



Research Insights

—

Transforming chemical industry services

Superstars create
the winning formula

IBM Institute for
Business Value



How IBM can help

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Key takeaways

Criticality of services

Executives view launching new services as the second most important business objective behind reducing operational costs. Services deliver a continual revenue stream compared to the cyclical nature of the chemicals business and provide a growth engine for chemical organizations. Service offerings also enable them to enhance the customer experience.

Framework to transform services strategy

We identified a small group of chemical leaders—19% of survey respondents—that have a well-defined services strategy. They excel at both service customer satisfaction and cost of service delivery. Their enterprises also lead in financial performance for revenue growth and profitability.

Four key actions for success

Leading organizations achieve services transformation by setting services strategy, governance, and cross-business alignment; leveraging technology and tools; acting on data and insights; and addressing talent and change.

Servitization in chemicals

For chemical companies, offering and delivering services are critical to address the disruptive market forces driving industry shifts. With decreasing product profit margins and limited brand loyalty, these companies are struggling with how to differentiate their value—whether through cost, features, or quality. The COVID-19 pandemic has exacerbated difficulties with significant disparities in the demand for chemical products.

Customers are demanding more personalized service. They expect service representatives to resolve immediate issues, as well as serve as trusted advisors that help them gain more value out of purchased products. Yet many companies lack the capabilities to meet their customer service aspirations. Customers are not impressed with the experiences provided by manufacturing companies—only 15% give the industry high marks in experience—beating out only organizations from the automotive and government industries and significantly lagging behind the 45% of the top industry, technology.¹

To drive growth, chemical companies have shifted from not only selling products but also offering a broad range of services. Service offerings can be based on product, performance, or usage:

- *Product-based services*: add services to existing products, for example, engineering services
- *Value-added services*: provide additional value, for example, knowledge and advisory services
- *Process optimization services*: provide process efficiency improvements, for example, services to achieve desired results
- *Outcome-based services*: deliver business outcomes, for example, management of total product cost as opposed to a product sale.



18%

higher net promoter score for delivered service experience for “service superstars” versus their cohorts



92%

of “service superstars” indicated that they were very effective at launching new services



82%

of “service superstars” reported improved customer benefits and outcomes from their technology investments

Services enable chemical companies to enhance the customer experience since service offerings can span the entire product life cycle. Service offerings can lower coordination, transactions, and other costs incurred by the customer if they were required to search out and assemble various products, services, and activities (for example, chemicals, equipment, procurement, operations, maintenance, quality assurance, or inventories on their own).²

Based on better customer intimacy and knowledge, companies can improve service levels and tailor targeted product and services offerings. In addition, chemical companies can generate better visibility into how customers use products and how the products are performing. These insights provide the basis for modifying products and developing the next generation of products and services.

Services deliver a continual revenue stream compared to the cyclical nature of products and provide a growth engine for these companies. Innovations in services mark a shift from the value of a product to the value provided by a product.³ Chemical management services are expected to grow at a compounded annual growth rate of over 7% from 2019 to 2024,⁴ compared to only a flat to low rate for products—negative in 2020 due to the COVID-19 pandemic.⁵ And services tend to generate higher profit margins. Margins generated by service-based models appear to be two times higher as compared to product sales.⁶

For the end customer, these service offerings address many of their most pressing challenges. Service innovation allows the customer to concentrate on their core competencies and provides technological flexibility.⁷ The customer does not have to depend on their own chemical management operations which may be inefficient or ineffective.

Services also allow customers to shift from CAPEX (owning products) to OPEX (using products), addressing the needs of their cash flow optimization. In addition, process- and outcome-based contracts shift the risk away from customers to suppliers. For customers, the cost of chemical management ranges from one time to three times for every dollar of chemical purchased (for example, a purchase of \$5 million in chemicals requires an additional spend of \$5 million to \$15 million to manage those chemicals). These high costs are related to compliance, safety, disposal, and floor space.⁸

55% of chemical executives indicated that traditional business models are not sustainable in the current market environment.

Examples of chemical companies providing services can be seen in the automotive and electronics industries. For paint and coating applications, automobile manufacturers require specific properties and are engaging with coatings manufacturers to meet individual requirements. The coatings companies can run complete coatings operations at automotive body plants.

In the electronics industry, full lifecycle management for chemicals is important. For example, a chemical supplier may “lease” chemicals to a semiconductor company for chips processing, with the management of used chemicals handled by the chemical supplier. Chemical companies can provide advisory services, solving problems and supplying solutions, best practices, and performance guarantees, while at the same time reducing waste and increasing cost savings.⁹

To understand where chemical companies are with their services strategies and delivery, the IBM Institute of Business Value (IBV) and Oxford Economics surveyed 350 executives in 23 countries who are involved in service development and delivery at their organization (see “Study approach and methodology”).

State of services

Chemical executives recognize the business need for services. Nearly three in five told us that customer/consumer behavior is shifting from product based to experience based. 55% indicated that traditional business models are not sustainable in the current market environment. And ongoing commoditization of products is reflected by over half of respondents, who agreed that differentiation is dramatically decreasing in terms of products, prices, quality, and delivery terms.

