

Gartner®

# Measuring Supply Chain Agility: The How and the Why



# Introduction

The last few years represent a turning point for our society, businesses and supply chains. The COVID-19 global pandemic brought with it an unprecedented level of uncertainty and disruption, impacting both supply and demand. Even before the pandemic, the pace of change was increasing, taking us into a much more complex supply chain environment. We can define this using the acronym VUCA (volatility, uncertainty, complexity, ambiguity): continued volatility of market demand, uncertainty due to frequent risk of supply chain disruption and complexity in product portfolios and global supply chain operations.

Supply chain organizations that can thrive in such an ambiguous environment will lead the way. To respond to these challenges, the supply chain community is responding in unison. Nearly 90% of supply chain leaders who participated in our 2020 annual Future of Supply Chain research said they are planning to invest to make their supply chain more agile over the next couple of years.

Agility has long been a buzzword, often perceived as the panacea to all possible supply chain issues. Judging by the many conversations we've had with supply chain executives, there is a lack of clarity and consensus about what agility really means. Are supply chain leaders staking their future on embodying a quality that isn't totally clear?

This research seeks to answer the most critical questions that chief supply chain officers (CSCOs) and heads of supply chain strategy ask us about agility. Can supply chain agility be defined? What is the behavior of an agile supply chain, and what are its critical success factors? How can the impact of agility on business performance be measured?



## Understanding supply chain agility

The collective understanding of agility comes with a few misconceptions. The most common misunderstanding about agility is that it equals speed. There is not much value in running fast per se. What if you respond to unanticipated changes in demand very quickly by expediting? It may be the right thing to do occasionally, but it's expensive and likely not economically sustainable when it's common practice. Or what if you respond quickly, but quality suffers because the wrong product is shipped? Although speed is valuable, it doesn't go far enough. Supply chain agility is much more than just running fast.

A second misconception is that agile supply chains are too costly to operate. According to our research, over 30% of supply chain executives believe so and refrain from investing to make their supply chain more agile.

However, creating higher levels of agility should not automatically be thought of as the antithesis of cost efficiency. In a VUCA business world, an agile supply chain can improve an organization's ability to limit the downside while capturing upside potential. Agile supply chains may be more costly to operate, but that cost should be considered "insurance" against lost sales or negative impact from disruptions. CSCOs should weigh the costs that agility brings against the increase it delivers on the customer service level to determine if they have the right level of agility. For the organizations that are able to find this balance, the cost of agility can more than pay for itself by increasing the reliability, quality and speed of customer service.

Supply chain leaders responding to Gartner's 2020 Supply Chain Signature Series Risk Survey reported a 4% average increase in cost to serve after an unfamiliar disruption to their supply chain. They also said that they experienced five unfamiliar disruptions on average per year. This means that the impact of disruptions on total cost to serve accounts for about a 20% increase in total cost to serve, annually.

Supply chain organizations should invest in increasing levels of agility to mitigate risk, as long as the cost of agility doesn't overcome the cost implications of supply chain disruptions.

