

In Collaboration
with Kearney



Charting the Course for Global Value Chain Resilience

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Foreword



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As the adage says, a chain is only as strong as its weakest link, and when it comes to the current state of global value chains, weakness is evident everywhere upstream and downstream. From shortages of key materials, extended order backlogs and constrained distribution capacity to labour shortages, the functioning of even the most carefully designed supply chains is being challenged. Companies need to develop new approaches and capabilities if they are to navigate the current and future disruptions.

No industry is insulated from the global disruptions that are occurring. And while issues affect various industry sectors in different ways (and therefore necessitate disparate responses), there are unique opportunities for pioneers to build resilience and shape the supply chains of the future.

The World Economic Forum, in collaboration with Kearney, has been working with a community of more than 400 manufacturing and supply chain leaders to determine how manufacturing companies can best move beyond responding reactively to disruptive forces towards proactively addressing the root causes of disruption – in order to ensure long-term and sustainable resilience. Through our work across industries and geographies, this paper describes five distinct profiles of resilience leadership in order to help companies confidently chart a course forward with focus and action.

We trust this work will further advance ongoing global discussions by highlighting key learnings and providing actionable strategies for both manufacturing companies and policy-makers alike as we move forward together to forge the future of value chain resilience.

Executive summary

Supply chain disruptions continue to destabilize global value chains and are undermining the prospects of long-term growth and prosperity. In a fast-changing world, manufacturing companies are now forced to design and roll out new strategies, and to develop the right set of capabilities, to build resilience across their entire value chains.

In July 2021, building on insights from a survey carried out with more than 400 senior executives in operations and supply chains and consultations with more than 40 members of the World Economic Forum's Platform for Shaping the Future of Advanced Manufacturing and Value Chains, the Forum published, in collaboration with Kearney, [The Resiliency Compass: Navigating Global Value Chain Disruption in an Age of Uncertainty](#).¹ This new framework aims to help manufacturing organizations assess their current level of resilience across eight dimensions: portfolio excellence, customer orientation, financial viability, go-to-market versatility, logistics flexibility, manufacturing adaptability, supplier diversity and advanced planning. Since then, companies have been using the framework to identify priorities and the actions needed to prepare for and respond to future disruptions.

In this new white paper, the resiliency compass was deployed with surveyed firms and clear patterns of manufacturing companies with similar resilience attributes were observed. These patterns led to the identification of five distinct industry-agnostic resilience profiles: the collaborator, the planner, the enhancer, the adapter and the provider. Each of these profiles reflects distinct priorities and leadership approaches to starting and navigating a resiliency journey.

To help firms build and implement new resilience efforts and roadmaps, a series of strategy playbooks were co-developed in close collaboration with the companies engaged in the Platform for Shaping the Future of Advanced Manufacturing and Value Chains. These playbooks outline the set of actionable strategies employed by leaders within each resilience profile to fortify their value chain.

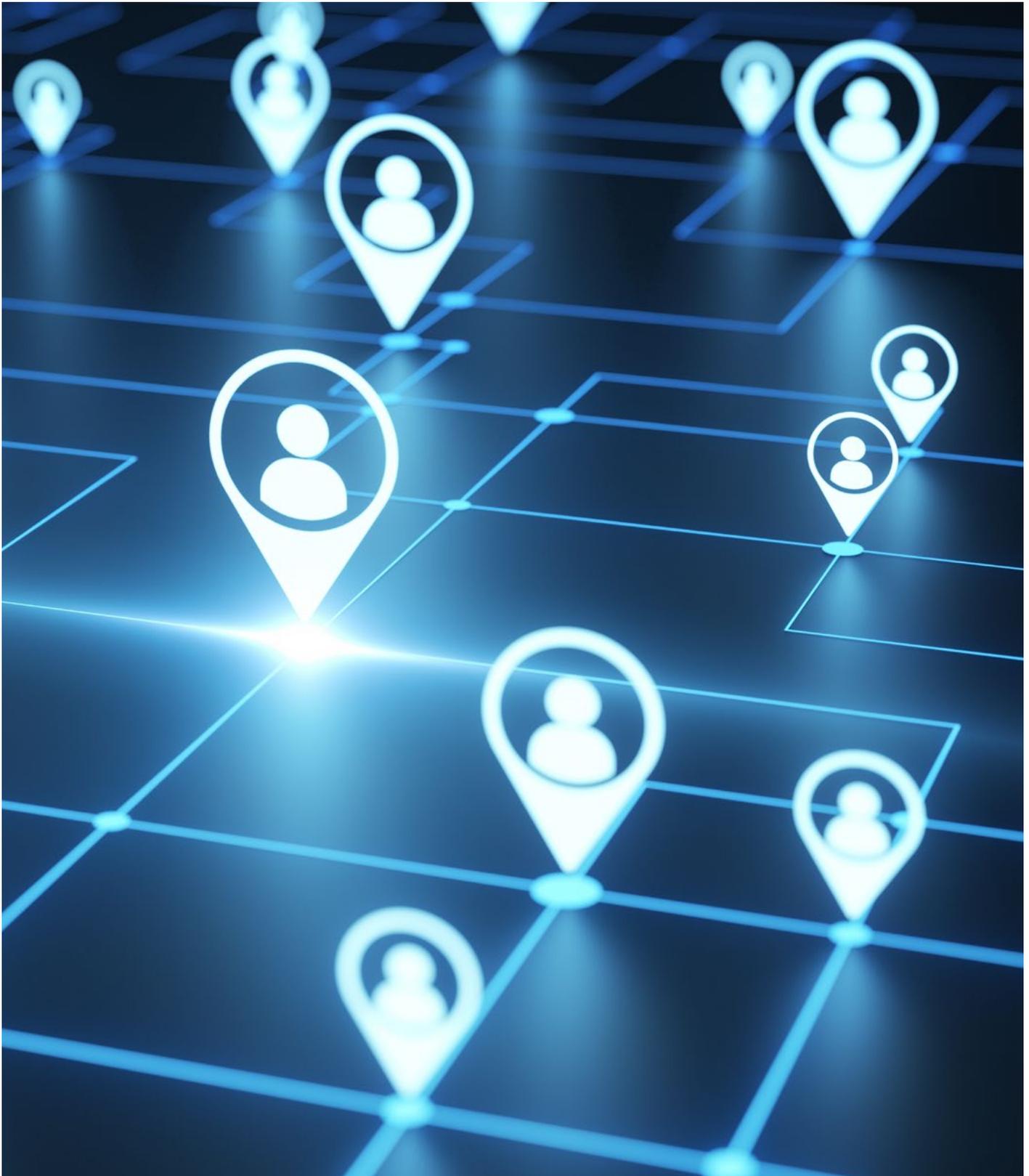
As companies accelerate their efforts towards building resilience, it is important to highlight that some of the challenges and related disruptions being faced cannot be addressed in isolation. The combination of megatrends that continue to threaten the future of production and value chains – from the climate crisis to geopolitical tensions and emerging technologies – is forcing companies to partner with a broader set of stakeholders, beyond those involved in their own production ecosystems. In particular, strengthened public-private and global dialogue and cooperation will be required to address the root causes of disruption and help shape a new generation of industrial policies and strategies.

Moving forward, the World Economic Forum will continue to work closely with stakeholders at the country, regional and global level by providing a unique and neutral space to help businesses and governments upgrade their manufacturing and industrial strategies. The resilience profiles and associated strategy playbooks will support the incubation of new partnerships around the following opportunities for strengthened public-private collaboration: new regulations and policies; technology dissemination and innovation; strategic investments; and demand environment.

1

The resiliency compass

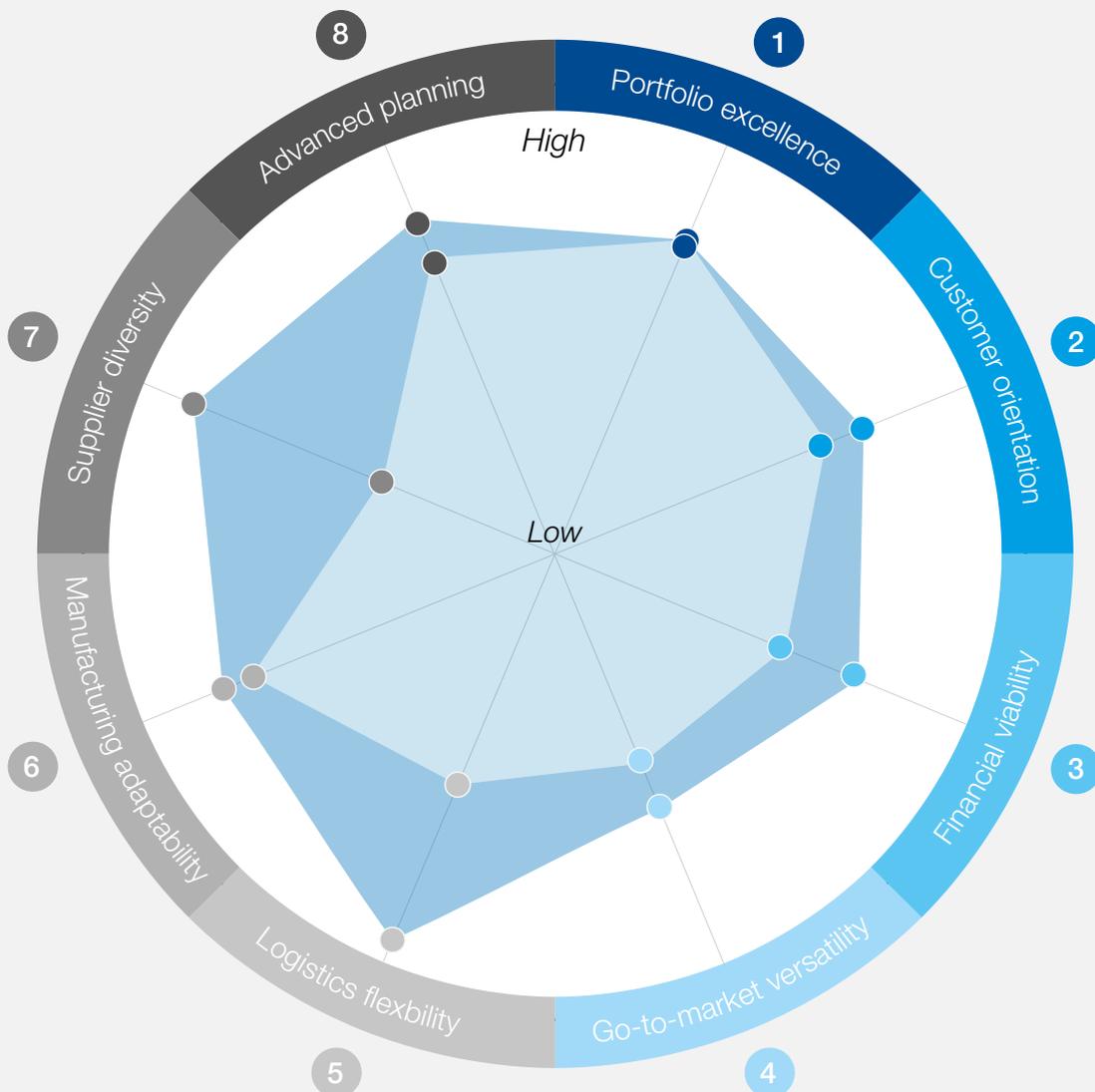
Resilience in global value chains can be broken down into eight unique dimensions, each of which provides an opportunity for leadership.



The world economy is facing a perfect storm of disruptive megatrends, ranging from the climate crisis to geopolitical tensions and emerging technologies, which are challenging the foundations on which global value chains are built. To prepare for and respond to these challenges, a greater sense of resilience and shared responsibility is needed. The previous white paper, [The Resiliency Compass: Navigating Global Value Chain Disruption in an Age of](#)

[Uncertainty](#),² introduces the resiliency compass (Figure 1), a framework for manufacturing companies to define new priorities and prepare to respond to future disruptions. The paper captures insights from a survey carried out with more than 400 senior executives in operations and supply chains and consultations with more than 40 members of the World Economic Forum's Platform for Shaping the Future of Advanced Manufacturing and Value Chains.

