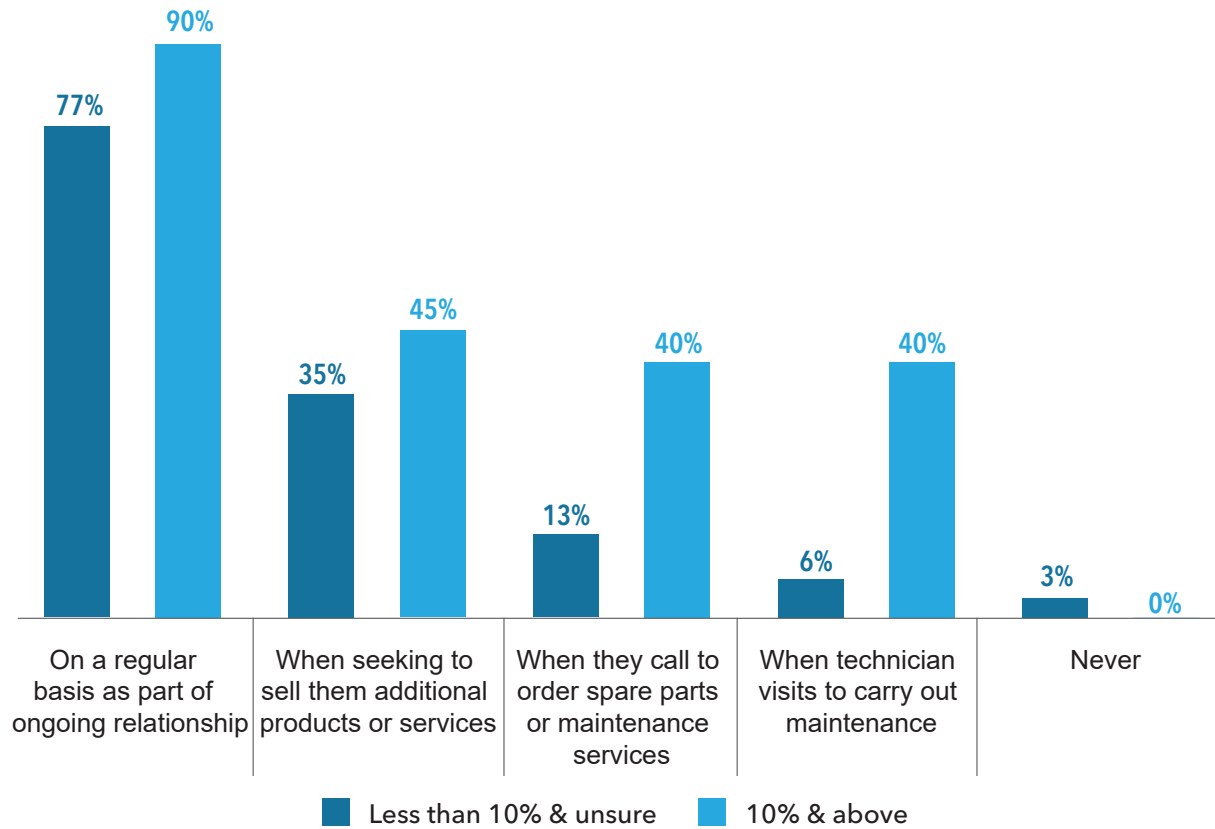
Remote monitoring and service reduce the need for a technician to travel to a site and lead to a much faster resolution of problems or even prevent problems.

Aligning company success with that of the customer is a key factor in developing a customer-centric approach: collaboration ensures the highest levels of goods or service provided to the end user. Many survey respondents report customer success is an essential measure for their organization.

It is also a good sign that many organizations are building ongoing relationships that look beyond the customer’s use of the product to the opportunities and challenges in their market. Conversations like this allow the service provider to identify new sources of value, which, when delivered as part of the service, make for a stronger customer relationship.

Ongoing, Not Episodic, Product Performance Conversations Integral to Customer Relationships

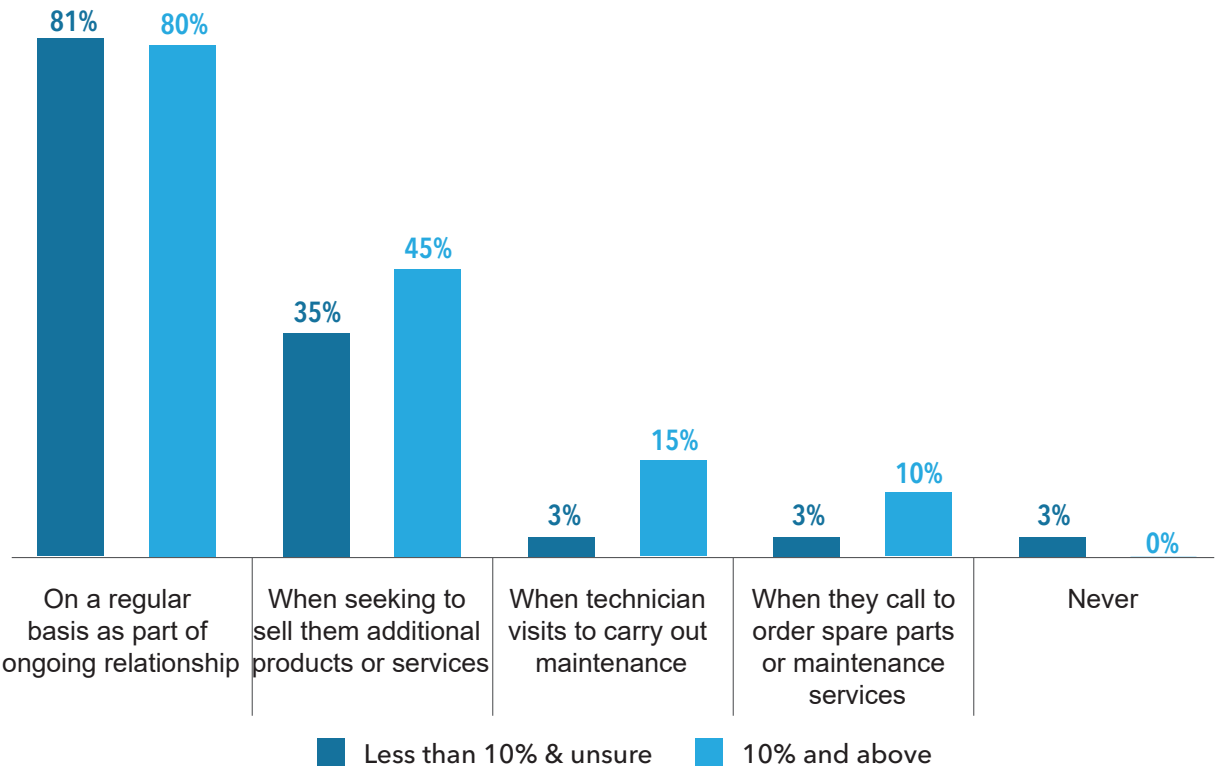
When do you talk to the customer about the performance of your product?