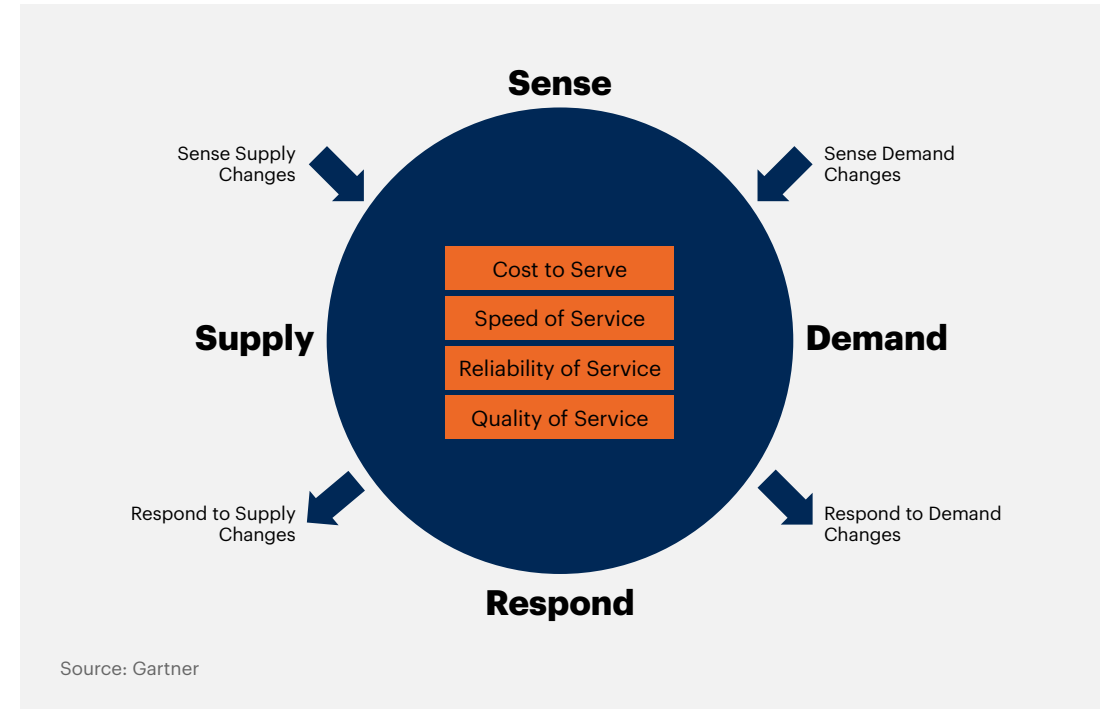


## Defining supply chain agility

Supply chain agility has proven to be difficult to define. Many academics, researchers and companies have tried hard to do so, and many have differing understandings of what agility means. All definitions, however, share a common thread: Agility is a quality of managing change. Gartner defines supply chain agility as the ability to sense and respond to unanticipated changes in demand or supply, quickly and reliably, without sacrificing cost or quality (see Figure 1).



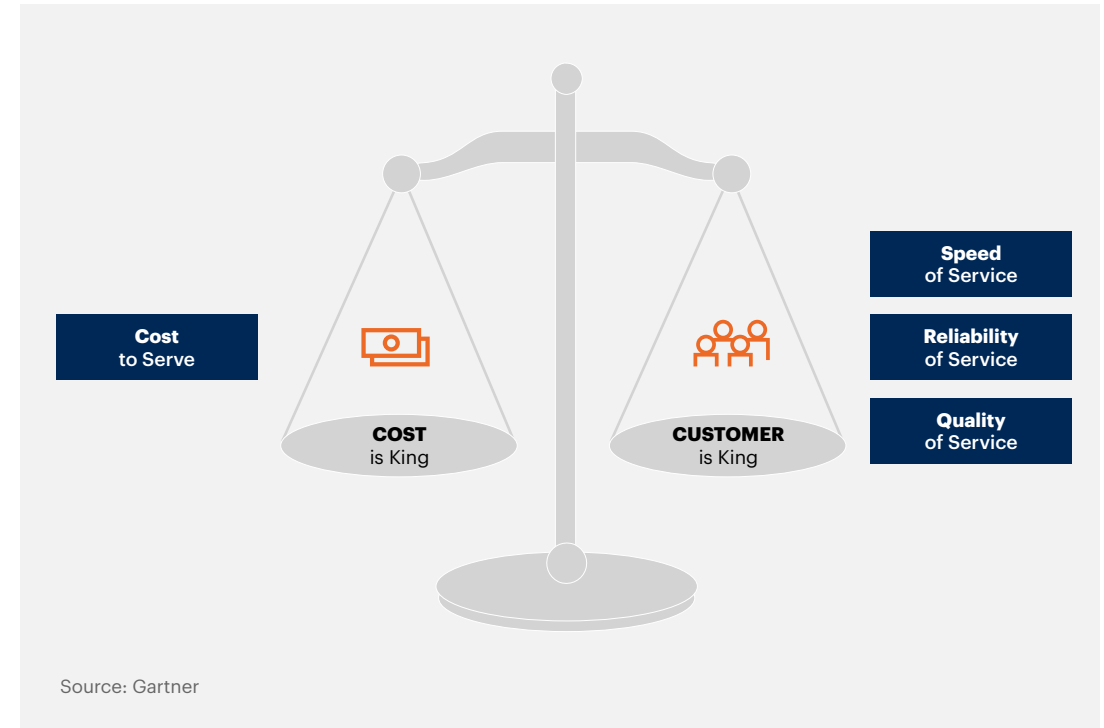
Figure 1. Define Supply Chain Agility and Its Success Factors