FIGURE 1 The resiliency compass



Source: World Economic Forum, The Resiliency Compass: Navigating Global Value Chain Disruption in an Age of Uncertainty, 2021

The eight dimensions of the resiliency compass break down the challenge of building stronger value chains into manageable pieces:

1. **Portfolio excellence.** Focus on product availability through active portfolio management
2. **Customer orientation.** Level of diversity and geographic proximity of demand
3. **Financial viability.** Transparency on financial health across the end-to-end value chain
4. **Go-to-market versatility.** Ability to serve demand through diverse channels
5. **Logistics flexibility.** Visibility and flexibility across warehousing and distribution
6. **Manufacturing adaptability.** Production network designed with resiliency in mind

7. **Supplier diversity.** Multiple and diverse sources of supply

8. **Advanced planning.** Ability to rapidly sense shifts in supply and demand and pivot appropriately

Throughout 2021, companies have been using the resiliency compass framework to understand their level of resilience across the eight dimensions and identify the main areas that need improvement if they are to increase their resilience.

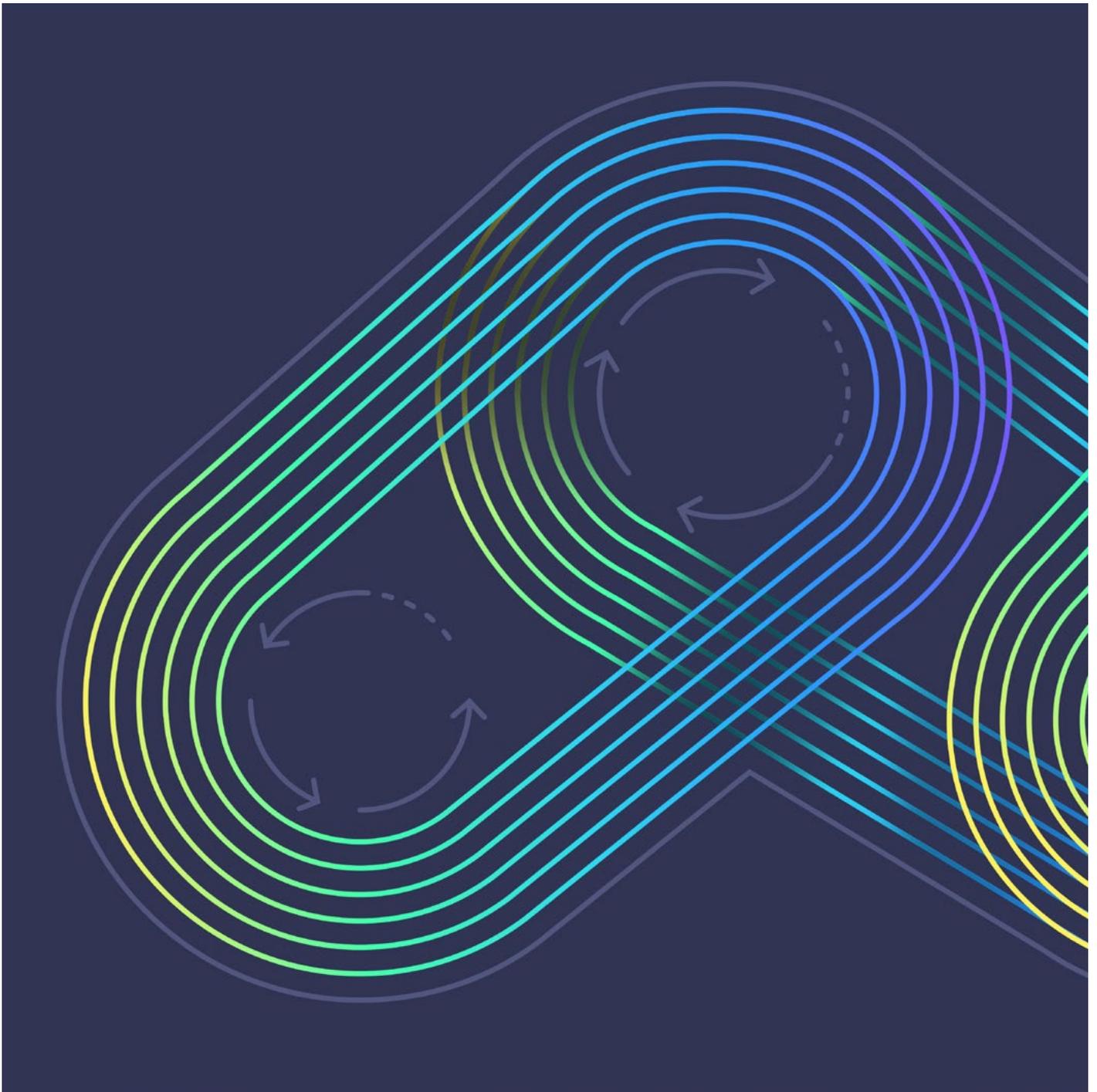
As demonstrated in the previous white paper, the results of the analysis of surveyed firms using the compass showed that only 12% of companies – the resilience leaders – are sufficiently protected against future disruptions. Some 36% of surveyed companies – the resilience laggards – demonstrate a need to take immediate action along the dimensions of the compass to build resilience, while the remaining 52% are mainstream players that fit in between.



2

Five key resilience profiles for continuous adaptation

These profiles include proven actionable strategies employed by leaders to create long-term resilience.



In this new white paper, the resiliency compass was deployed with surveyed firms – the leaders, laggards and mainstream categories described in the previous section – and clear patterns of manufacturing companies with similar resilience attributes were observed. These patterns led to the identification of five distinct industry-agnostic resilience profiles, which reflect distinct priorities and areas of strength in the dimensions

of the compass, helping to shed light on and make resilience-building more accessible to all manufacturing companies. They are: the collaborator, the planner, the enhancer, the adapter and the provider. Each of these five profiles is characterized by extreme scores in different dimensions of the framework, with leaders being extremely resilient and laggards experiencing fragility (Figure 2).

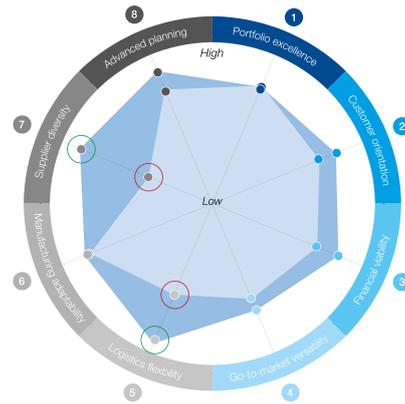
FIGURE 2 The five resilience profiles



1

The collaborator

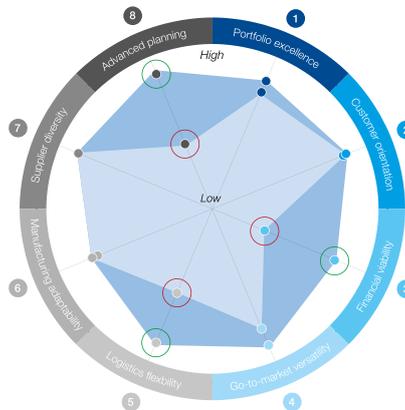
Characterized by strong supplier relationships and partnerships



2

The planner

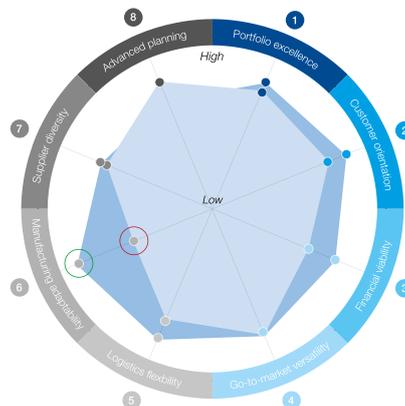
Characterized by sophisticated risk management and planning capabilities

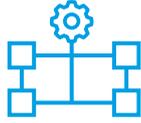


3

The enhancer

Characterized by a high degree of flexibility within the production and distribution network

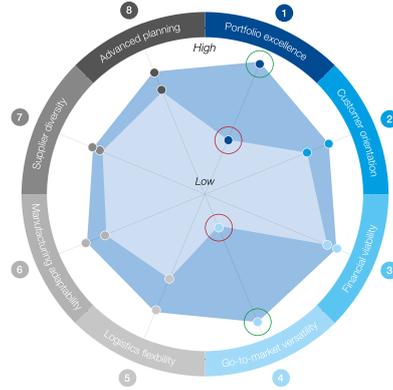




4

The adapter

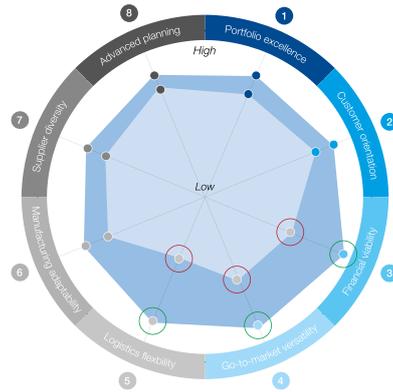
Expert in simplifying the product portfolio and component requirements



5

The provider

Characterized by a high degree of go-to-market agility across channels



Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

In this analysis, it was found that resilience leaders from the survey were distributed evenly among the five profiles, with 19% being collaborators, 19% planners, 24% enhancers, 21% adapters and 17% providers.

Working together with the community, and based on the survey results, led to the co-development of a series of strategy playbooks. These feature a proven set of leading strategies associated with each resilience profile to further help firms implement new resilience efforts and roadmaps.

It is important to note that companies rarely fit neatly into one profile and often have elements of many. The upcoming sections look closely at the characteristics of each profile to unpack and understand each in further detail, understand the main challenges they face and shed light on the selected winning strategies applied by leaders within each profile.

2.1 The collaborator

Characterized by strong supplier relationships and partnerships

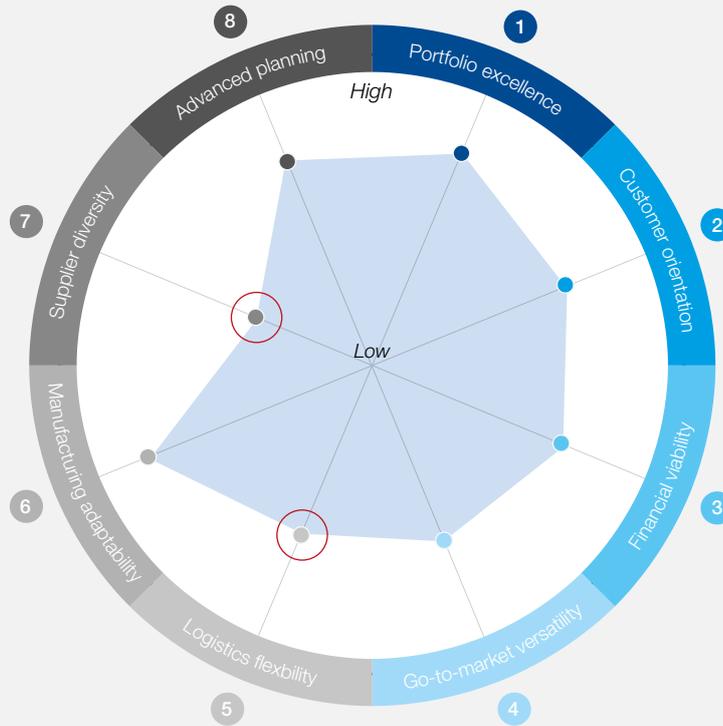
Collaborators are characterized by extreme scores in supplier diversity and logistics flexibility. Leaders with this profile demonstrate advanced

supplier relationships and a high degree of flexibility in logistics, whereas laggard collaborators experience fragility in those areas (Figure 3).