Turning next to the “toughness” characteristic of resilience, the great opportunity that advanced services brings is to change individual product transactions into a continuous stream of payments based on the delivery of the desired outcome. A business with significant services revenue will have very strong cash flow.

Recurring Business Health Conversations Also Integral to Customer Relationships

When do you talk to the customer about their overall business?



What are Advanced Services?

Advanced services are a cluster of high-value business models that focus on the delivery of ‘outcomes’ rather than products to customers. These usually include:

- Revenue payments structured around product usage;
- Performance incentives (e.g., penalties for product failure when in service); and
- Long-term contractual agreements (e.g., spanning 5, 10, or 15 years) and cost-down commitments.

Well-documented examples of advanced services in the manufacturing sector include Xerox’s Print Management offering, which bundles printing-equipment and maintenance-services whereby customers are charged for the use of the product-service-bundle (i.e., per print); or MAN Truck & Bus pay-per-mile offering, which bundles truck, maintenance, and driver-management services where customers are charged for the extent of the use of the bundle (i.e., distance driven).

Digital technologies such as artificial intelligence (AI), deep learning, and data analytics play critical roles in the development and delivery of advanced services today, where they essentially provide remote monitoring of product location, condition, and use.

Why Are Advanced Services More Relevant Now?

- **Economic trends.** The world’s gross domestic product from services is growing while that from products is in decline. For a very long time, manufacturers have been focused primarily on manufacturing products. However, manufacturing executives are recognizing that value creation is shifting toward services, and they can build revenue from products and services.
- **Sustainability.** Environmental, Social, and Corporate Governance (ESG) is accelerating as an industry priority. Environmental sustainability is a big issue. Advanced services lead to a dematerialization of the supply chain.
- **Resilience.** When resources are tight, customers start to think about whether it is more cost-effective (in the short or long term) to service their existing equipment or to buy new. With cash under tight control, companies are more likely to service and maintain existing products. Advanced services, which guarantee the performance of the equipment for the customer, support the resilience agenda as well.

Advanced services are a cluster of high-value business models that focus on the delivery of ‘outcomes’ rather than products.

Advanced services address three prevailing challenges within this current environment:

- **Business Uncertainty.** The pandemic disrupted previous supply chains and they have been slow to adapt. Many companies now have underutilized assets while others no longer have capacity to cope with the change in demand.
 - » Advanced services can add flexibility in operations. An ability to pay only for the output delivered as and when needed would enable the organization to survive this and future crises.
- **Scarce Investment Funds.** Uncertainty makes finance and investors nervous. In the past, companies would use a 10 or 15-year NPV calculation to justify a major capital expense. Covid-19 has revealed that such long-term forecasts are inherently riskier.
 - » Servitization enables manufacturers to develop services based on the outcome delivered by the product. Customers will not need to fund the purchase but rather pay as they go with a

guarantee that the product will perform, whatever the level of demand. The transformation to deliver these advanced services will lead to sustainable growth.

- **Remote Access.** To control the spread of a virus, such as Covid-19, we were advised to keep at least 6 feet from others. It is less desirable today to send technicians to a site to configure, maintain or repair equipment. With the use of Internet of Things (IoT), it is possible to do these things remotely and thereby protect field technicians, the customer, and those they would come into contact with traveling to and from a site.
 - » Servitization encourages manufacturers to look for new sources of value remotely. Technological connectivity in conjunction with a closer relationship with the customer opens the opportunity to do things differently: to overcome things that stop the customer from reaching their current capacity (pains) or to act on opportunities to grow their business (gains).

The economic, sustainability, and resilience agendas are a compelling argument for manufacturing companies to look at services and servitization, especially to absorb risk and create value.

Of course, manufacturing companies have long provided a set of services: providing the product, providing spare parts, and, perhaps, providing break-fix services. These base services are shown at the bottom of The Services Staircase (Figure 1).