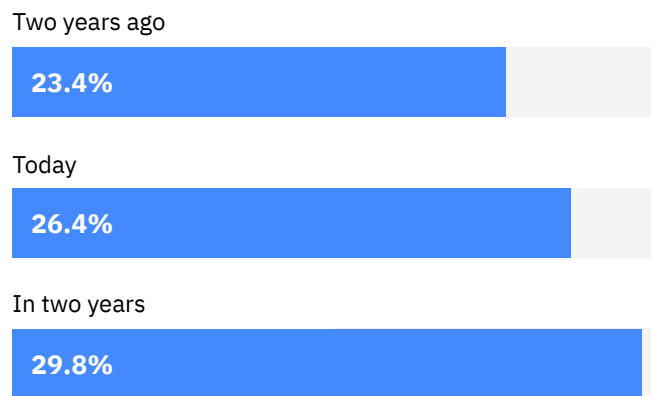
The importance of services is reflected in the companies’ business objectives. While nearly three in five executives surveyed indicated they are focused on reducing operational costs today, launching new services was second in importance at 50%, followed by launching new products and improving cybersecurity. This services priority is reflected in the growth of services revenues and margins (see Figure 1). The expectations are that both will continue to grow in the future. This growth is supported by the expected increase in service offerings over the next two years (see Figure 2).

Figure 1

Growth in chemicals services

Service revenues and margins will continue to grow in the future.

Services revenues as a percent of total revenues



Average service margin

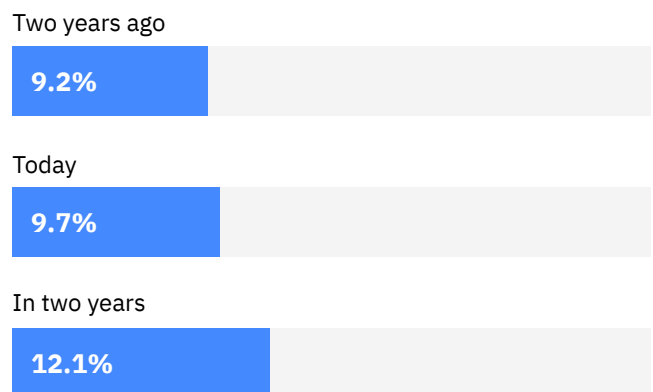


Figure 2

Growth of service offerings

Service offerings, especially those associated with training, support of competitor solutions and commodity chemicals, are expected to grow.

Offering	Today	In two years	Growth rate (CAGR)
Knowledge-based services	65%	67%	2%
Online monitoring	42%	49%	8%
Provision of training	39%	48%	11%
Support of competitor solutions	30%	37%	11%
Services for commodity chemicals	30%	43%	20%
Facility optimization	24%	25%	2%
Transformation of existing products/applications to services	20%	25%	12%
Services for performance chemicals (e.g., cognitive product finder)	17%	20%	8%
Joined partner services (ecosystem)	17%	21%	11%
Services for agrochemicals (e.g., digital crop advisor)	9%	13%	20%

However, most companies are facing execution issues with their service delivery. Only 43% of our respondents said that their organizations are providing seamless customer engagement associated with their services.

This could be attributable to inconsistency in service channels. Providing service to customers across a variety of channels and providing the necessary support are critical for customer acquisition and retention.

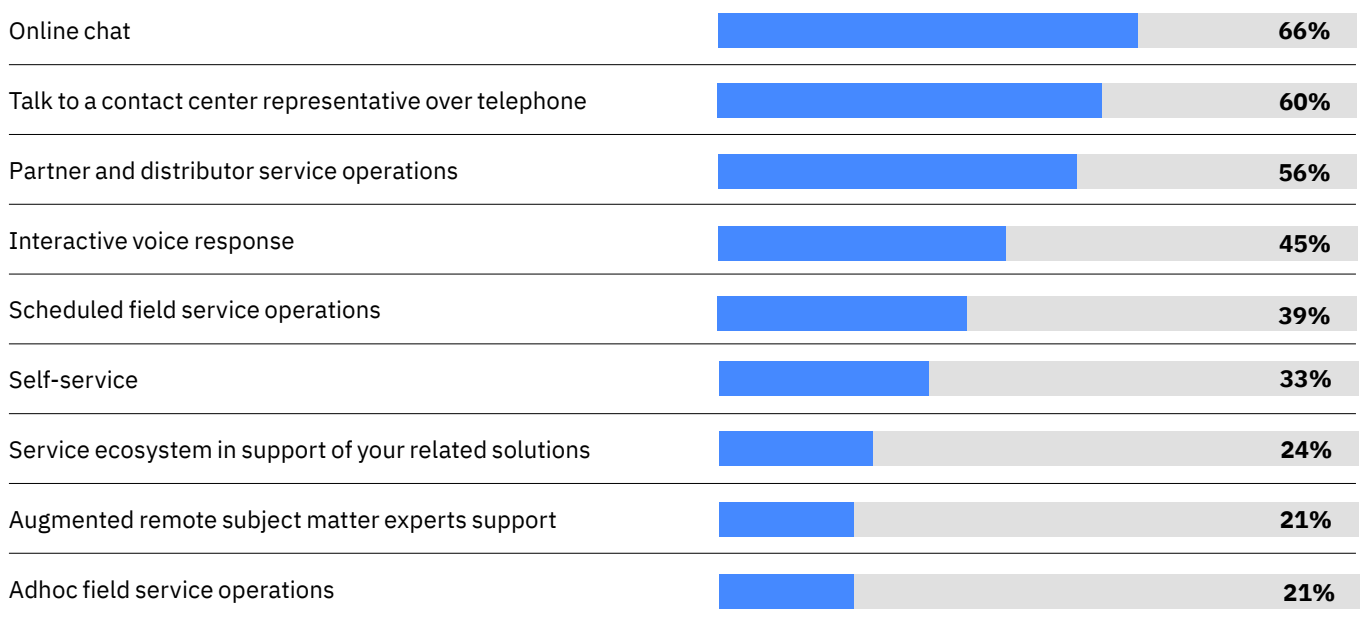
Respondents said the top service channels for their customers are through traditional means (for example, online chat, contact centers, and partner/distributor service operations) (see Figure 3). Only 45% are providing interactive voice response. Even less are offering scheduled service operations and self-service.