FIGURE 3 The collaborator's position on the resiliency compass

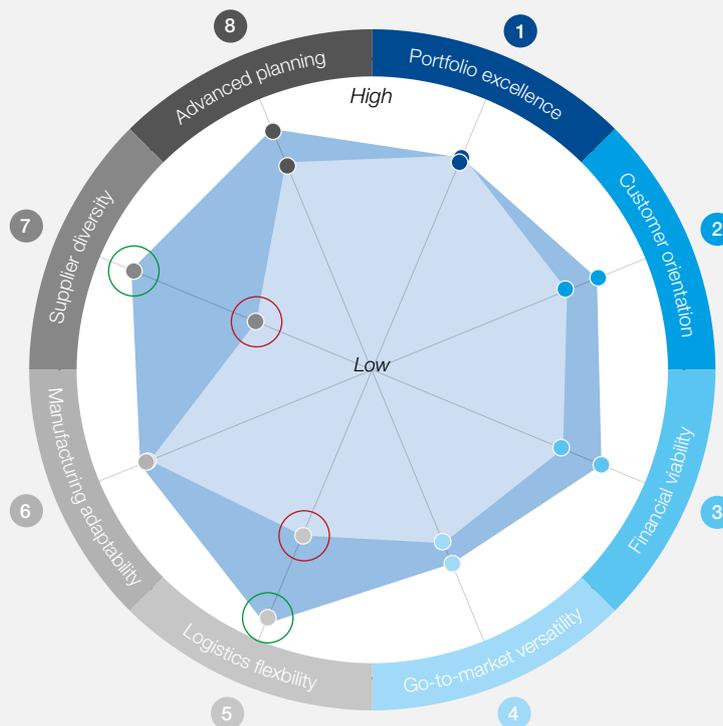
Laggard

Specific fragile points identified



Leader

High level of resiliency identified



- Laggard company profile
- Leader company profile
- Resilient points
- Fragile points

Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

Collaborator challenges

For the collaborator, the main risks of exposure to disruption stem from:

- **Dependency on a limited group of suppliers**, which may be due to a small pool of suitable suppliers, a concentration of suppliers in one geographic area or a lack of transparency across the supply chain.

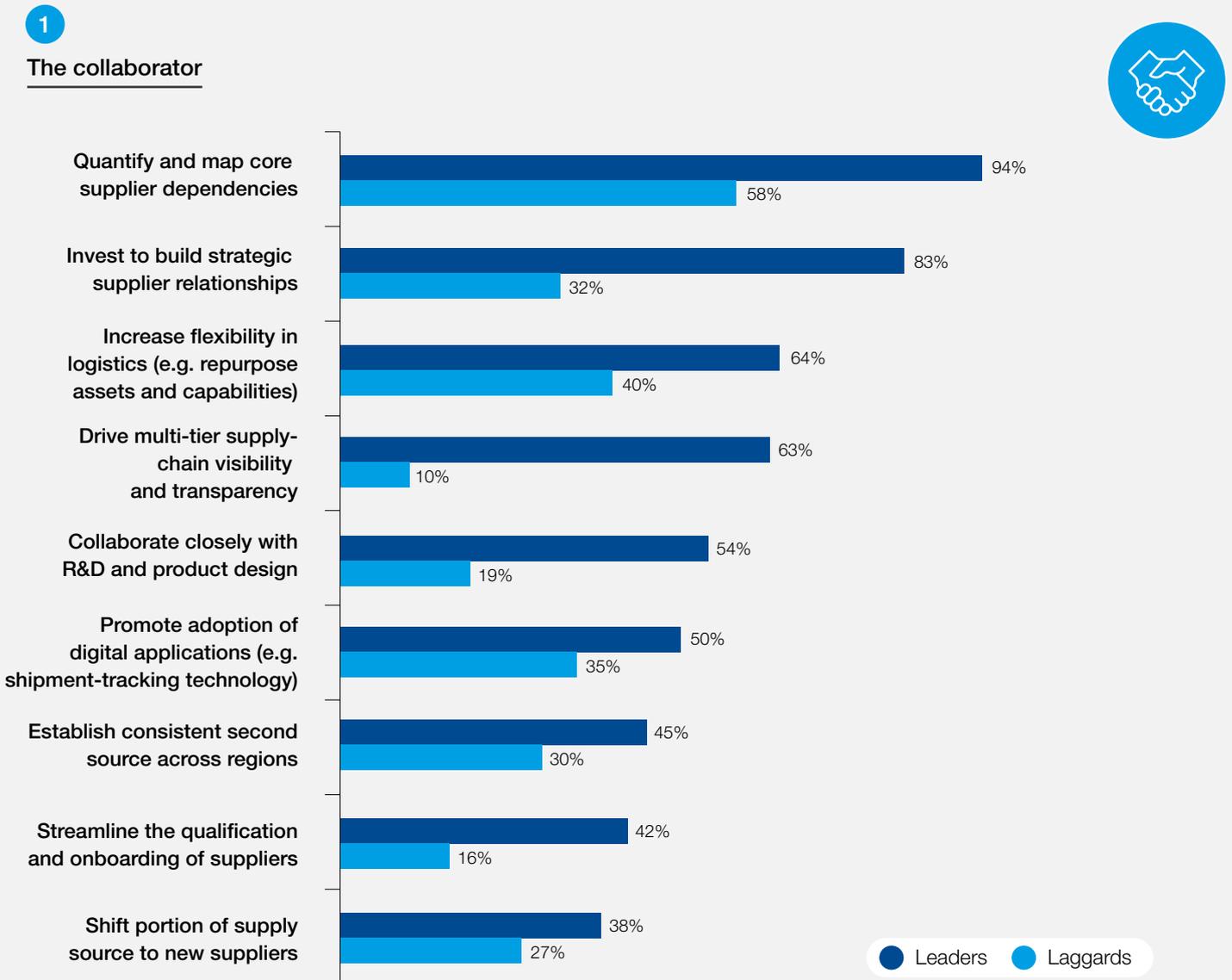
- **Long and complex supply chains**, generating higher transaction costs and making the qualification of new suppliers more challenging. This heightens the risks of supplier concentration and presents a barrier to agile restructuring.

The collaborator strategy playbook

Findings from the global survey, as well as consultations with senior executives in operations and supply chains, led to the identification of nine proven strategies that have been implemented

by successful collaborators to strengthen their supplier relationships and logistics, from R&D and product design collaboration to sourcing diversification (Figure 4).

FIGURE 4 Selected winning strategies applied by collaborator leaders



Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

Ralph Lauren is a global leader in the design, marketing and distribution of premium lifestyle products across five categories such as apparel and footwear. The company works with more than 500 large-scale suppliers operating in many countries and niche suppliers. Given the wide and diverse supplier landscape, Ralph Lauren needed to establish strong supplier relationships and communication channels to achieve mutual long-term positive impact. Furthermore, the textile industry has been prioritizing the traceability of products and raw materials to ensure sustainable and ethical sourcing.

Building resilience

Ralph Lauren has put in place a supplier engagement strategy to achieve mutual, long-term, positive impacts across the supply chain through transparency- and trust-based partnerships:

1. **Supplier engagement life-cycle strategy**, including onboarding, qualification, segmentation and risk management, performance management, development and innovation, as well as responsible phase-out when needed.
2. **Open two-way communication** that includes the sharing of the business direction and priorities as well as seeking feedback on

ways of working to improve processes and practices that affect suppliers’ factories and workers and develop adequate training based on actual requirements.

3. **Digital integration on the vendor management system level** to incorporate responsible purchasing practices with a heightened focus on citizenship and sustainability principles, including the collection of data to create transparency across the entire supply chain.
4. **Regular review of suppliers’ capacity, capability and performance** to avoid placing orders that would exceed their capacity and might lead to subcontracting or additional pressure on workers to meet demand.

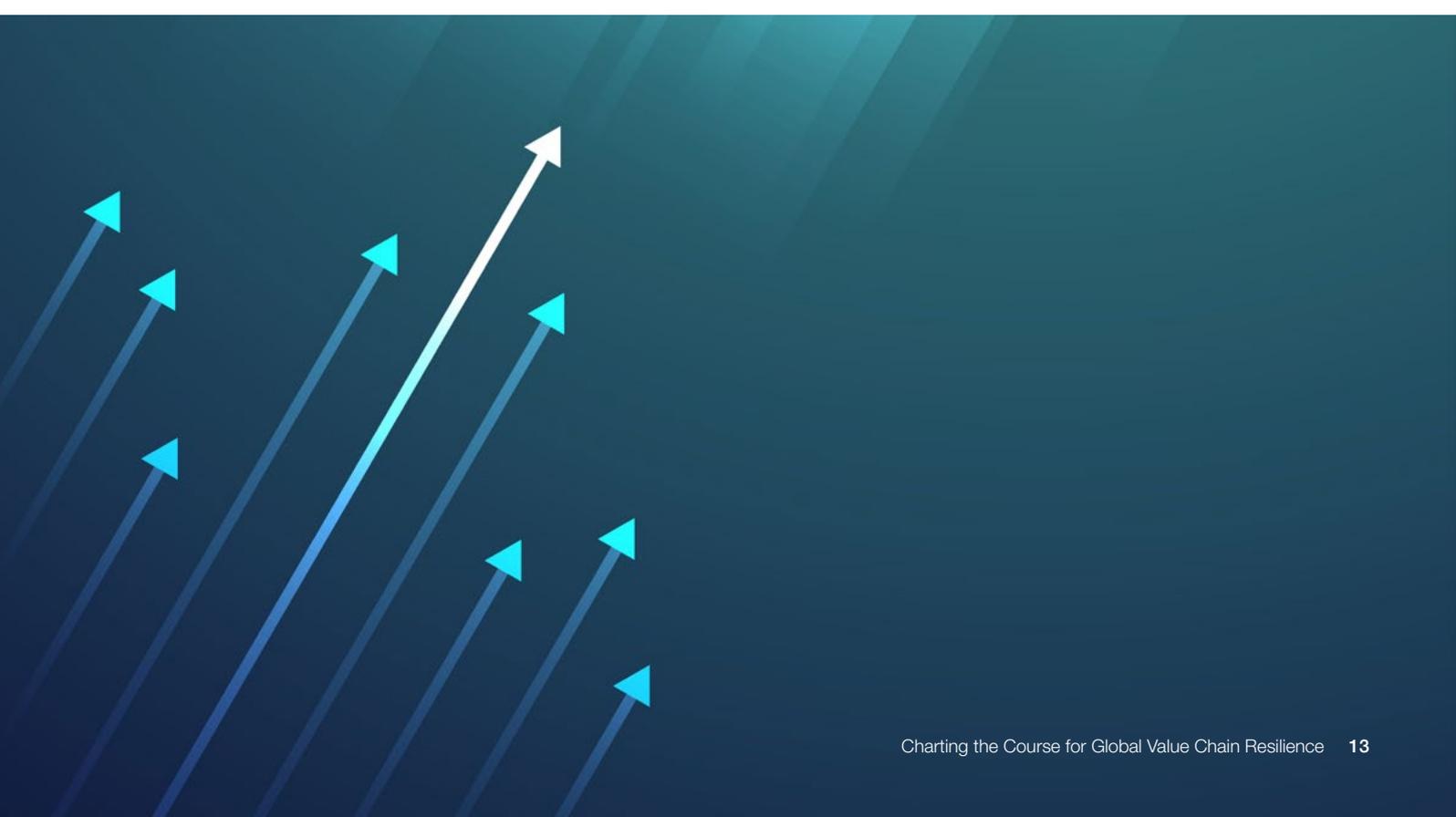
Resilience benefits

The supplier engagement strategy has allowed Ralph Lauren to be flexible with 70% of its planned orders during the COVID-19 pandemic. This strategy helps to drive continuous improvement and positive impact based on shared transparency, accountability and value creation. In that context, Ralph Lauren was rated in the Carbon Disclosure Project’s (CDP) top 7% of companies for supplier engagement on climate change.



Our collaborative supplier model enables us to form strategic alliances with large producers as well as niche artisanal suppliers.