The first part of the definition describes the behavior of an agile supply chain, geared around a “sense and respond” capability. Agility is the quality of managing unexpected events, those that were impossible to plan in advance — for example, a supply disruption, a sharp decline in demand or an urgent order. Instead, events that can be planned in advance do not require agility, as companies have the time to organize all needs ahead of time. Sense is the first step, that is, being able to understand that something is happening or is about to happen. Secondly, agility is about being able to respond and take actions that reduce the impact of that event across the end-to-end supply chain.

The second part of the definition describes four key success factors that determine how effective supply chain agility is: cost to serve, speed of service, reliability of service and quality of service. Improving the speed, reliability and quality of customer service positively impacts the customer experience and, in turn, supports revenue growth. However, such improvements also impact cost to serve. Trading off the level of customer service agility with the costs entailed means finding the right balance between customer experience and cost to serve (see Figure 2).

Figure 2. Agility Must Support Trading Off Cost With Speed, Reliability and Quality of Customer Service



## Key performance metrics for supply chain agility

Agility is an attribute of the supply chain. It's not a business outcome. As such, it cannot be measured per se. What companies can measure is the impact of agility on the business performance. Determining the appropriate level of agility requires monitoring the supply chain performance over time across the four success factors of speed, reliability and quality of service, and cost. Monitoring means determining how performance varies, especially when things don't go as expected. If performance is significantly affected when unexpected events occur, then the level of agility is not adequate. The degree of needed agility will depend on how much a company wants to "insure" its supply chain against possible risks.

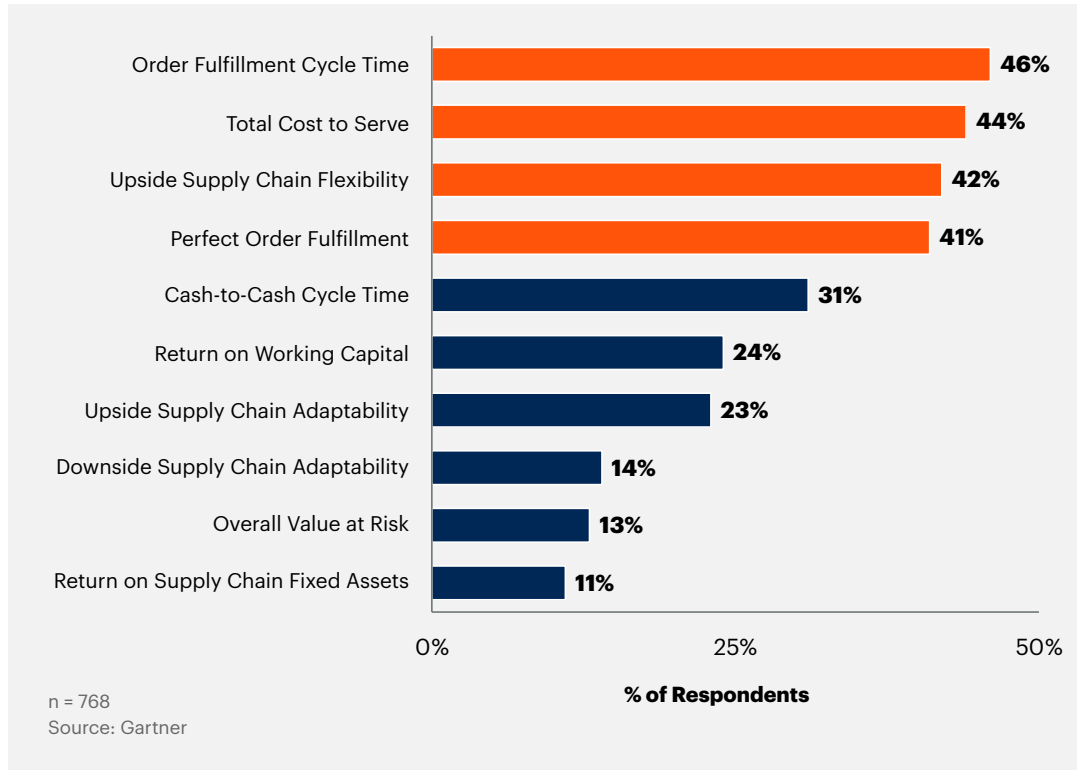
In building the right approach to measuring the impact of agility on the business performance, supply chain organizations need to identify the right performance metrics. A good starting point for doing so is to look at the four success factors that determine how effective supply chain agility is (cost to serve, speed of service, reliability of service and quality of service) and then identify the performance metrics that would align with those success factors.