The ASG Services Staircase

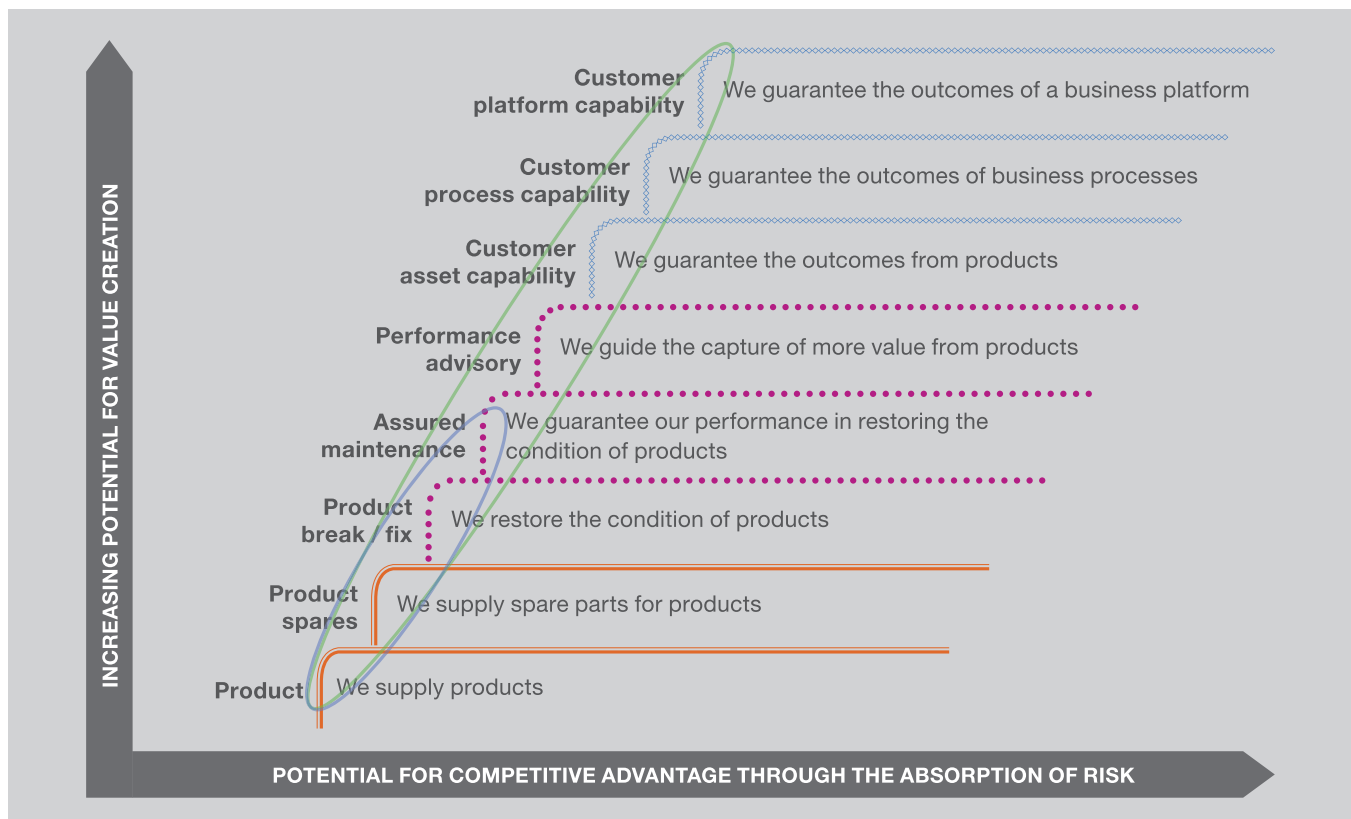


Figure 1 - The Services Staircase. © Advanced Services Group 2020

Over the past 30 years, manufacturers have become more interested in assured maintenance programs in which the product's condition is assured. For an annual fee, Caterpillar will monitor engine condition and ensure the oil is changed as needed. Intermediate services like this are important, but other service innovations go further. Advanced services go beyond providing a product or maintaining the condition of that product to selling the outcome that the product enables. So, rather than selling cars, the manufacturer sells mobility. Rather than selling gas boilers, sell heat as a service. Focusing on the outcome is when the value of product-service combinations becomes visible.

On the Services Staircase, it is possible to express the changing footprint in terms of the customer value propositions, or even the business models, that manufacturers are now offering. Most manufacturers traditionally associate themselves with the blue envelope (shown at the bottom left of the diagram on page 8) providing the product, parts, and break-fix. Many manufacturers now aspire to move into the green envelope, that is, to move into outcome-based contracts such as providing the mobility as a service or heat as a service. These are advanced services, the potential game-changers.

This is not about letting go of manufacturing. This is about extending the footprint of the manufacturing business. Ambassadors in this space are companies like Rolls-Royce. Rolls-Royce manufactures a product and has services that enable it to have a pathway to differentiating itself in the marketplace. By contrast, a company like IBM has moved away from manufacturing products to offer research and consultancy services. Manufacturers are using their knowledge of designing and producing the product to sell services focused on the outcomes that the product enables.

How Advanced Services Add Value: Co-Creation

The Services Staircase is also a model of the support that manufacturers give to their customers regarding the use of their product. The survey results below show different types of support ranked from left to right according to the activities of organizations that already earn more than 10% of revenue from services. We should view the responses with some caution. When manufacturers talk about performance guarantees, they refer to the product's rated performance which can be obtained when new, in controlled conditions.

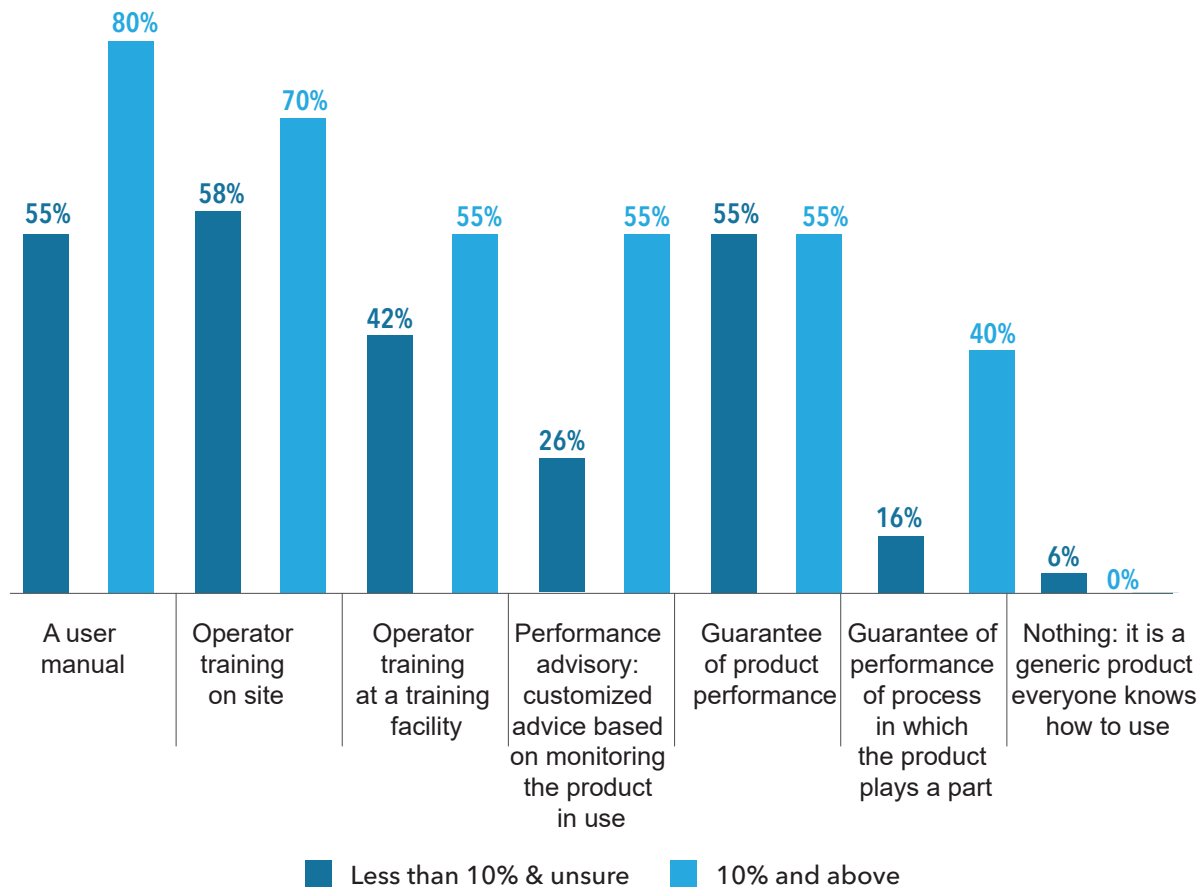
Rather than sell cars, sell mobility. Rather than sell gas boilers, sell heat as a service.