Halide Alagöz, Chief Product and Sustainability Officer, Ralph Lauren



2.2 The planner

Characterized by sophisticated risk management and planning

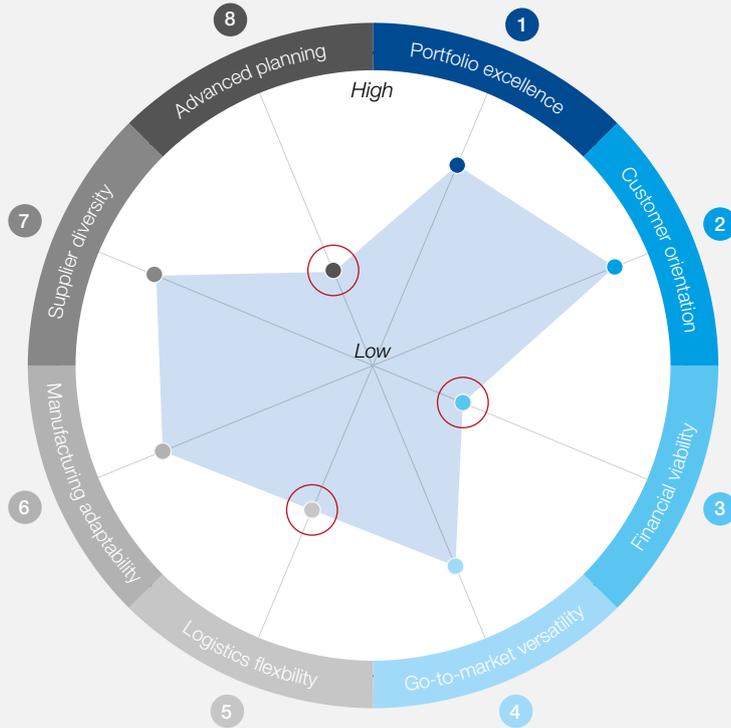
Planners are characterized by extreme scores in risk management and planning capabilities. Leaders with this profile demonstrate sophisticated risk

management and planning capabilities, whereas laggard planners experience fragility across those areas (Figure 5).

FIGURE 5 The planner's position on the resiliency compass

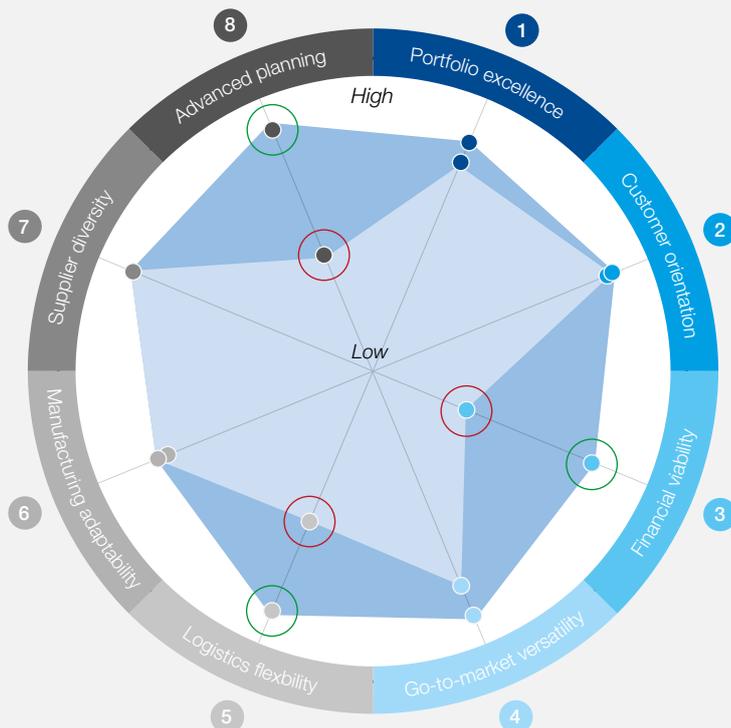
Laggard

Specific fragile points identified



Leader

High level of resiliency identified



- Laggard company profile
- Leader company profile
- Resilient points
- Fragile points

Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

Planner challenges

Many planner laggards find it difficult to react quickly to shifting demand preferences or abrupt supply-side changes. This is often the result of poor planning systems, most notably in advanced planning, financial health and logistics. Frequently cited challenges include:

- **Lack of supply chain visibility and accurate real-time information** to make timely decisions

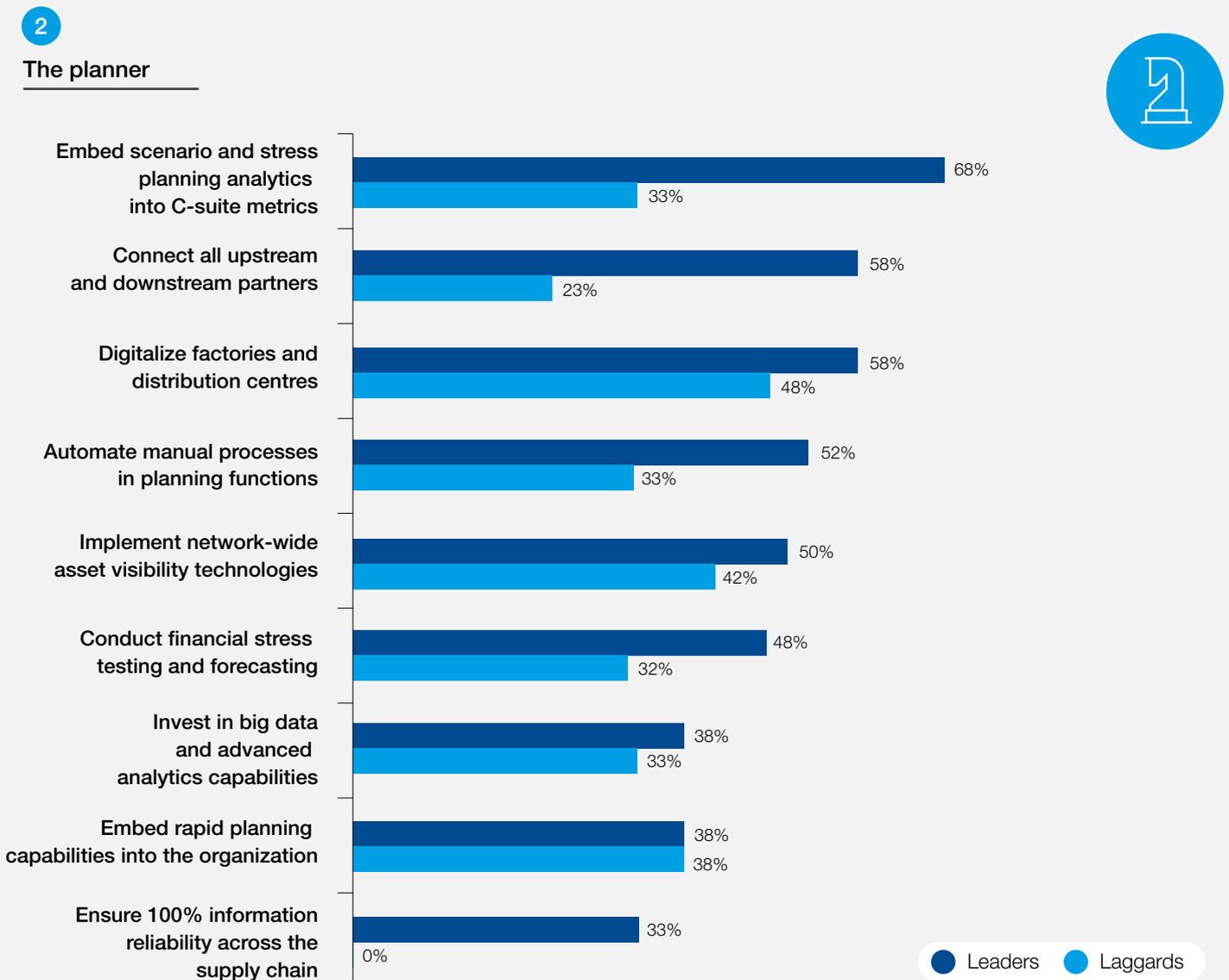
- **Insufficient stress-testing and scenario planning** to implement the necessary contingency plans
- **Time-consuming manual processes** and lack of investment in state-of-the-art analytics and planning capabilities within and across company boundaries

The planner strategy playbook

Effective planners build resilience across their operations by applying state-of-the-art planning to anticipate sudden supply-demand disruption and address longer-term periods of volatility or uncertainty. The nine key strategies in their

playbook are outlined below and include creating and ensuring information reliability, digitalization and automation, and a commitment to advanced analytics capabilities (Figure 6).

FIGURE 6 Selected winning strategies applied by planner leaders



Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

Heineken operates across the globe, with almost 200 breweries. Its strategy of being close to the customer, with a local offering alongside strong international premium brands, has been highly successful. While such an approach is extremely beneficial in terms of working with local companies, suppliers and talent, it requires a centrally coordinated effort to attain the economies of scale that would otherwise come from a more centralized approach to sourcing, production and selling. At the beginning of the pandemic, local stock levels and the corresponding distributed network of supplier locations helped in continuing to deliver despite sporadic supply-side shortages. However, as the situation evolved, more and more suppliers struggled to deliver as required, leading the brewing company to look for suitable solutions to ensure supply of critical goods in the short term, which could help also in the long term.

Building resilience

In order to significantly advance its planning capabilities, Heineken formed strategic collaborations with core suppliers that led to high visibility across the supply chain. Specifically, Heineken focused on implementing the following four key strategic actions:

1. **Seeking new levels of communication and collaboration** with a set of suppliers willing to engage in new partnership models and jointly working to find solutions that would enable all parties to meet consumer demand to the best degree possible.

2. **Creating visibility and insights** into globally aggregated demand forecasts, input materials, transportation, availability and bottlenecks beyond tier 1 and tier 2 suppliers by investing in new technologies to enhance planning.
3. **Adjusting the stock-keeping unit (SKU) portfolio** in close collaboration with suppliers and customers, adapting production and steering the market towards the adjusted portfolio.
4. **Instigating control towers for production and sourcing decisions** using the opportunities created by adjusting SKU specifications and serving markets from different sourcing breweries depending on product availability and suppliers' outlooks. This enables prioritization of product lines, markets and sourcing allocations.

Resilience benefits

Two sets of benefits were achieved. Despite extreme levels of disruption and uncertainty, the international brewing company was able to continue satisfying its stakeholders, from employees maintaining employment to customers receiving their products with acceptable service levels, all the way to investors benefiting from the business returns as operations were maintained. Furthermore, Heineken is now better prepared for future disruption and has gained valuable experience in enhancing its planning capabilities in close cooperation with up- and downstream partners.



Centralized control towers for demand and supply were put in place, building on harmonization of local sales and operations planning processes of the global network of operating companies.

Magne Setnes, Chief Supply Chain Officer, Heineken



2.3 The enhancer

Characterized by manufacturing adaptability

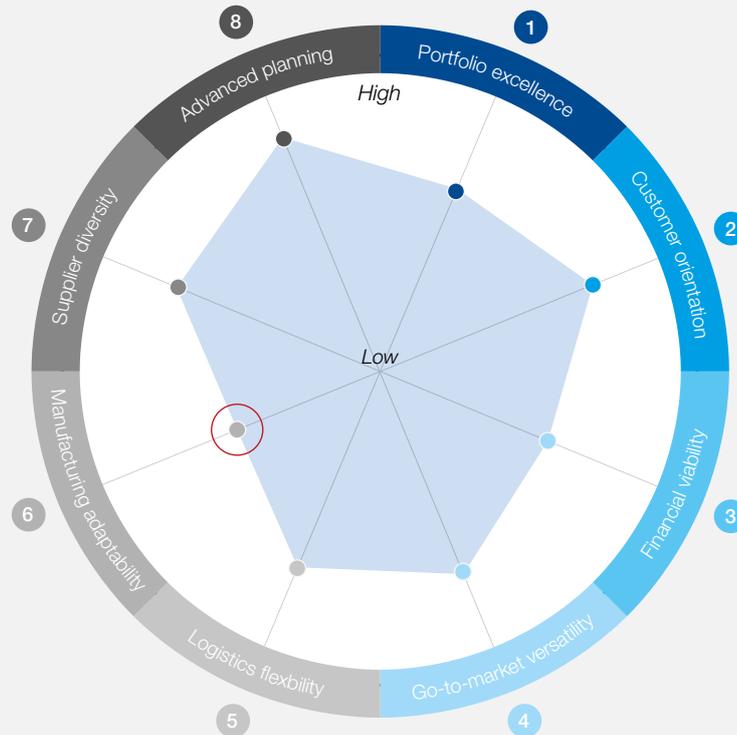
Enhancers are characterized by extreme scores in their manufacturing adaptability. Leaders with this profile demonstrate a high degree

of flexibility in the production and distribution network, as opposed to laggards, who experience fragility in this dimension (Figure 7).