Only 49% of respondents have demand forecasting tools, which are needed to optimize inventory and reduce stock.

Figure 3

Customer service channels

The top service channels are through traditional means.



Insufficient tools hinder service execution. While three in five of respondents have customer relationship management tools, only 49% have demand forecasting tools, which are needed to optimize inventory and reduce stock. Just one-third use service management tools to help optimize service job scheduling. The limited usage of tools makes it harder to empower manufacturing, sales, customer service, and service technicians to make decisions, gain access to expert and customer knowledge, enhance response time, and improve efficiency.

The lack of customer data and insights contributes to the challenges. Less than half of the executives surveyed reported that customer knowledge is available at each customer touchpoint to inform further engagement. And just 42% are maintaining a single view of the customer. This makes it difficult for each service member to do their job. The service planner needs relevant customer and product information to effectively serve the customer's broader expectations. The customer service representative and sales team need visibility to all customer engagements and work streams to resolve customer requests or initiate next best actions.

Taking guidance from service superstars

To help organizations improve their service capabilities, we analyzed survey responses and identified a small group of chemical “service superstars,” consisting of one in five (19%) of our survey sample. These executives self-reported that their organizations had a well-defined services strategy that their employees understand.

These leaders deliver better financial performance than industry peers—69% versus 46% for revenue growth and 72% versus 47% for profitability. These service superstars self-reported that they outperform in innovation—78% compared with 40% for their cohorts—which is important in creating specialized service capabilities.

Service superstars are focused on a different set of business objectives compared to their peers (see Figure 4). Whereas their cohorts concentrate on reducing operational costs, these companies focus on new services (their top objective), automation, and customer experience. This emphasis is reflected in their performance. Service superstars excel at service customer satisfaction and their average service delivery cost is nearly 40% lower (see Figure 5). They are also more much effective against their most important business objective, launching new services—a whopping 92% versus 52% for all others.

Figure 4

Business objectives

Service superstars emphasize new services whereas their peers focus on reducing operational costs.

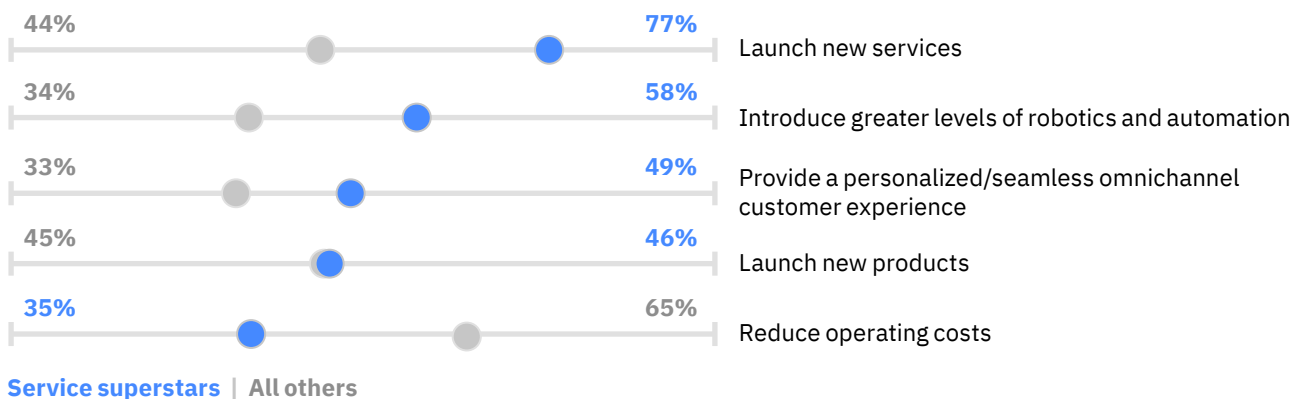
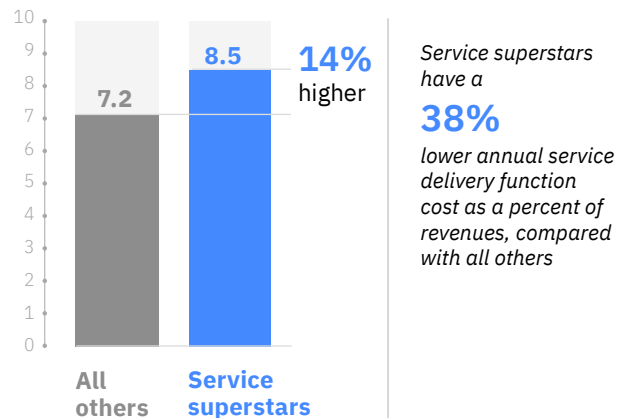


Figure 5

Service excellence

Service superstars have a higher customer satisfaction score with a lower service delivery cost.

Net promoter score for delivered service experience



New services require a deep understanding of customer expectations.

Our research indicates service superstars drive services transformation through four actions:

1. Set services strategy, governance, and cross-business alignment
2. Leverage technology and tools
3. Act on data and insights; and
4. Address talent and change.

Set services strategy, governance, and cross-business alignment

Service superstars have made experiences an enterprise priority. Nine in ten recognize the customer shift from a product focus to an experience focus. New services require a deeper understanding of customer expectations and being flexible and transparent to deliver these services. This allows the leaders to shift to data-enabled services and maximize the customer experience.