For advanced services, we need to move from the design characteristics to the outcome delivered by the product. For a pump, the performance characteristics will refer to the expected flow at a specified head but what the customer needs is the correct volume of liquid to be supplied to their process machinery that runs 24/7.

Notice that some organizations have begun to offer guarantees of the performance of the process in which their product takes part. A guarantee of this type requires a risk analysis of the whole production line and, possibly, collaboration with other equipment suppliers in the process.

Breadth of Customer Support Rises with More Services

What support do you give to your customer regarding the use of your product?



Common Challenges in Introducing Advanced Services

Organizations seeking to introduce advanced services must navigate a number of challenges. Survey respondents identified the following categories:

- Data access
- Value
- Product access
- Liability
- Expertise

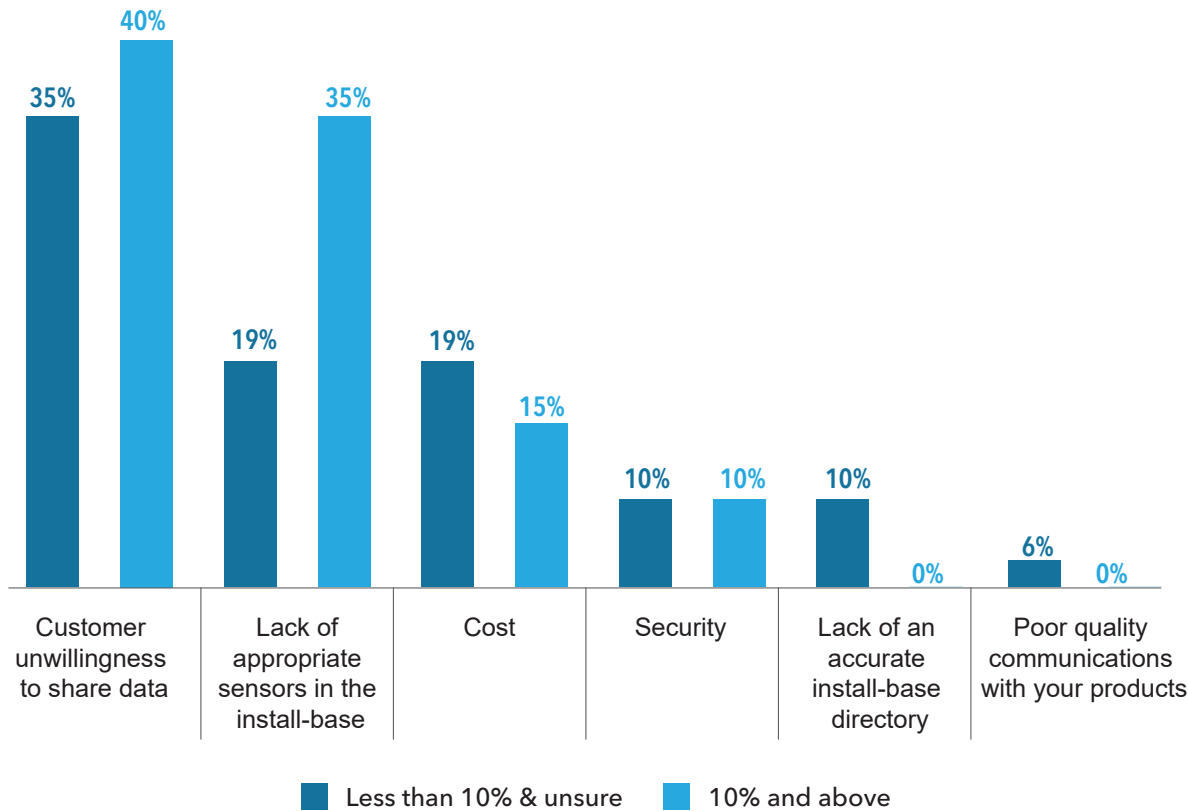
The primary challenge is obtaining permission from the customer to connect to the product while in use, whether in their factory or elsewhere. In addition to data security issues, customers are concerned that the product manufacturer can now “see” what is happening in their factory, for example, their production rate. This information could be of use to their competitors.

The Covid-19 pandemic has encouraged more customers to allow data connectivity as a way of avoiding the need for maintenance technicians to visit their site. Regardless, the product manufacturer will have to ensure that the data is secure and not shared with competitors. However, once the customer begins to benefit from

performance advice that data access enables, the reluctance to communicate tends to fall away and many companies report that their customers seek more insight and more services based on connectivity. Being connected opens the way to new sources of value for the manufacturer and their customers.