FIGURE 7 The enhancer's position on the resiliency compass

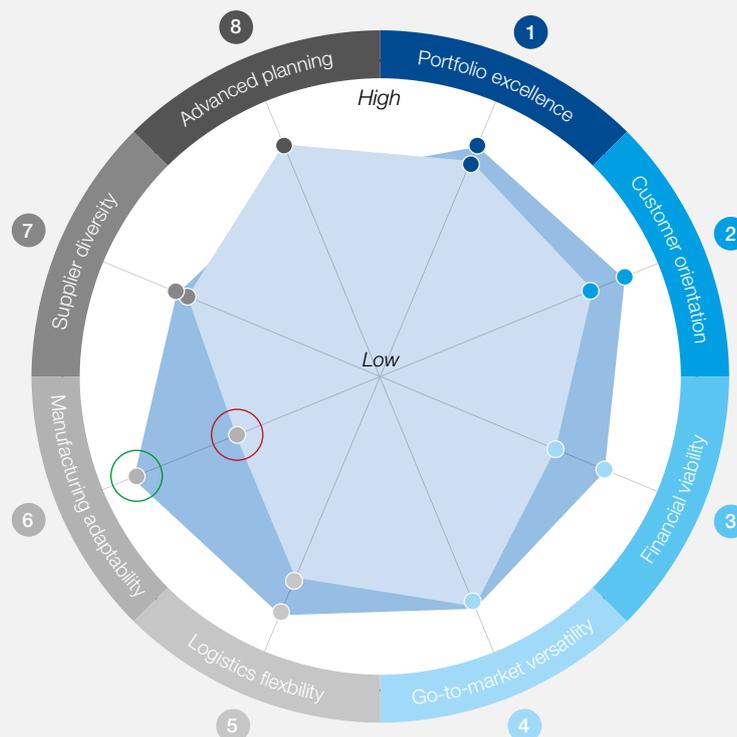
Laggard

Specific fragile points identified



Leader

High level of resiliency identified



- Laggard company profile
- Leader company profile
- Resilient points
- Fragile points

Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

Enhancer challenges

To avoid risks in the supply chain, enhancers focus on creating a high degree of flexibility in their production and distribution network. The most common challenges they experience are:

- **Lack of flexibility in production systems and in agile technologies**, affecting costs and hindering the fulfilment of increased demand
- **Absence of the “just-right” level of automation and digitalization** to keep a

certain level of flexibility and allow for human intervention when needed

- **An organizational disconnect and a lack of robust processes** costing valuable time when production changes are needed
- **A need for digital transformation** to connect all aspects of their value chains and organizations and establish a seamless flow of information

BOX 3

Enhancer strategies in action: Rockwell Automation

Rockwell Automation is a world-leading provider of industrial automation power, control and information solutions. In the face of disruption, suboptimal productivity levels caused by bottlenecks and labour shortages were exposing the company to delivery risk.

Building resilience

To address this challenge, Rockwell Automation implemented a “closed-loop operating system” that unifies processes and departments into one single digital ecosystem, facilitating a more robust, connected and flexible manufacturing process as outlined below:

1. **Digital transformation in scheduling and team collaborations:** Fully automated global standard solution driven by analytics, company business rules and objectives, and engineering constraints. Digital thread created between human resources (HR) system, enterprise resource planning (ERP), the manufacturing execution system (MES) factory talk production centre (FTPC) and finite scheduling system (factory talk innovation suite).

2. **Advanced analytics optimizer engines:** Using meta-heuristic optimizing solutions with parallel computing to solve hundreds of complex order sequencing scenarios within five minutes and an optimal staffing schedule within 10 minutes.

3. **Proactive and agile:** Daily shift schedule is ready in advance, with the ability to quickly reoptimize assignments based on staffing availability and skills.

4. **Digital visibility of deployed resources:** Intuitive dashboard for shift-start staffing assignment and real-time tracking of employee movement to specific stations during shifts.

Resilience benefits

While the initiative is still being fully implemented across all global facilities, it has already led to an improvement in schedule attainment and increased labour efficiency. The solution provides exception-based notifications when cycle times exceed standard thresholds, enabling immediate evaluation and corrective actions to improve throughput. This ultimately drives improved customer service levels and on-time delivery.



The closed-loop operating system improved synergy and collaboration across planning, engineering, manufacturing execution and change management teams with established and sustainable operating rhythm.

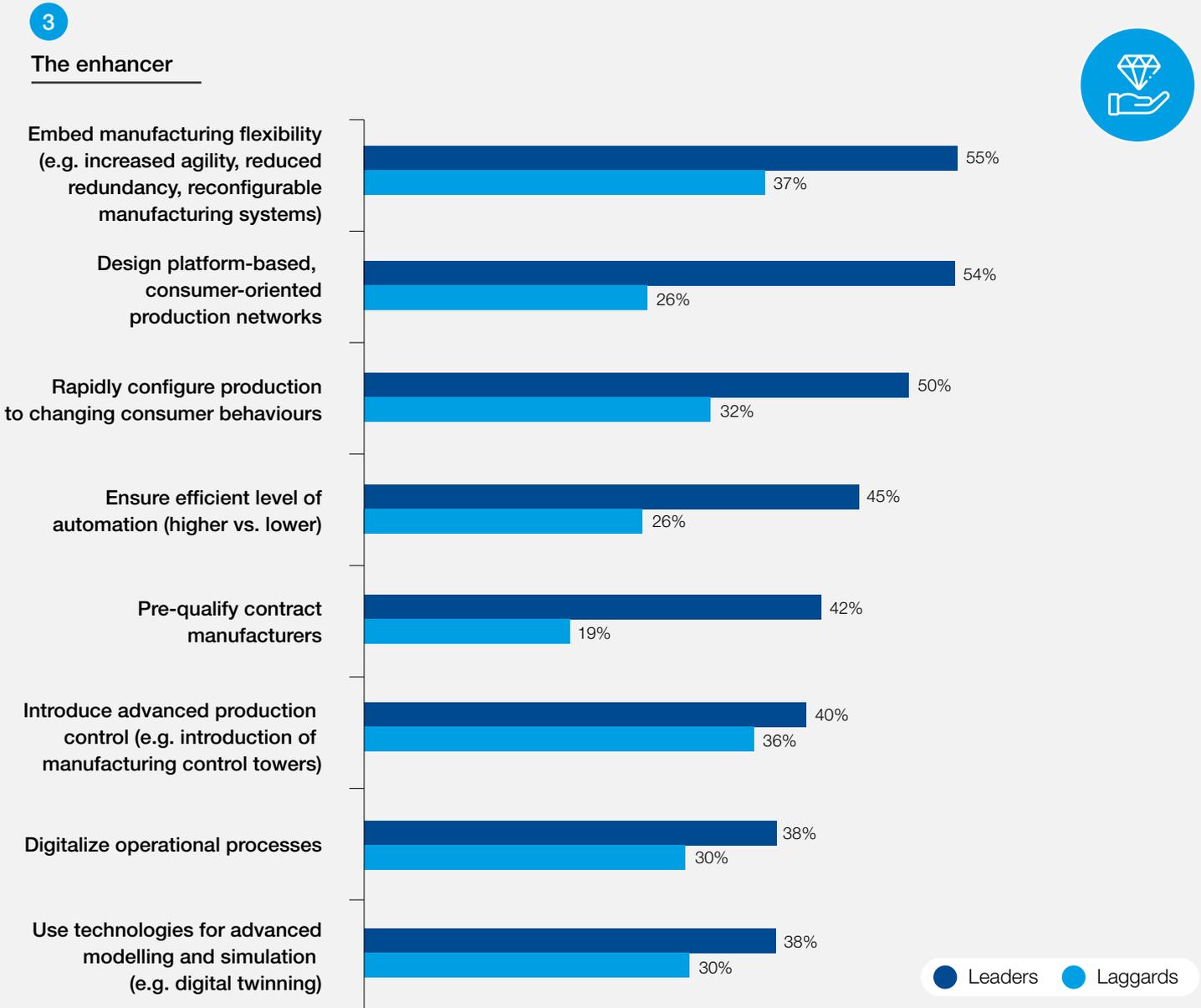
Ernest Nicolas, Senior Vice-President and Chief Supply Chain Officer, Rockwell Automation

The enhancer strategy playbook

Leading enhancers enable rapid changes in production and volumes and make effective use of advanced technologies. The strategies in their playbook include: redesigning production networks

and machinery; preparing and onboarding contract manufacturers; and investing in automation and connectivity (Figure 8).

FIGURE 8 Selected winning strategies applied by enhancer leaders



Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

Schneider Electric is a global specialist in energy management and automation. Operating in more than 100 countries, supply chains are a critical part of its business operations. To protect its business across the world in the face of ongoing and potential risks such as COVID-19, geopolitical tensions and natural disasters, Schneider Electric's business continuity plan needed to be reinforced.

Building resilience

To prepare for disruption and make its business continuity plan more robust, Schneider Electric implemented the "power of two" strategy that includes:

1. **Production processes in at least two relevant regions** to ensure steady delivery of key product ranges.
2. **A robust upstream supply chain** with systematic and strategic double sourcing and business continuity planning, including short-term mitigation action.

3. **Industrial deployment of central teams** in each key region to facilitate coordination.
4. **Digital platforms** to map component risks to revenue impact.
5. **Time-to-survive and time-to-recover** strategies to ensure demand fulfilment and ability to recover when facing unexpected disruptions.