55% of these leaders are actively developing new services and business models to differentiate themselves compared with just 39% of all others. Four in five service superstars have put in place the financial resources to execute their services strategy. This compares with just 39% of all others. This service mindset puts the customer and the user experience at the center of attention.

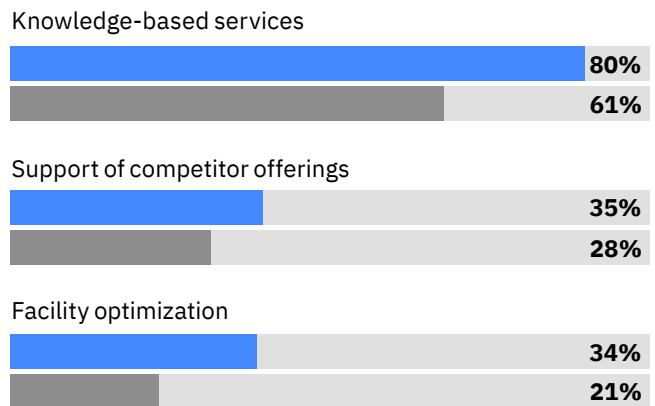
Service superstars leverage data insights in the digital transformation of the service experience. Nearly two-thirds have customer data available at touchpoints to support a seamless, omni-channel service experience. 58% of these leaders have a single view of the customer that is shared across the enterprise, compared to 38% of their peers.

Service superstars offer select services, especially around knowledge-based services (see Figure 6). For example, with such services, service technicians can spend more time at a customer's location providing advice and optimizing product usage. Analysis of the application of the products in the customer environment triggers proactive activities that avoid future customer issues. These service superstars recognize that service excellence is about delivering value to the customer, beyond just improving the performance of the product. This is a significant mind-shift and requires different data sets and insights to define service contracts, risks, and pricing.

Figure 6

Select services deliver value

Service superstars offer select services, especially around knowledge-based services.



Service superstars | All others

For service superstars, services are a company-wide, management-led approach. Nearly three in five have established cross-functional key performance indicators (KPIs) to support customer satisfaction, revenue, and service levels, compared with 44% of their peers. Delivery of process and outcome-based services requires cross-business alignment across legal, commercial, human resources, IT, and operations.

By quantifying services, these service superstars know what they want to achieve and have a clear focus on service accountability. They also reward both their service organization and their sales force to drive service sales. Over three-quarters have incentives in place for the service organization to sell services and over two-thirds have established financial incentives for the sales force to actively sell service solutions.

Covestro: Creating a comprehensive program for digitalization, including services¹⁰

Covestro is a world-leading supplier of high-tech polymer materials. Covestro offers a comprehensive range of services including synthesizing chemicals, developing formulas, and the processing and handling of plastic products. Covestro launched a comprehensive global digitalization program, Digital@Covestro, which is based on three pillars. The first pillar is digital operating processes in production. The second pillar is a digital trading platform for chemicals. The third pillar involves new business models, primarily digital technical services. The goals are to develop efficient production processes for customers and to digitalize entire value chains. Covestro's service offerings include synthesizing chemicals, developing formulas, and processing and handling of plastic products.

Leverage technology and tools

Service superstars view technology as a critical enabler for digital transformation of the service experience. Over four in five reported their customers benefit from the company using technologies to increase agility and responsiveness in service, compared to 47% of their peers. And 69% of service superstars indicated they keep up to date on new technologies that surround their products to service them appropriately.

Superstars confirmed that a collection of technologies is critical to service delivery (see Figure 7). Internet of Things (IoT) solutions permit continuous monitoring of process data to provide health status and automate chemical flows within a process. In addition, IoT technology helps enable a product-as-a-service business model.

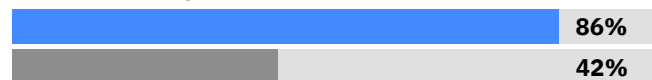
Figure 7

Harness the power of technologies

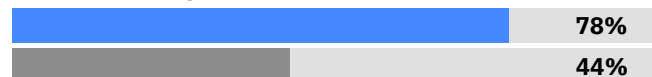
Service superstars take advantage of IoT, cloud, automation, and mobile in their service delivery processes.

Implementation—operating or optimizing (today)

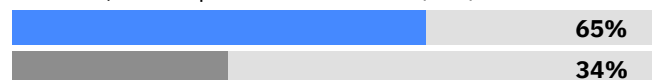
Internet of Things



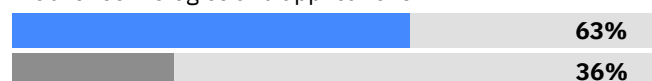
Cloud computing



Robotics/robotic process automation (RPA)



Mobile technologies and applications



Service superstars | All others

Cloud computing can be used to run service applications, develop and maintain data around customer touchpoints, and share information across locations. Mobile technologies allow ubiquitous access to information and help with service technician execution. Automation improves productivity and efficiency of technical work order flow.

In the future, service superstars expect to implement additional exponential technologies in their service delivery processes aimed at enhancing visibility and transparency and increasing speed and scale. Specifically, over three-quarters said they will leverage artificial intelligence (AI) compared to 31% of their cohorts. AI can be used in customer service chatbots, customer- and employee-facing applications, and for insights in diagnostics and guided resolution to employees. Over one-third of service superstars will take advantage of predictive analytics versus just 12% of their peers.