To guide the selection of the most appropriate performance metrics, we surveyed over 700 supply chain leaders from across the globe in the 2019 Gartner Supply Chain Agility Survey. Using ASCM's Supply Chain Operations Reference (SCOR) model Level-1 strategic metrics, respondents were asked to select which ones they believe are most impacted by increased levels of supply chain agility.

Figure 3 shows the survey result, which clearly points to four metrics mostly impacted by agility. There is a strong connection between these four metrics and supply chain agility.

- **Order Fulfillment Cycle Time:** With reference to the four success factors of agility, order fulfillment cycle time measures the speed at which a company can deliver to customers. An agile supply chain should be able to fulfill customer orders at the usual speed during a time of change or disruption, without impacting the normal cycle time performance.
- **Upside Supply Chain Flexibility:** Similar to the order fulfillment cycle time, this metric can help measure speed and reliability from a supply performance perspective. The combination of upside supply chain flexibility and order fulfillment cycle time is a powerful way to model how fast (the mean value for these metrics) and reliable (the standard deviation of these metrics) an end-to-end supply chain is.
- **Perfect Order Fulfillment:** This metric measures how well the whole supply chain fulfills customer expectations in terms of on-time delivery performance with complete and accurate documentation and no delivery damage or defects. This is a tough metric that an agile supply chain should be able to preserve, even in times of disruption.
- **Total Cost to Serve:** This metric calculates the profitability of servicing a client. This metric is obviously associated with the success factor cost of supply chain agility. It is essential to counterbalance all other factors because by increasing speed, reliability and quality of customer service, cost will be impacted.

Figure 3. Metrics Most Impacted by Supply Chain Agility



The selected metrics are among the most commonly used across the majority of supply chains. Focusing on these metrics is a practical and logical starting point to measuring agility impact. However, there might be other important metrics that could be added to the plot. For example, the overall value at risk metric can assist companies in estimating potential losses related to risks in the supply chain and estimating the potential benefits related to mitigation measures.



## Measuring supply chain agility against baseline performance

Agility is about managing change and unexpected events. Measuring it means understanding how this attribute is effective in maintaining “standard” supply chain performance even during a time of change and when unanticipated events occur. Measuring agility should help answer the following questions:

- ✓ **To what degree are unexpected events impacting the speed, reliability and quality of customer service? And how do they impact costs?**
- ✓ **Is the supply chain able to respond effectively to change and unexpected events?**
- ✓ **Is the level of agility sufficient to prevent negative impacts to business performance?**
- ✓ **What adjustments should be made to improve performance during times of change?**

Measuring agility requires comparing current supply chain performance with a baseline performance. The best baseline to pick is the performance the supply chain has demonstrated during times with no disruptions. The latter would represent the ideal performance of the supply chain you want to compare to. The reason why you should compare with a baseline is to determine if the current level of agility is adequate to maintain the performance close to the baseline, even when things don't go as expected.





## Using a dashboard to monitor the impact of supply chain agility on performance

A good measure must be inclusive — it must measure all suitable aspects of performance. Therefore, the four metrics discussed above (order fulfillment cycle time, total cost to serve, upside supply chain flexibility and perfect order fulfillment) should be viewed in combination and not individually. Companies should graphically plot all relevant metrics in a dashboard, providing an opportunity to review supply chain performance at once. Figure 4 displays an example of a dashboard, showing a snapshot of supply chain performance in a particular moment in time. The example dashboard includes a summary metric called Agility Impact Gap that aggregates all metrics, providing an easy way to measure the current impact of agility on business performance.