Data Sharing Tops Challenges to Remote Monitoring

What is the most significant challenge to remote monitoring?



The type of challenge in the second category of “Value” includes whether the manufacturer can recoup the incremental costs of setting up the remote monitoring service. After all, “Performance Advisory” often enables the customer to get more out of their existing product: increased reliability, enhanced productivity, better quality output, and longer asset life. All of these likely lead to a reduction in demand for the product itself, spare parts, or basic maintenance or upgrade services.

Performance advisory services are often seen as the gateway to advanced services since it is necessary to build a strong relationship with the customer and establish remote monitoring. However, survey respondents report significant challenges to providing a performance *guarantee*.

Most manufacturers are confident to quote performance figures for their product based on test conditions in a controlled environment. However, when in use in the customer’s factory or elsewhere, the product is in a more complex environment. For example, the manufacturer does not control quality of the input materials or the ambient temperature and humidity in the factory, or the competence of the customer’s operations and maintenance teams. Another factor of complexity is establishing exactly what is to be guaranteed and the economic consequences if the product fails to deliver the required output. Moreover, when the product was purchased, was the correct model and capacity specified to meet the production load now put upon it?

There are two approaches to this challenge. One is the discipline of risk management. For example, using a Failure Mode Effects Analysis to identify what needs to be controlled and how to monitor the effectiveness of such controls. The other is to define what is being guaranteed with the customer. It does not have to be a stark all-or-nothing offer such as “If the product fails, I will cover the costs of the lost production” but

rather a commitment to improving one (or more) current production metrics. For instance, “We will reduce unplanned downtime by five hours a month.” (See the ASG case study of [Goodyear](#).) Together with insights gained from providing performance advisory services, these approaches provide two-way value.

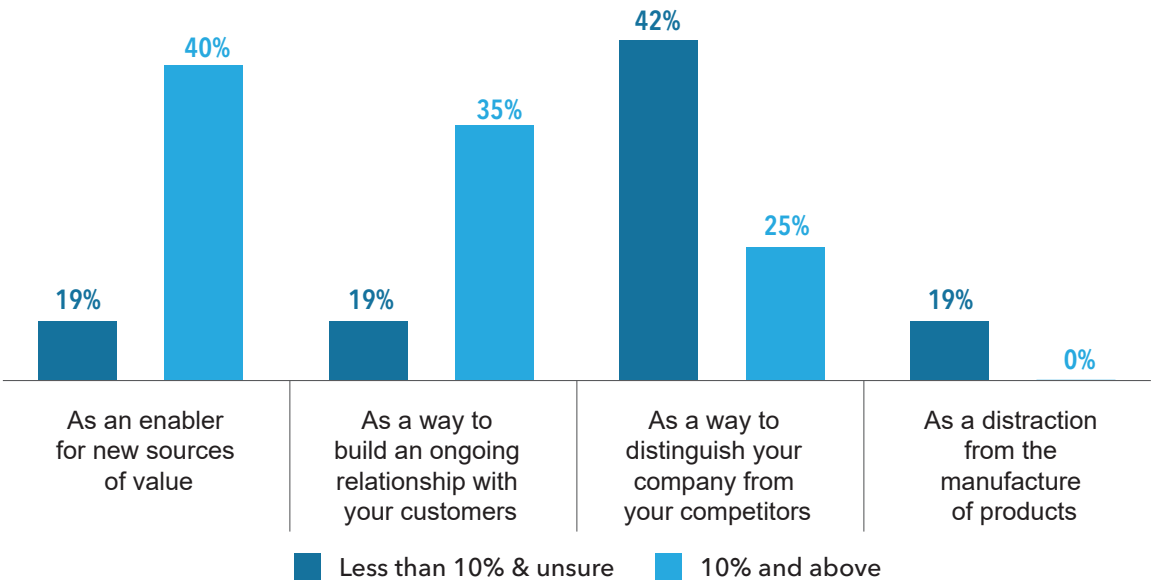
Where to Start the Advanced Services Journey?

Most manufacturers already offer base services but often these services are viewed narrowly as a way to obtain product sales. To move the organization’s mindset to be more focused on the customer, it is better to view services as an enabler for new sources of revenue and new sources of value, and as a way to build the ongoing relationship with the customer. Many respondents reported that services are a way to distinguish the organization from its competitors, but often manufacturers give away services to sell more products.

Well-designed services offer real value both to the manufacturer and their customer. As we have seen during the Covid-19 crisis, if the organization’s strategy is built on selling more products, market disruption can cause significant difficulties. On the other hand, those organizations who have built a strong relationship with their customers and have outcome-based services in place, find that their income is more resilient to the changes in demand.

Service-Orientation Requires a Shift in Mindset

Which of the following best describes how your company views services today?



Advanced Services Transformation Roadmap

Given the interest in introducing advanced services into an organization, ASG has summarized their research in the Transformation Roadmap. There are several aspects to it, such as technology and engineering, which are very important. Still, the biggest challenge that the organizations face – including MAPI members polled – is organizational cultural change.

This roadmap has been created by carrying out an exhaustive set of case studies with manufacturing businesses who have moved into advanced services; manufacturing businesses who have moved to embrace the green envelope shown on the Services Staircase on page 8. The roadmap shows a retrospective view of how companies have transformed from being a product-focused company to being a company that provides services based on the outcome delivered by their product. ASG is not prescribing what a specific organization should do next, because what to do next depends on where the organization is today. The Transformation Roadmap sets out the *pattern* that companies that have successfully moved into this space have followed. By understanding that pattern, manufacturing executives will be in a better situation to navigate the change.

The roadmap shows that, as organizations move from what was the blue footprint in the staircase to the green footprint, they go through four phases of organizational change.

1. **Exploration**—organizations ask themselves questions such as “is servitization right for me? Should we be doing this type of thing? What could be the benefits?”
2. **Engagement**—test ideas with customers to see where new services will work, whether these advanced services will truly deliver value for them.
3. **Expansion**—scale up the services, such as moving them from one country to the next or into different markets.
4. **Exploitation**—improve the efficiency in delivering advanced services.