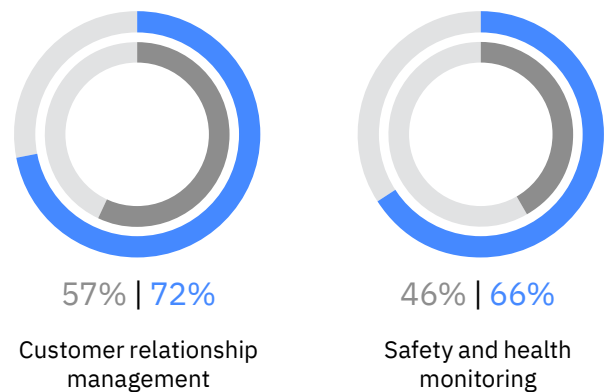
Service superstars provide both customers and distributors with the tools to do their jobs (see Figure 8). Customer relationship management tracks and manages customer interactions and records interactions with customers. Safety and health monitoring helps make work safer and smarter with near real-time insights of worksites and service technicians. IoT data and analytics are tapped for monitoring and event tracing. Wearable sensors inform worker physical hazard protection.

Service superstars have put in place the necessary enterprise IT architecture to support their service delivery. Over four in five provide flexibility and openness through hybrid multicloud to support the services strategy compared to 37% of their peers. 62% of these leaders establish a comprehensive enterprise architecture in alignment with business activities versus 42% of other respondents. This foundation allows them to scale, provides openness, and enables a seamless flow of data.

Figure 8

Tools to support service delivery

Service superstars provide both customers and distributors with CRM and safety tools to help them do their jobs.



Service superstars | All others

Evonik: Optimizing results in livestock farming¹¹

Evonik is one of the world's leading specialty chemical companies. For optimal results in livestock farming with the goal of optimizing the contribution per animal, a holistic approach covering animal nutrition, animal health, and animal farming is required.

The company offers Evonik Precision Livestock Farming (PLF), combining science, expert knowledge, intelligent software, and connectivity into a comprehensive solution for poultry production. Evonik PLF enables the transformation of data from the entire value chain into valuable information that—with help from Evonik experts—leads to new knowledge about livestock farming. This knowledge leads to a better understanding of the entire production process. It facilitates facts-based decision-making and actions using Evonik's feed supplement and gut health portfolio.

SABIC: Complementing material solutions with services¹²

SABIC is one of the world's largest petrochemicals manufacturers. By complementing its innovative material solutions with services, the company provides speed and flexibility so its customers (manufacturers and molders) can develop new applications faster than before. Engineering services include small order quantities, molded samples for prototypes, formulation service, and engineering tools. Innovation and faster time-to-market are key for staying competitive in the long term. SABIC's ColorXpress Services offers existing colors, custom colors, and color matching.

Act on data and insights

Service superstars use richer insights to make informed decisions about service experience improvements. 86% of service superstars have built a data-driven culture associated with their services strategy and delivery, compared with 45% of their peers.

This culture is contagious across cross-functional teams and is reflected in the integration of service data with operational data in product development, supply chain, and marketing and sales (see Figure 9). By connecting customer service and service technicians with other upstream processes, critical information can be leveraged. The combined data helps the company with service experience strategy decisions and enhances enterprise performance. They are better equipped to identify challenges and shape their services development to proactively anticipate customers' needs and create personalized process and outcome-based services.

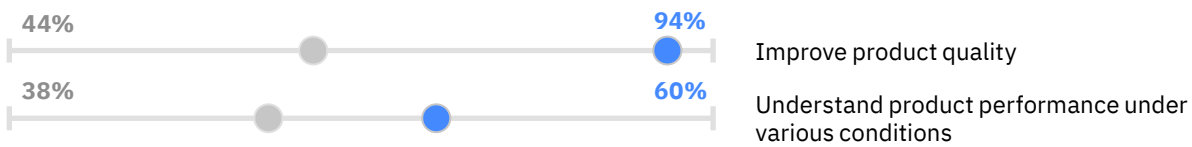
In the supply chain, production teams can see data associated with quality issues and the causes behind product or application failures. Providing these insights to the distributor or finished goods processing unit, can result in improved customer satisfaction. And the sooner issues are identified and resolved, the less costly the problem is to the organization.

Figure 9

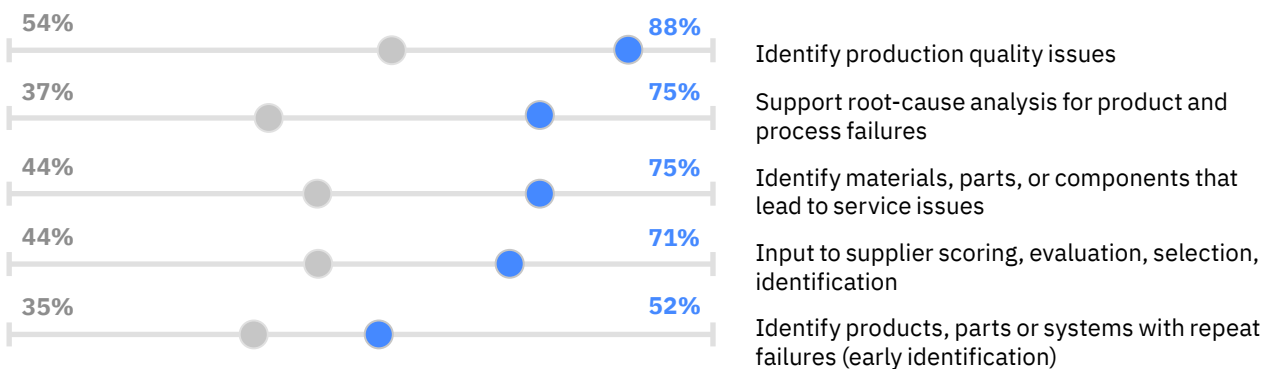
Service data integration

By connecting customer service and service technicians with other upstream processes, critical information can be leveraged.