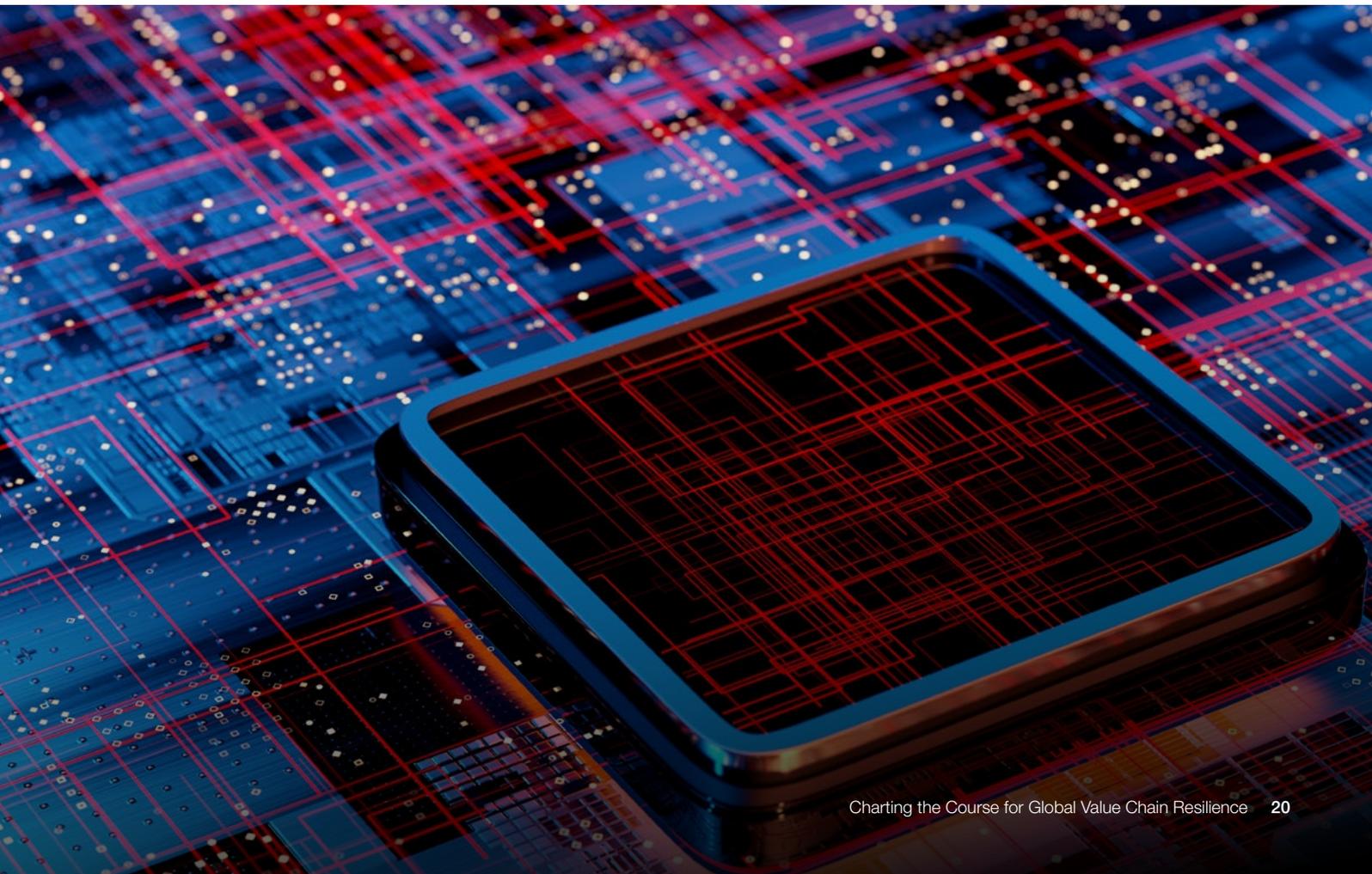
Resilience benefits

Some 70% of the total described programme has already been completed and a mitigation plan for the upstream supply chain developed based on a risk-assessment methodology. More than 100 projects are planned and executed to protect the critical ranges with impact on seven business units and 30-plus factories in more than 10 countries, allowing Schneider Electric to adjust flows between different production regions in case of natural disasters or geopolitical risks to secure delivery to customers.



This programme has been very successful because of the buy-in and collaboration between the lines of business and operations, as well as the strong involvement of research and development for alternative source qualification and design adaptation.

Mourad Tamoud, Chief Supply Chain Officer, Schneider Electric



2.4 The adapter

Characterized by an expertise in simplifying the product portfolio

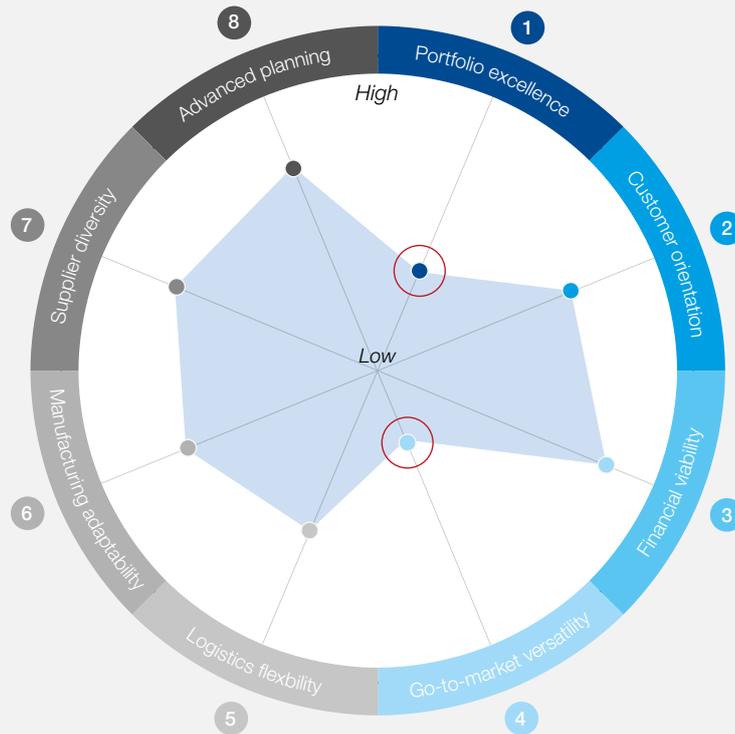
Adapters are characterized by extreme scores in portfolio excellence and go-to-market versatility. Leaders with this profile are experts in the simplification of the product portfolio and

agile management of go-to-market channels as opposed to laggard adapters, who experience fragility in those areas (Figure 9).

FIGURE 9 The adapter's position on the resiliency compass

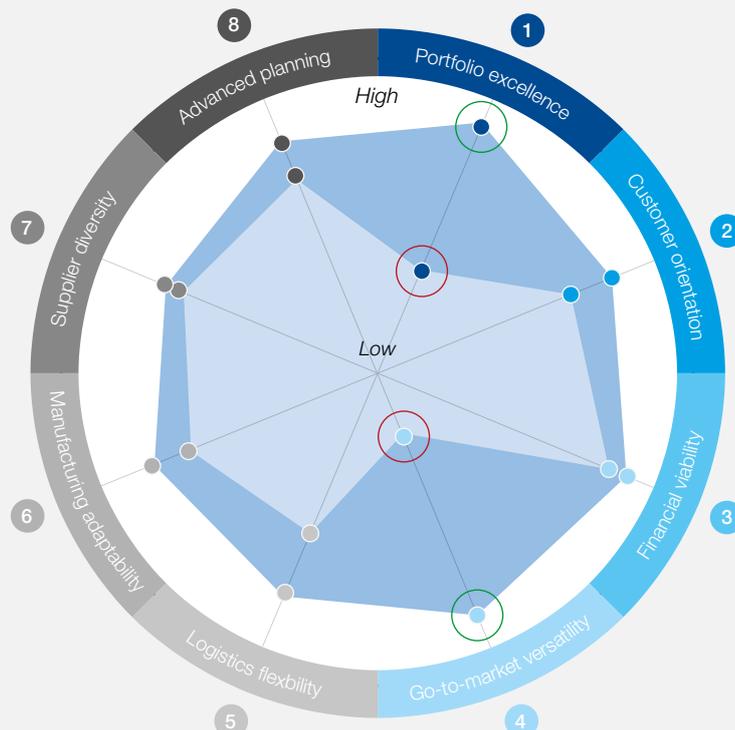
Laggard

Specific fragile points identified



Leader

High level of resiliency identified



- Laggard company profile
- Leader company profile
- Resilient points
- Fragile points

Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

Adapter challenges

Simplifying the product portfolio – especially for large, multibrand, multinational organizations – can be a complex undertaking and is not to be underestimated. Key risks include:

- **Portfolio proliferation**, such as with variations of the same product to satisfy the demand of rapidly changing market needs that inhibit agility
- **Limited modularity** in the use of interchangeable parts to ensure that only the

net-positive components of a product remain, in turn limiting opportunities for value re-engineering

- **Limited end-to-end product understanding**, preventing companies from effectively using deep customer understanding for smarter product and R&D design as well as building resilience into long-term customer channel strategies

The adapter strategy playbook

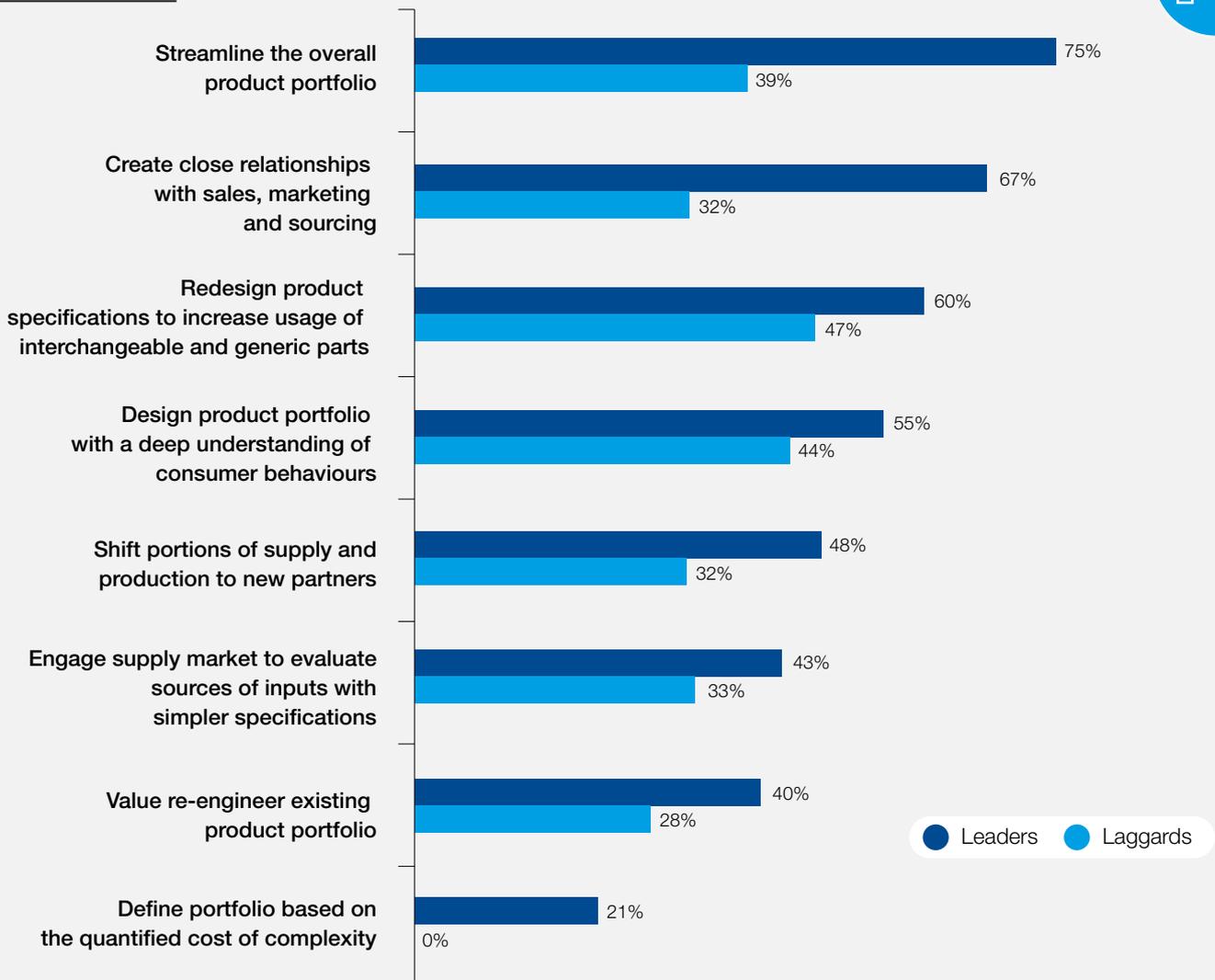
Leading adapters reduce complexity in both their product portfolio and component requirements, allowing them to adapt in times of increased uncertainty. The eight strategies they use to build

resilience include streamlining and re-engineering the product portfolio to increase modularity and manage the cost of complexity (Figure 10).

FIGURE 10 Selected winning strategies applied by adapter leaders

4

The adapter



Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

DePuy Synthes, Johnson & Johnson's orthopaedics company, provides one of the most comprehensive orthopaedics portfolios in the world. Major market challenges include the need for high inventory – which drives up costs and ties up net working capital, complexity and perioperative inefficiencies. These challenges can negatively affect the ability to deliver to hospitals and end customers in an efficient and cost-effective manner, especially in times of disruption.

Building resilience

Johnson & Johnson redesigned the customer journey using patient data input to better serve the end customer while reducing the inventory required. Its solution is a HITRUST digital case-management system that enables sales consultants to bring a streamlined range of products to surgeries, informed by upfront access to patient data. Its main features are:

1. **Digital integration with patient systems**, which allows secure, real-time access to information, including procedure schedules, X-rays and patient biometrics, meaning manual case coordination is virtually eliminated.