The Transformation Roadmap on page 14 shows a pathway companies can follow, and it has lots of ring roads and roundabouts on it. These roundabouts are where companies get themselves in a situation where they are cycling. They are stalled, so they have to play with ideas until they generate momentum and success. Then they move into the next phase. It is not a linear process. The roadmap is based upon a theory called punctuated equilibrium, a theory of how businesses grow.

As an illustration, Rolls-Royce Aerospace, which has a strong portfolio of advanced services, is in the exploitation phase, as is Caterpillar. When looking at those types of businesses, four sets of forces affect how fast an organization moves or how successful an organization will be. Those forces are, on the top, the market pull and, on the bottom, the technology push.

Innovation takes place as a combination of an interplay of market pull and technology push. If customers are calling for these things, progress is likely to be faster. If the organization has an abundant technology base of sensors and monitors, which can be used, the transformation will be faster. In addition, on the right and left extremes, there are two other forces: on the far-right hand side, the structure of the organization’s value network. If the organization is close to customers, it will move faster. Still, if it is far away from customers and is servicing customers through dealerships, distributors, and in stores, the transformation will be slower.

*The culture of the organization
and how the culture shifts
have the most influence on a
servitization journey.*

ADVANCED SERVICES TRANSFORMATION ROADMAP

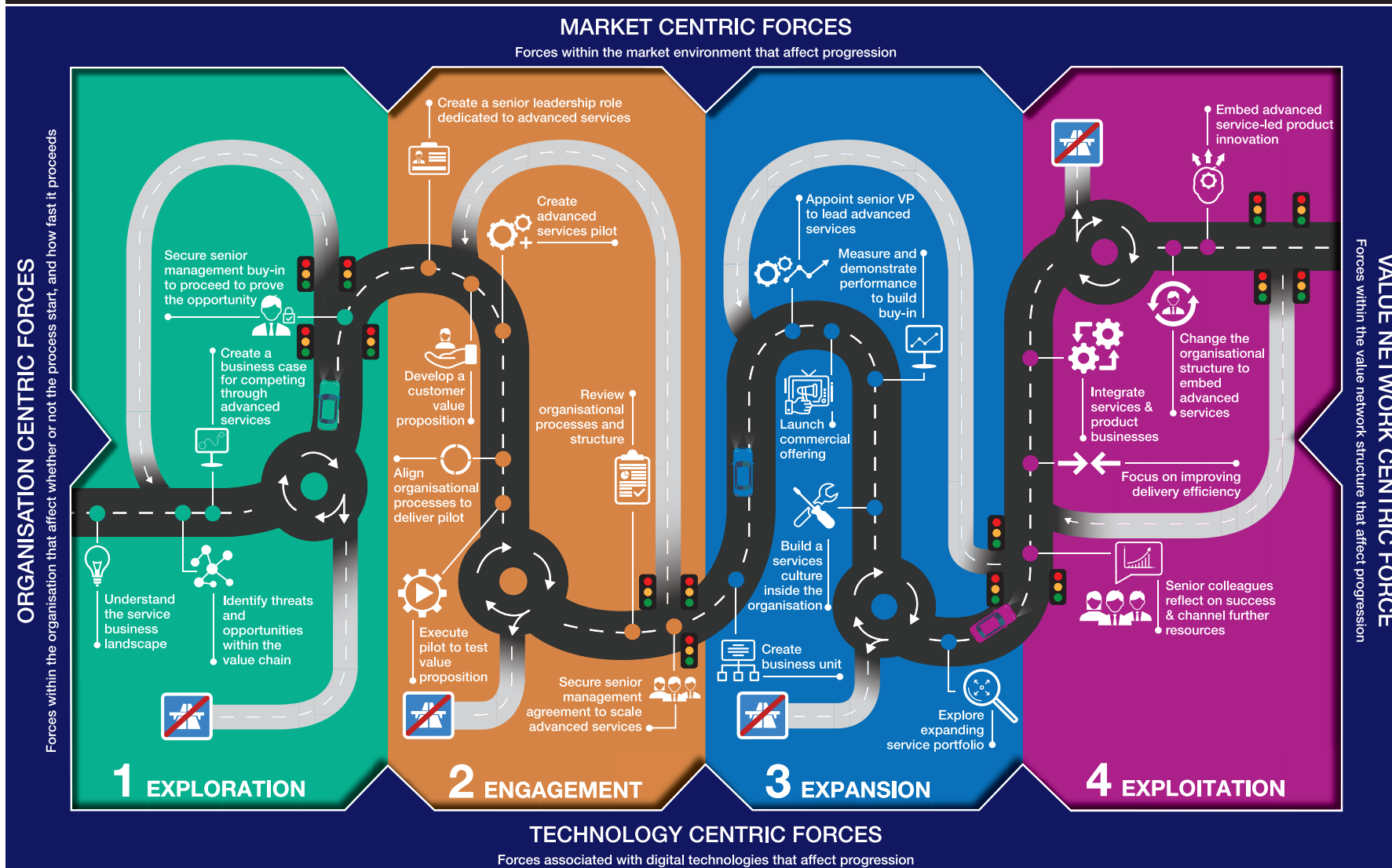


Figure 2 - © Advanced Services Group 2020

On the left-hand side of the Transformation Roadmap is the set of forces that ASG has found most influential, and these are the organization-centric forces: the culture of the organization and how that culture shifts. There are specific tools and techniques needed because the organization is trying to create a very distinctive culture. The aim is not to abandon products but to build a service business based on those products. Indeed, if the product-based philosophy of the organization is challenged too early, it is likely to result in a failure. Each organization has to develop a way of blending its product-based mentality and engineering expertise with a service culture and develop a hybrid culture. This is one of the most significant factors in organizations which inhibits the adoption of advanced services. It can be overcome but, upfront, it is the most significant barrier.