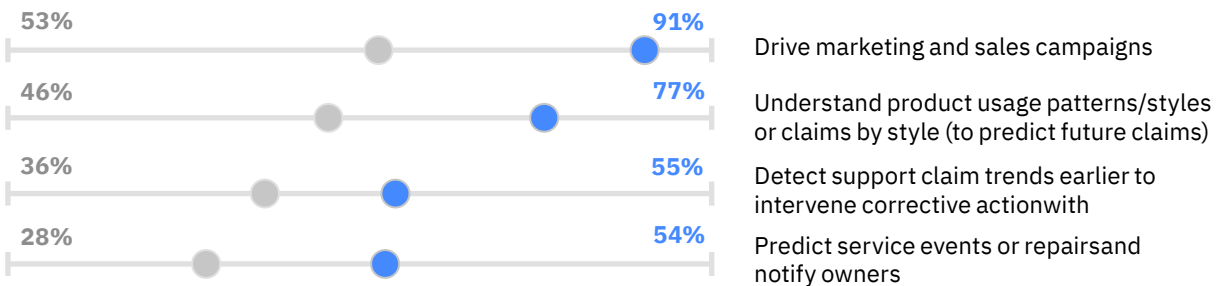
Product design, development and engineering data



Supply chain data



Marketing and sales data



Service superstars | All others

Service superstars leverage decision improvement by combining marketing and sales and service delivery data. It allows them to predict service events and notify customers before a failure occurs. Service superstars understand that product usage patterns and applications can help predict future issues or detect customer support trends and challenges earlier, shortening the cycle time from detecting to correcting it.

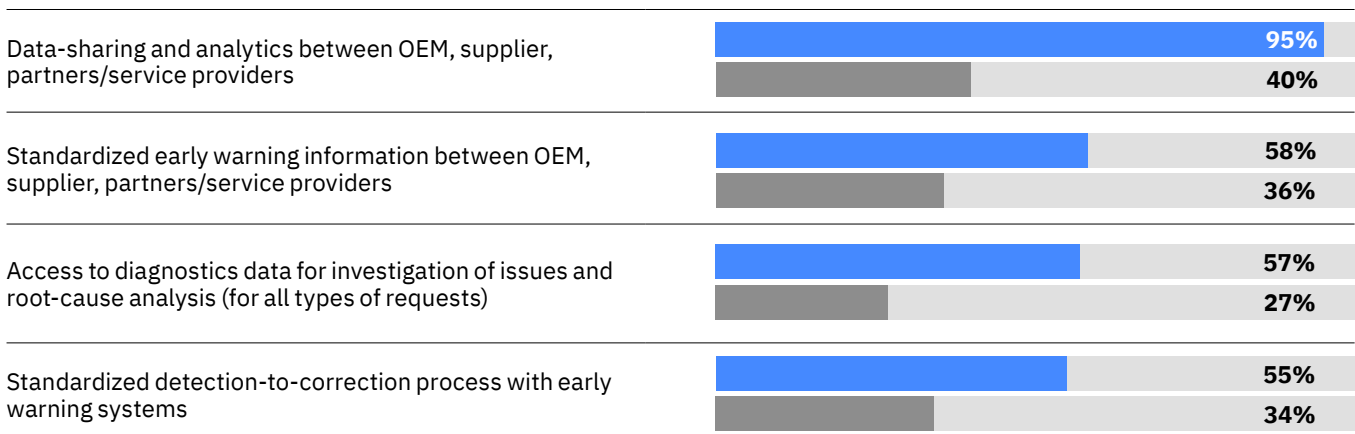
For service delivery, service superstars also recognize that success comes from inside the organization by using core capabilities, as well as from outside entities leveraging those strengths. Most service superstar organizations have established support processes and data and information sharing with their partners (see Figure 10). For instance, 95% of leaders report they are either operating/optimizing or implementing data-sharing and analytics between themselves, supplier, and partners/service providers, compared to just 40% of others. They are leveraging insights to create flexible service delivery operations which are focused on continuous improvement and built to respond to opportunities.

Figure 10

Collaboration with partners

Service superstars share data, information, and processes with their ecosystem.

Implementation of external collaboration initiatives in service delivery processes— Implementing OR Operating OR Optimizing



Service superstars | All others

Address talent and change

54% of service superstars have put in place the people and skills to execute their services strategy. This compares with less than half of other respondents. While service superstars understand how these resources help their enterprises capture services' value and enhance customer engagement, they still have some work to do with services talent management.

Nearly three-quarters of these leaders say their services strategy is being supported by change management, versus 48% of their peers. Given the need to create specialized service capabilities to excel at delivery, service superstars have not underestimated the scale of change associated with establishing a cross-business services mindset, executing efficient processes, creating real-time visibility and monitoring, and utilizing exponential technologies and tools.