2. **Artificial intelligence (AI) and machine learning, templating and perioperative planning**, which uses AI-driven algorithms to help accurately predict the implants and surgical instruments needed while reducing and optimizing medical procedure tray configurations for individual cases.
3. **Digital performance management**, which is enabled by an Advance Case Management (ACM) portal providing an integrated means for the supply chain customer solutions team to digitally monitor and manage performance once the product has gone live.

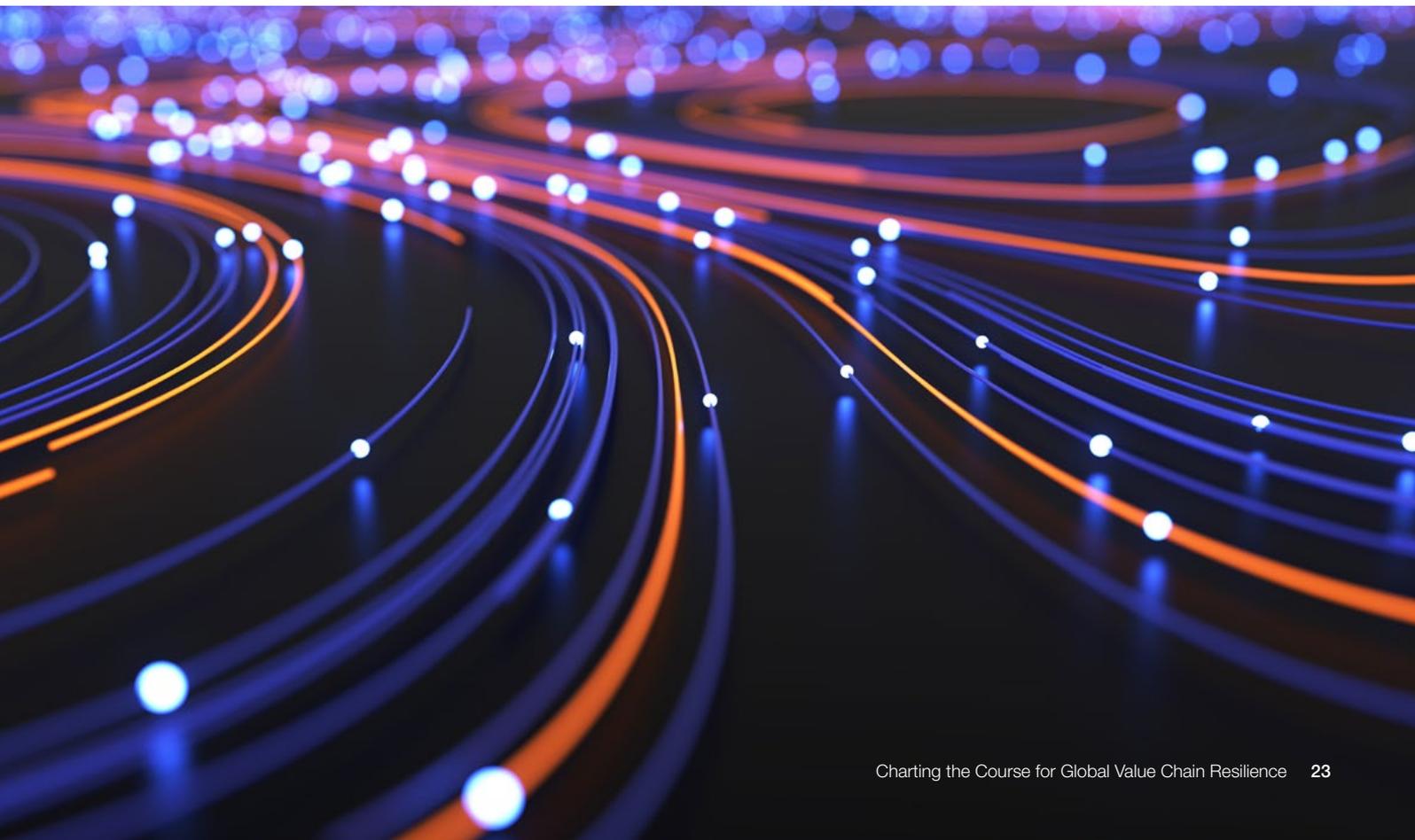
Resilience benefits

Where ACM has been deployed, DePuy Synthes has been able to halve its inventory footprint, and instrument tray needs have shrunk by almost two-thirds (63%). This has had the downstream effect of reducing the requirement to sterilize instruments by the same amount, reducing the environmental impact of water, natural gas and electricity usage, and blue wrap waste used for sterilization purposes. The portfolio of equipment and product components for surgeries has been simplified, while patients in need are being served more efficiently.



For this ambitious adaptation programme to be successful at scale, a strong collaboration between sales, account management, supply chain and tech teams was required.

Kathy Wengel, Executive Vice-President and Chief Global Supply Chain Officer, Johnson & Johnson



2.5 The provider

Characterized by a high degree of go-to-market agility across channels

Providers are characterized by extreme scores in logistics flexibility, go-to-market versatility and financial viability. Leaders with this profile exhibit a strong financial profile, in large part due to their

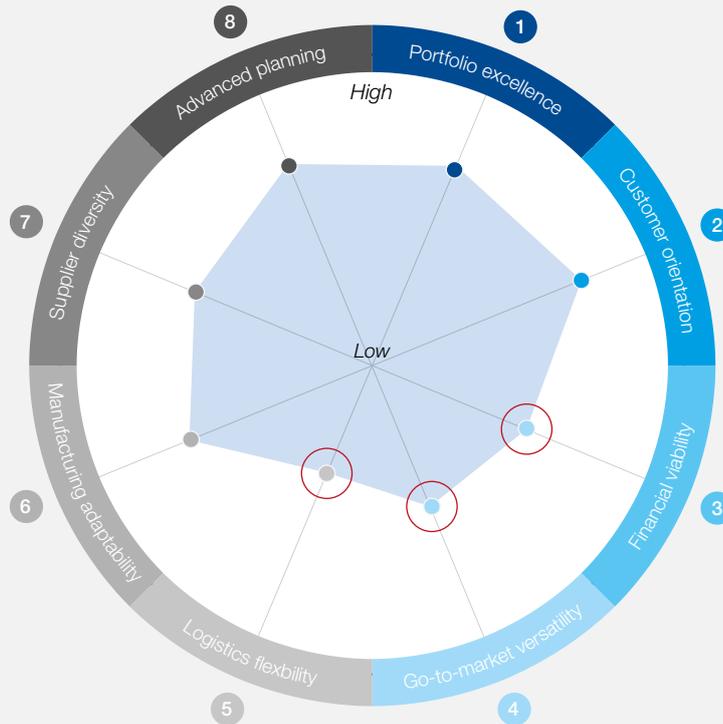
go-to-market agility and logistics flexibility across channels to quickly address supply/demand volatility as opposed to laggard providers who experience fragility in those areas (Figure 11).

FIGURE 11

The provider's position on the resiliency compass

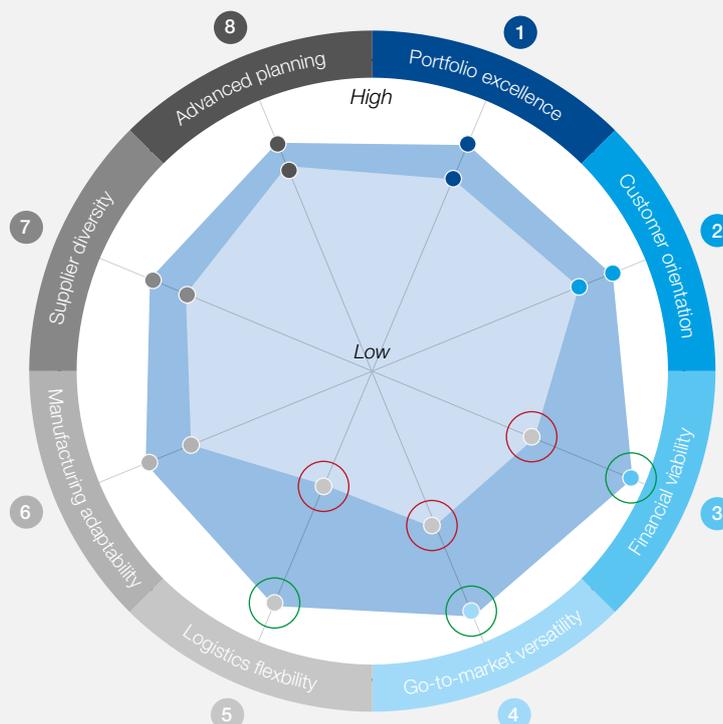
Laggard

Specific fragile points identified



Leader

High level of resiliency identified



- Laggard company profile
- Leader company profile
- Resilient points
- Fragile points

Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

Provider challenges

Conversely, providers will struggle if they are weak in either of these areas:

- **Lack of multichannel fulfilment options** and an inability to reach customers when primary distribution methods become unavailable

- **Lack of capacity flexibility and strategic stocks** internally and within the supply network in a world that has been optimized for “just-in-time”

The provider strategy playbook

The seven key strategies that have been implemented by successful providers (Figure 12) can help companies create an agile supply chain

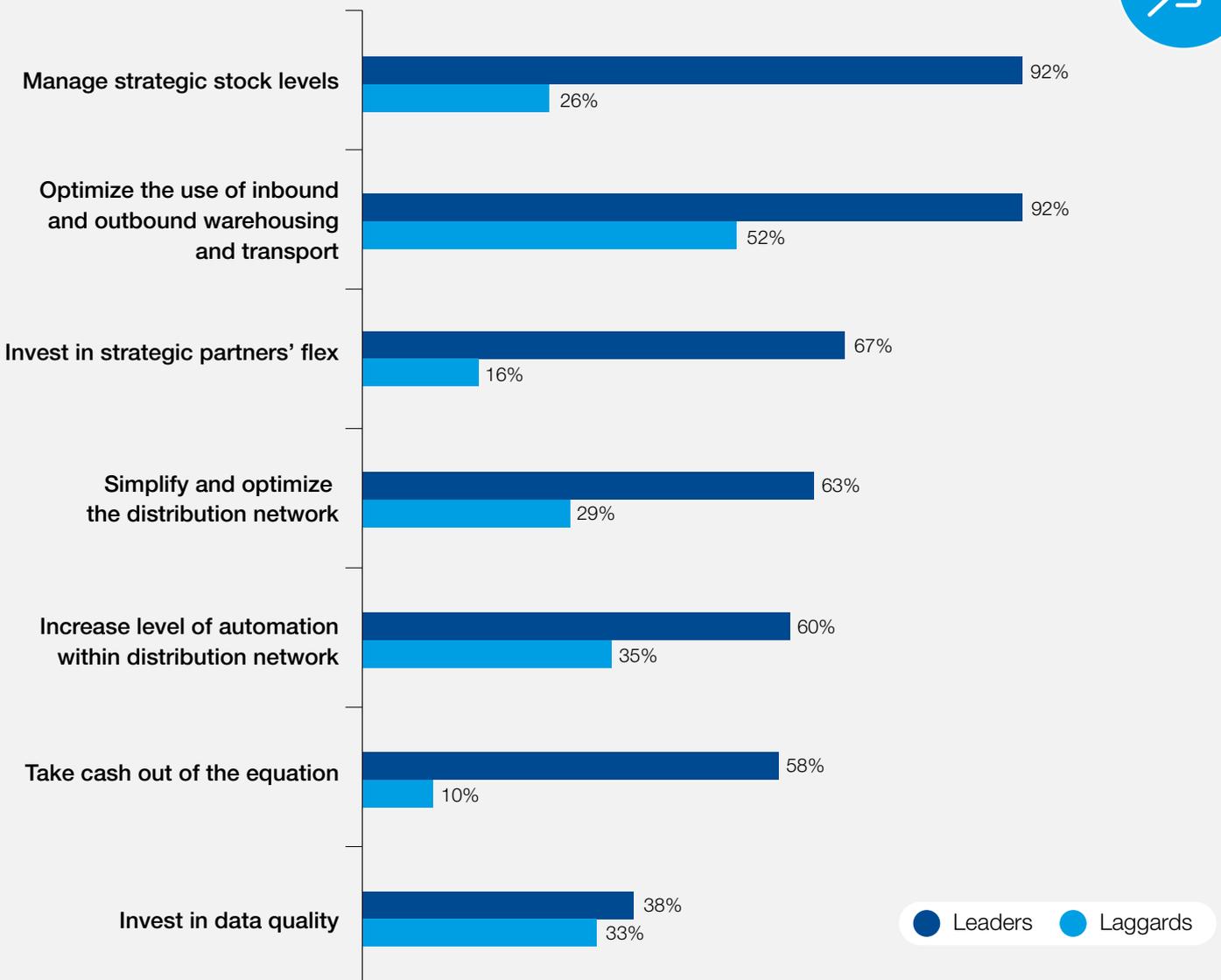
that can address changing consumer preferences and assure fulfilment in challenging times.