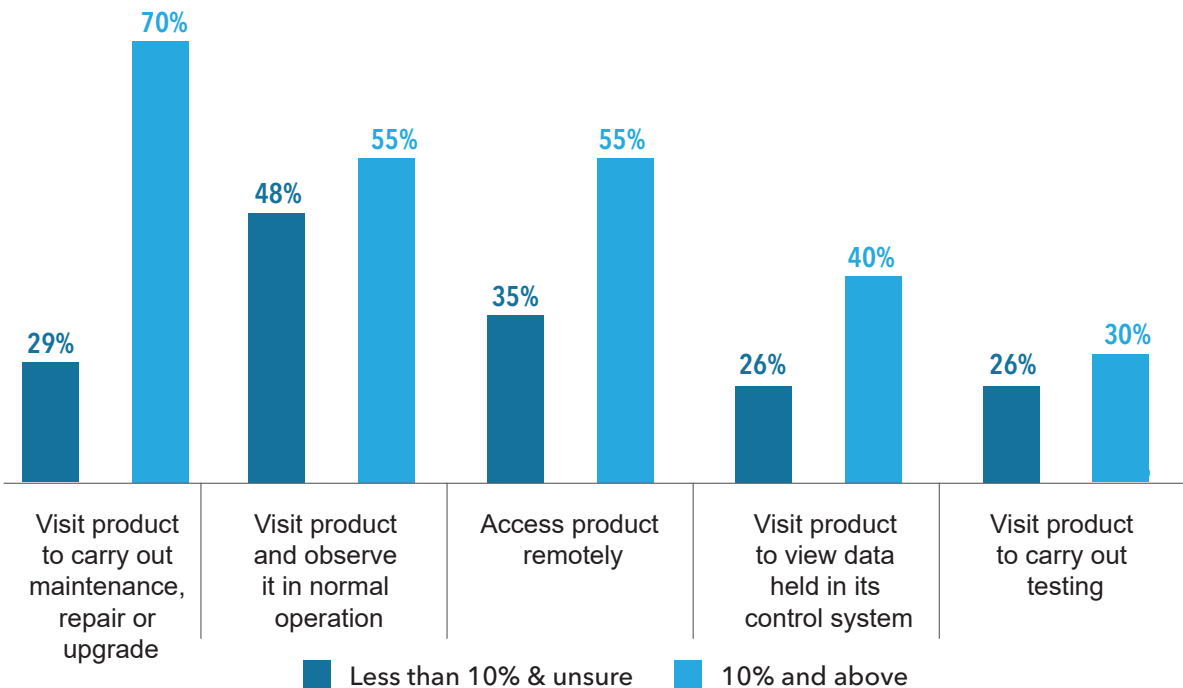
Survey results revealed the underlying culture of each responding organization. It is interesting to note that many respondents arrange to observe the performance of the product in normal operation. This represents an investment on the part of the company to arrange for employees to visit customers outside of any direct need to carry out maintenance or repair. The willingness to make this investment points to a company culture concerned about whether the product is performing as it should.

The survey also shows considerable investment to ensure that organizations can monitor their product remotely. This provides more evidence that companies are moving beyond the traditional product-centric approach of “make it and sell it” to greater engagement that seeks to understand whether the product performs for the customer. We presume that having this information enables manufacturing organizations to ensure that the customer gets what they need from using the product.

Each organization has to develop a way of blending its product-based mentality and engineering expertise with a service culture and develop a hybrid culture.

On-Site Visits Remain Common with Remote Monitoring

How does the company monitor the performance of the product in use?

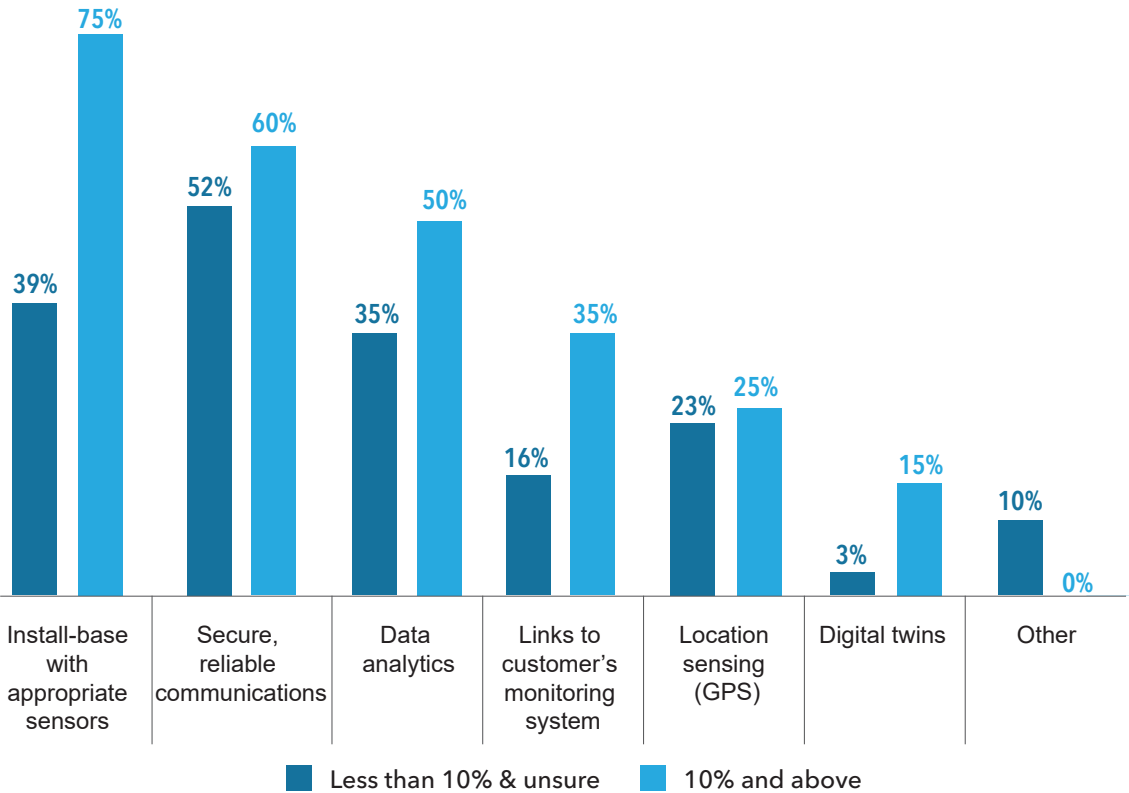


It is something of a surprise that only around 5% of respondents currently use remote monitoring to trigger maintenance activity (not shown). However, survey respondents also indicate that new technologies are enabling greater connectivity for remote monitoring.