Dow: Maximizing refining and gas processing operations¹³

Dow's ambition is to become the most innovative, customer-centric, inclusive, and sustainable materials science company in the world and has a portfolio of performance materials, industrial intermediates, and plastics businesses. Beyond the breadth of products, Dow offers the refining and gas processing industry its global team of technical experts, services, and comprehensive in-house analytical testing capabilities. These services help the industry optimize operations throughout project lifecycles:

- *Design and optimization:* Offer performance support for new or existing systems, using simulation tools to help increase efficiency and reduce energy consumption.
- *Training:* Cover topics ranging from analytical reporting to unit operations for safe, efficient, and reliable operations.
- *Analytical expertise:* Establish analytical capabilities and train teams to perform routine field tests using established methods. Provided test kits allow analyses to be run on-site.
- *Troubleshooting/sample analysis:* Provide routine analysis and unplanned troubleshooting to minimize operational upsets that would cause downtime or pose a safety risk. Recommendations are based on detailed analytical lab results, extensive expertise and advanced simulation tools.
- *Process monitoring:* Assist plants in monitoring performance and supporting the operations staff to help ensure unit reliability. This can include predictive equations and remote monitoring, including assistance with corrosion monitoring.
- *Emissions management:* Using simulators, help find the right solution to reduce overall emissions from a system without reducing long-term energy efficiency.
- *System cleaning programs:* Based on system analysis, recommend the appropriate cleaning solvents and cleaning best practices to start up units reliably after removing any build-up or system contamination.

Service superstars have made more talent improvements to support services than their cohorts (see Figure 11). They have placed skills at the center of their service strategy and aim for deep visibility into the skills position across their enterprises. 62% have a formal process to address skills for their service workforce.

Service superstars are uniquely tailoring service employee career, skill, and learning initiatives with employee experiences, goals, interests, and—where possible—individual purposes and meanings. This involves knowing where the company and the service individual want or need to progress and creating an attractive career path. Skills are reinforced with additional investments in digital technologies training. This helps retain talent and build the service workforce.

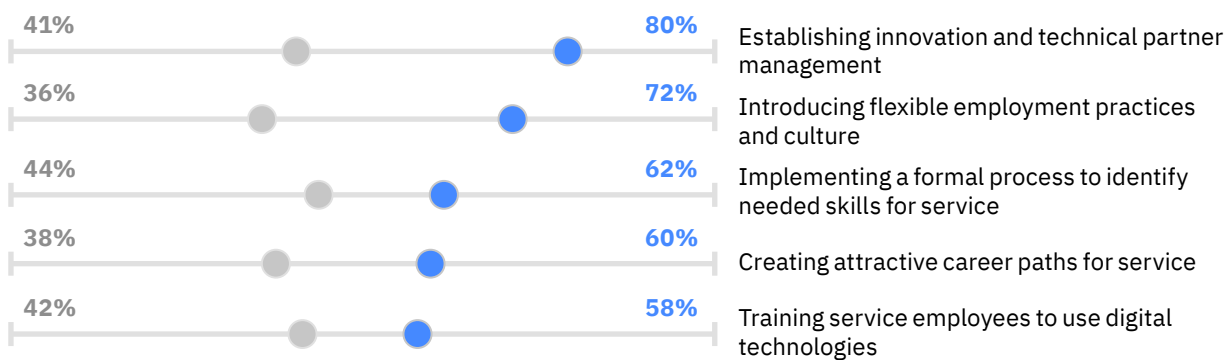
To address changing dynamics and opportunities, these leaders invest in new ways of working. An enterprise-wide perspective is required to determine the operational model, cross-business impacts, and platforms needed to deliver services excellence. Flexible practices allow service superstars to shift actions based on real-time feedback in service development and operational processes. As a result, service technicians can be supported by digital and physical cognitive assistants, centralized remote support, and less onsite demand for expert knowledge.

Finally, services superstars have put in place the necessary management to work with ecosystem partners. Four in five of these leaders have established innovation and technical partner management, compared with just 41% of their peers. As a result, they can engage with a coalition of partners to continually explore and pilot new services and digitally enable service staff.

Figure 11

Talent investments

Service superstars have made talent improvements to support services.



Service superstars | All others

JSR Corporation: Enhancing drug discovery through support services¹⁴

JSR Corporation is a multinational company and engages in the manufacture and sale of synthetic rubber and fine chemical materials. It operates through the following segments: elastomers, plastics digital solutions, life sciences, and others. In its life sciences business, the company offers services, products, and materials to pharmaceutical companies, biotech, and academia for new therapeutic discovery and development. With a range of global strategic partners from both inside and outside JSR, the company focuses on the drug development process through a system that supports the entire process from discovery to development to production of drug therapies.

One of the JSR Group companies, Crown Bioscience, provides drug discovery and development services, including translational platforms to advance oncology,

inflammation, cardiovascular, and metabolic disease research. From large-scale in vitro and in vivo efficacy studies of drug candidates, to running surrogate trials in tandem with human clinical trials, the company provides the data needed to make smarter decisions about drug candidates, thereby accelerating drug development.

KBI Biopharma, another JSR Group company, offers microbial and mammalian, clinical and commercial biopharmaceutical contract development and manufacturing services. Using analytical capabilities, the company delivers efficient process development and clinical and commercial cGMP manufacturing services.

BASF: Offering sustainability and regulatory services for fuel and lubricant solutions¹⁵

BASF's corporate model sums up the company's mission succinctly: "We create chemistry for a sustainable future." Its broad portfolio ranges from chemicals, plastics, performance products, and crop protection products, to oil and gas.

With its Sustainability Services, the company, jointly with its customers and partners, identify opportunities and risks to enable a fact-based decision making and ensure long-term business success for fuel and lubricant solutions. The services include:

- Sustainability Position Finder
- Sustainable Solutions Steering
- Product Carbon Footprint
- Life Cycle Assessment
- Life Cycle Inventory
- Eco-Efficiency Analysis
- Biomass Balance Products
- Sustainable Packaging Solutions; and
- Product Environmental Labelling Schemes.

With its global experts with in-depth regulatory and product knowledge, the BASF RegXcellence team can proactively track new trends and provide specific solutions for customers' individual markets. The services include:

- Pre-registration, registration, and new substance notification for fuel and lubricant solutions
- Compliant SDS and labels meeting national requirements in more than 200 countries
- Proactive transparent communication related to regulatory changes; and
- Access to a global network with local expertise, providing consulting and advisory services and training.