FIGURE 12

Selected winning strategies applied by provider leaders

5

The provider



Source: World Economic Forum and Kearney, Global Value Chain Disruption Study, January–June 2021

As the world's second-largest capsule maker and recognized pharmaceutical machinery manufacturer, ACG Group, based in Mumbai, was confronted with high demand during the COVID-19 pandemic while experiencing supply shocks. The decades-long focus on supply chain optimization to minimize costs, reduce inventories and drive up asset use removed buffers and flexibility that could absorb such disruptions. Lack of availability, delays and cost escalations led to a high degree of uncertainty and risk.

Building resilience

To address some of the complexities caused by lockdowns globally, supplier vulnerabilities, transportation uncertainties, changes in demand and supply patterns, and fluctuations in commodity prices, ACG Global implemented the following five key resilience measures:

1. **De-risking the sourcing strategy and geographic footprint** by using scenario management to identify risks – including port closures and COVID outbreaks – and avoid location dependencies when key suppliers are affected. Support initiatives have also been created to help supplier partners and service providers keep their operations running.

2. **Adaptive supply chain and logistics strategy** with a number of alternative routes, logistic hubs and modes of transportation available to ensure delivery of both inputs and customer orders.
3. **Capacity flexibility and increased levels of in-transit inventories** to create buffers in preparation for disruptions.
4. **Control towers for real-time decision-making** with dashboards of more than 300 key performance indicators (KPIs) using 24/7 track-and-trace capabilities throughout all production plants, logistic hubs, ports and delivery routes; also monitoring of supplier operations.
5. **Team empowerment, communication and reviews** to take quick decisions and remain agile.

Resilience benefits

Through having implemented the five key solution measures outlined, ACG Global continued to deliver to customers in more than 70 countries with zero production losses across its 14 global manufacturing facilities. Business continuity was the number-one priority and led to a strategic plan for a more than 20% capacity increase in Europe, India and Latin America to create the required flexibility capacity needed in more uncertain times. All of these initiatives resulted in double-digit topline growth.



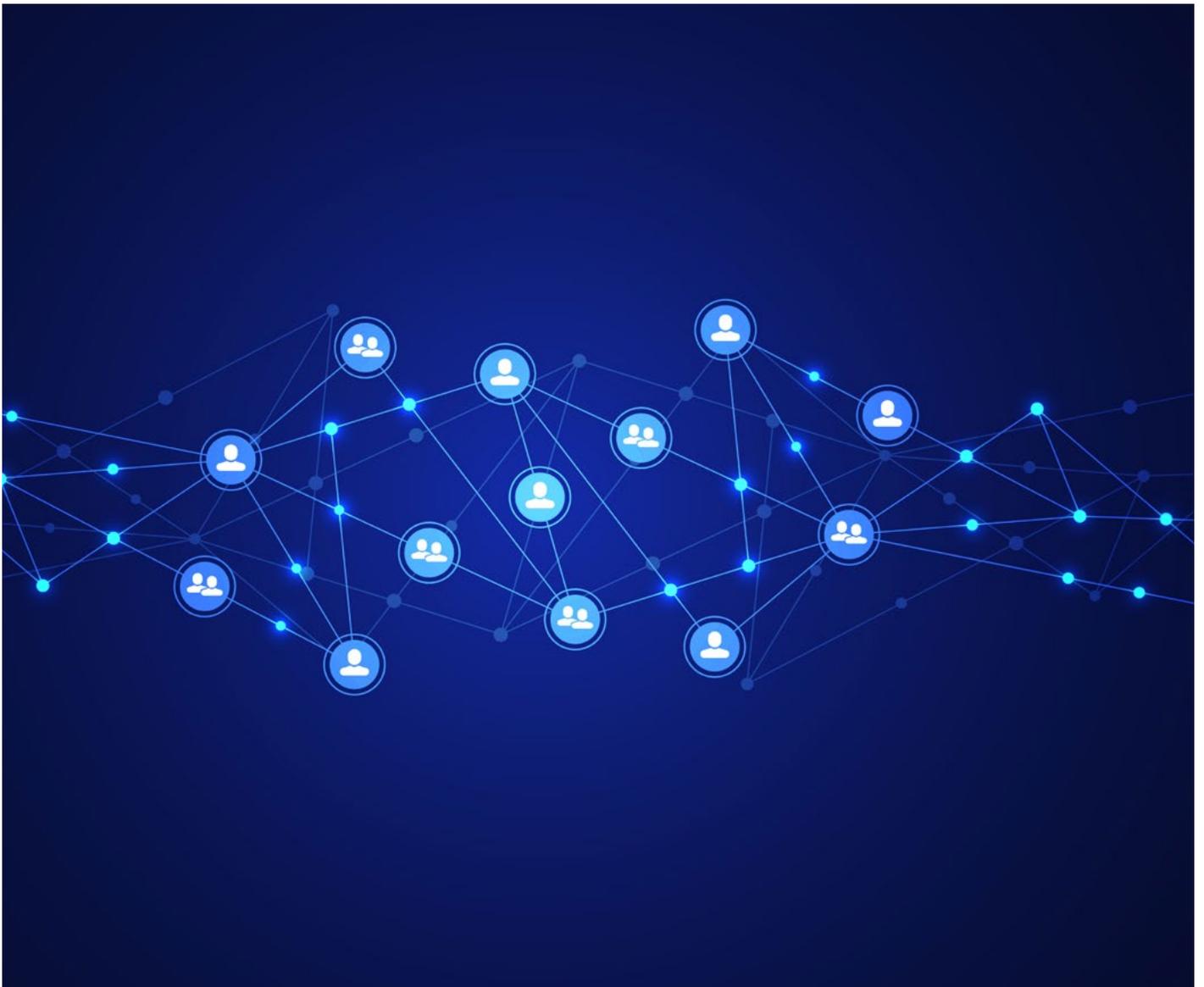
Team motivation, empowerment and close collaboration with government bodies, supplier partners and port authorities were key success factors in creating entirely new supply chain routes and increasing the production capacity to continue delivering despite challenges.

Nikunj Desai, Head Global Supply Chain, ACG Group

3

The way forward: future-proofing global value chains through public- private cooperation

Creating lasting and resilient value chains requires strong collaboration between the public and private sectors.



“ Resilience leaders are expanding their actions to include an added layer of public-private collaboration to help manage sustained, macro-level uncertainty and disruption.

Learnings from these resilience profiles show that the global value chains of the future will be defined by their end-to-end integration and the development of new capabilities, such as scenario planning, to anticipate challenges and quickly develop contingencies among other approaches. They will need to be supported by new industrial policies and strategies, developed through public-private consultations. Moreover, they will need stronger global coordination combined with local engagement and tailored regional responses to the specific impact of disruptions in different locations.

Resilience leaders in each of the profiles described are expanding their actions to include an added layer of public-private collaboration to help manage sustained, macro-level uncertainty and disruption. The consultations conducted for this paper have identified four opportunities for strengthened public-private cooperation that leaders are embracing as they continue to adapt their value chains.

1. Regulations and policies

National and regional government policies and incentives pertaining to trade, ESG (environmental, social and governance) criteria, taxes and the workforce have grown in number and complexity. The wide spectrum of measures in different countries is affecting global value-chain operations and can often lead to stranded freight, costly production downtime or lost sales.

Cross-border bottlenecks from labour and materials shortages through to port congestion and cyberattacks necessitate private-public information-sharing and involvement. Streamlining and harmonizing compliance will be required

across geographies and in collaboration with the private sector to globally coordinate and integrate supply networks, as well as to stabilize the flow of goods and inputs, ensuring smooth functioning of value chains.

An example is US President Joe Biden's recent negotiations with ports, terminals, labour and industry to extend operating hours and add off-dock warehouse capacity to clear freight at Los Angeles-Long Beach Harbor, allowed the securing of volume commitments from Wal-Mart and Home Depot, among others.³



2. Technology dissemination and innovation

Technological progress has catalysed innovation in shipment visibility, process automation, instant secure payments and data analytics. These transformations can help manufacturers build resilience through rapid-response capability and optimized allocation of people, assets and investment.

However, the lack of standards and end-to-end supply chain integration has reduced the ability to scale technology applications and achieve similar maturity levels across supply networks.

Public-private coordination efforts around technology and innovation will be key in

harmonizing global value chains to, for instance, enable the combination of data from multiple sources, ensure trust among partners sharing information through robust security features or harmonize proprietary and open-source software to work seamlessly across borders.

For example, the European Union has put in place such an initiative with a €700 billion (\$780 billion)-plus recovery and resilience facility,⁴ while Germany invested €7.6 billion (\$8.6 billion) in a digital hub initiative⁵ that includes infrastructure for data, making use of common platforms and increasing resilience.

3. Strategic investments

Financial markets are monitoring company supply chains closely, assessing manufacturers' ability to adapt to shortages and delays, and tracking availability of raw commodities and inputs.

ESG/SRI (socially responsible investing) screens offer growth opportunities for companies if managed correctly, but the risk of reputational damage makes it essential for manufacturers to get supplier relationships, granular visibility and compliance right.

Governments and industry have a collaborative role to play in ensuring market transparency, setting and maintaining clear regulations and incentives in areas such as net-zero goals or, more broadly, encouraging a level playing field for achieving resilience.

For example, total global assets under management in ESG/SRI-focused funds approached \$540 billion in July 2021, according to Refinitiv/Lipper, including \$65 billion in passive funds attracted since early 2020, suggesting huge growth potential.⁶

4. Demand environment

The rise of e-commerce, accelerated by COVID-19, has dramatically disrupted the manufacture and delivery of products that previously benefitted from relatively simple, stable business-to-business storage and shipment patterns.

Consumer expectations regarding delivery options, shipment tracing, returns, sustainable shipping and packaging, and ESG provenance are forcing radical service and transparency changes up the value chain.

In the future, the public and private sectors will increasingly work together to develop

incentives and policies to encourage responsible consumption and meet social responsibility goals to address the root causes of disruption.

To support this, local statutes requiring a charge for plastic bags in supermarkets have been effective in encouraging shoppers to bring their own reusable bags. By consolidating shipments and setting pricing to discourage next-day delivery, retailers were also able to reduce truck trips and alleviate driver shortages. Additionally, consumers' prioritization of social responsibility goals is forcing shipment visibility improvements that, combined with performance analytics, strengthen resilience.

As organizations revisit their manufacturing and supply chain strategies and build new capabilities to future-proof value chains, the application of proven strategies associated with the resiliency compass and the different profiles outlined in this white paper is a major milestone in reaching new levels of resilience and enables adaptation in case of future disruptions.

In the meantime, the World Economic Forum will continue to support stakeholders at the country,

regional and global level by providing a unique and neutral space to help businesses and governments upgrade their manufacturing, investment and industrial strategies. The leadership profiles and associated strategy playbooks will support the expansion and rapid scaling of public-private initiatives and measures along the four dimensions outlined in the section above: regulations and policies; technology dissemination and innovation; strategic investments; and demand environment.

“ Governments and industry have a collaborative role to ensure market transparency and set clear regulations and incentives to encourage a level playing field for achieving resilience.

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