Continued innovation has the potential to accelerate adoption of advanced services.

Greater Connectivity Distinguishes Remote Monitoring with Customer

What do you see as the most pressing barrier to remote monitoring?



Appendix

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About the Survey

Survey Design

The survey was designed to look at the elements of business thinking that enable a transition to advanced services. These elements include: the attitude towards services; how an organization measures success; what steps are taken to monitor the performance of the product in use and the organization's relationship with its customers. A few questions gave the opportunity for the respondent to enter their own views.

From Insight to Action

If this paper has set you thinking about how your organization could build resilience through developing advanced services, you may be interested in next steps. Here are three recommended resources.

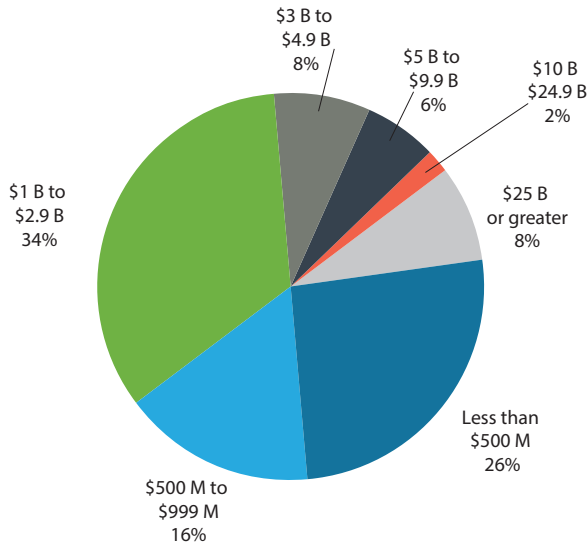
- Subscribe to [weekly insights](#) from MAPI and attend our [events](#).
- Download the [case studies](#) and [mini-guides](#) from ASG.
Talk to your customers to understand more fully how the use of your product helps them achieve their goals. See the ASG Mini-guide, "[Customer Value Propositions for Servitization](#)."
- [Contact ASG](#) for additional information or guidance on how to take specific steps to advance servitization at your organization.

This survey was primarily promoted with MAPI member organizations but we also made it available to non-MAPI organizations, e.g., in Europe. The design of the survey was such that it could be completed within five minutes and we asked practitioners to respond with the attitudes prevailing in their organization, rather than their own, personal opinion.

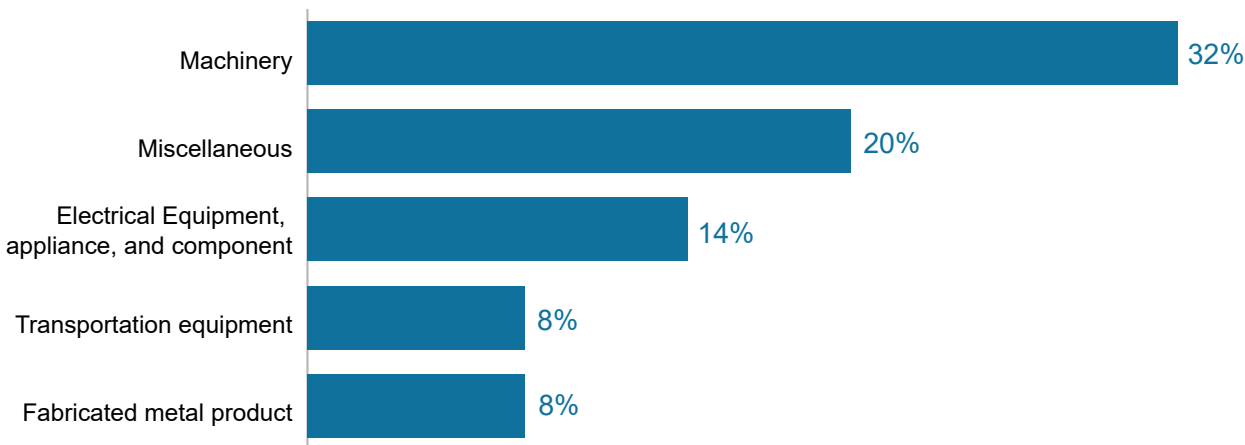
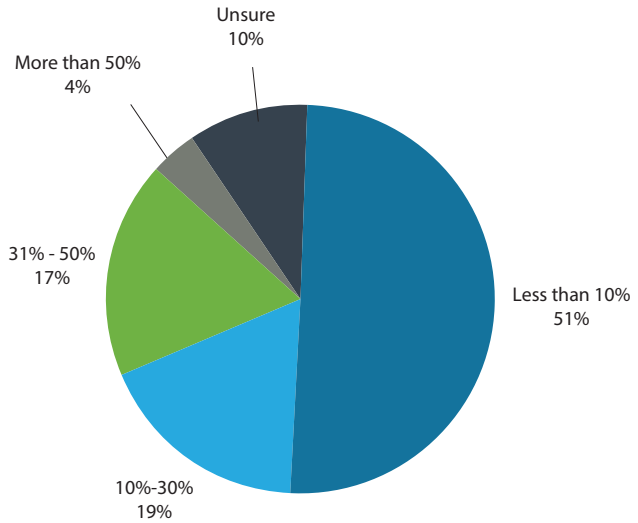
Survey Response

We received 52 usable responses from industrial manufacturers. The charts show the range of organization total revenue; the percent revenue from each organization receives from after-market service activities; and the business categories in which they operate.

Company Annual Revenue
Industry (Top 5 Represented)



Share of Revenue from After-Market Services



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Founded in 1933, the Manufacturers Alliance for Productivity and Innovation is a nonprofit organization that connects manufacturing leaders with the ideas they need to make smarter decisions. By leveraging the experiences of their peers and global market data, members use MAPI to enhance competitiveness and create efficiencies at their organizations. www.mapi.net.