Action guide

Transforming chemical industry services

Service superstars have created the framework to transform their services strategy and delivery, and your organization can as well by focusing on these four key actions:

1. Drive a unifying vision

Make services transformation an integral part of your organization's mindset, supported by offering development, delivery, and governance:

- Determine your service ambition to transition from selling products to added value and outcome-based services.
- Establish a clear services strategy and plan covering customers, employees, and partners that enable cross-business and operational alignment (vision, strategy, objectives, and goals).
- Incorporate enterprise-led and experience design into your services strategy; find key opportunities to build, evaluate, scale, and enhance your services.
- Determine the operational model needed to enable the trusted advisor service experience and offerings.
- Incorporate services KPIs and incentives to measure user and business value and promote success.
- Add services ownership to your C-suite to drive alignment of business functions, enabling transparency, collaboration, and control.

2. Integrate data and insights for better engagement

Combine service data with operational data to generate insights to improve efficiency and experience:

- Make sure that your services strategy targets both structured and unstructured data needed to understand the customer's processes and address their engagement objectives.

- Connect data horizontally (transparency between commerce, marketing, sales, customer service, service technicians, legal, and pricing) as well as vertically (customer lifecycle and engagement and resource management).
- Enable your ecosystem to share and combine products, services, and data to deliver additional valued services and products to customers.

3. Overlay your services functions with digital

Equip marketing, sales, and service with digital technologies and infuse them into specific areas:

- Create cross-business intelligent workflows that link processes, people, and insights.
- Infuse digital technologies to optimize processes in sales, customer service, and among service technicians.
- Add automation for process flow and service technicians.
- Deploy hybrid cloud to access data, put it to new use, and house workflows.
- Move to strategic platforms which enable agile business, operational, and IT practices.

4. Create the right team

Enhance services' talent and manage change:

- Develop services skills, capabilities, career paths, and new ways of working.
- Add data, personal, and tech-savvy skills to supplement existing service resources.
- Capture and disseminate knowledge to enhance skills and service efficiencies.
- Develop proactive change management since services transformation involves significant change in the business, operations, and talent. This could include mining insights from service personnel on customer engagement, obtaining employee input on services strategy and delivery processes, and using a change insights dashboard to track service transformation goals.

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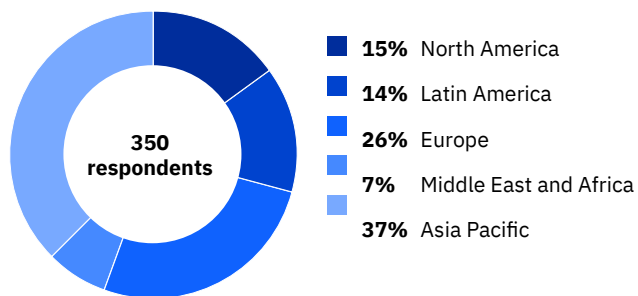
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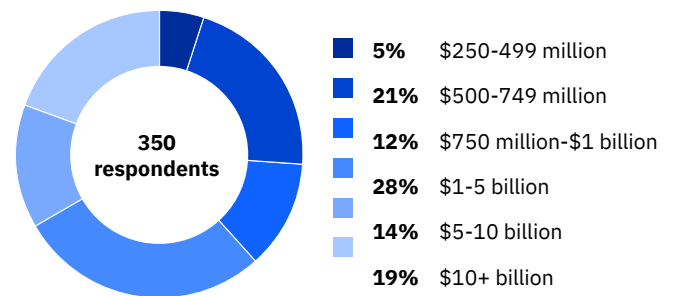
Study approach and methodology

In cooperation with Oxford Economics, the IBV surveyed 350 chemicals executives in 23 countries from July to September 2020. The 350 executives come from different roles, geographies, segments, and sized organizations. All data is self-reported.

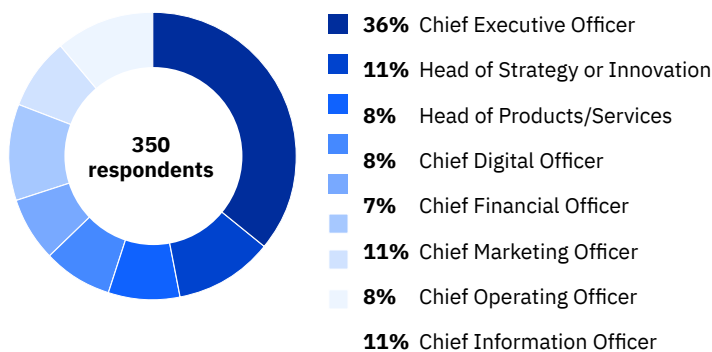
Respondents by geography



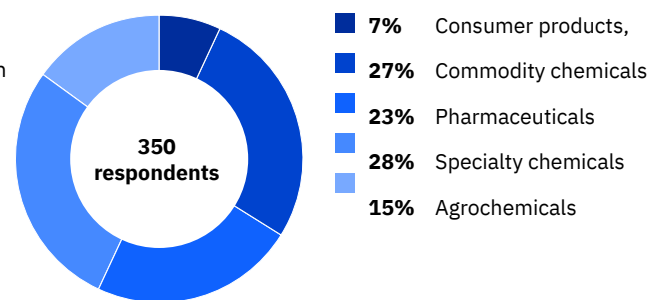
Respondents by enterprise size (annual revenues)



Respondents by role



Segment



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