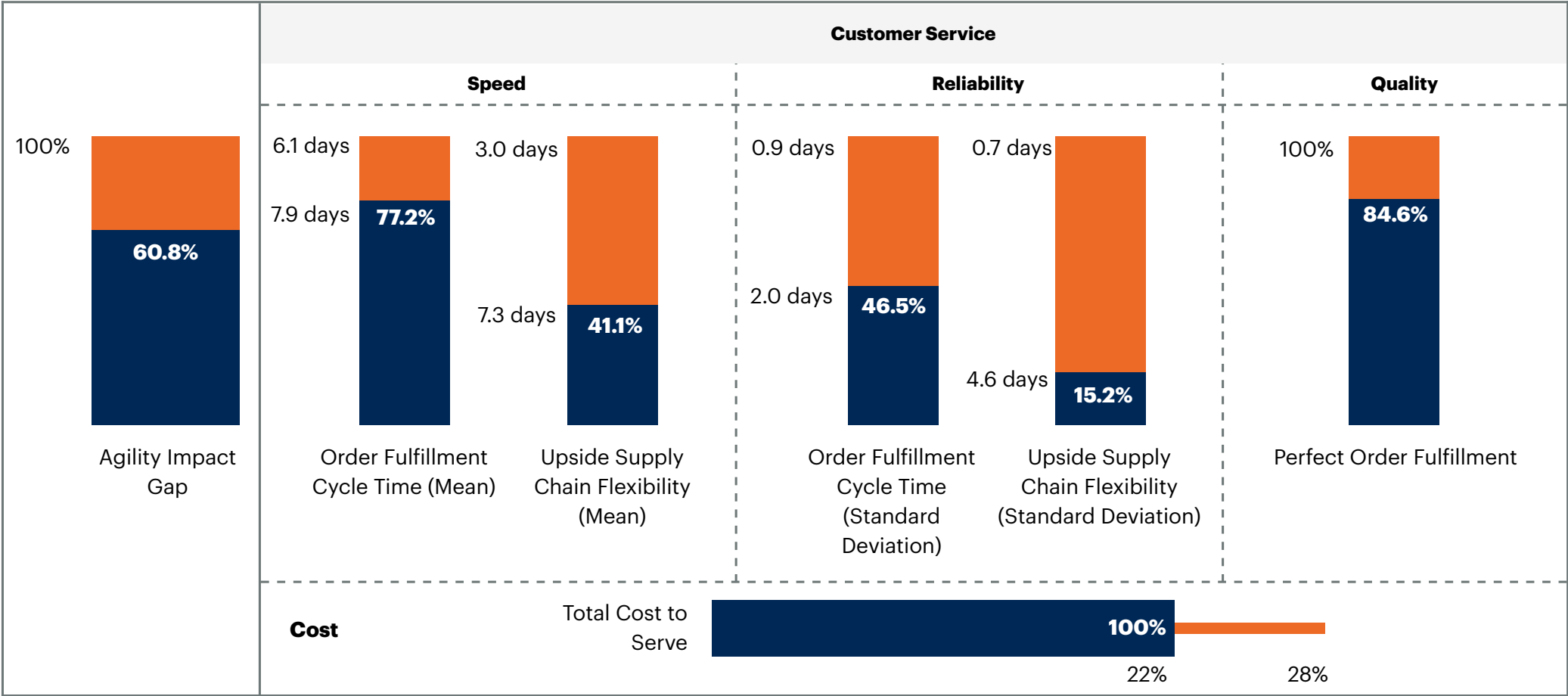
A dashboard allows decision makers to understand if the performance metrics that agility can impact are currently under pressure. An extremely agile supply chain's performance, for example, won't be impacted much during a time of disruption. In this case, the dashboard will display that current performance is still close to the baseline performance, and no particular actions should be taken. A supply chain that is not sufficiently agile will instead be under pressure when things don't go as planned, and the dashboard will show that current performance diverges from baseline.

An organization can get the most from its dashboard by monitoring specific areas of the business, rather than the whole supply chain. For example, it would be worth looking at the performance of a product line that is experiencing significant growth or looking at a region that is affected by significant disruptions.



Figure 4. Example of Agility Dashboard

■ Gap from Baseline Performance
 ■ Current Performance

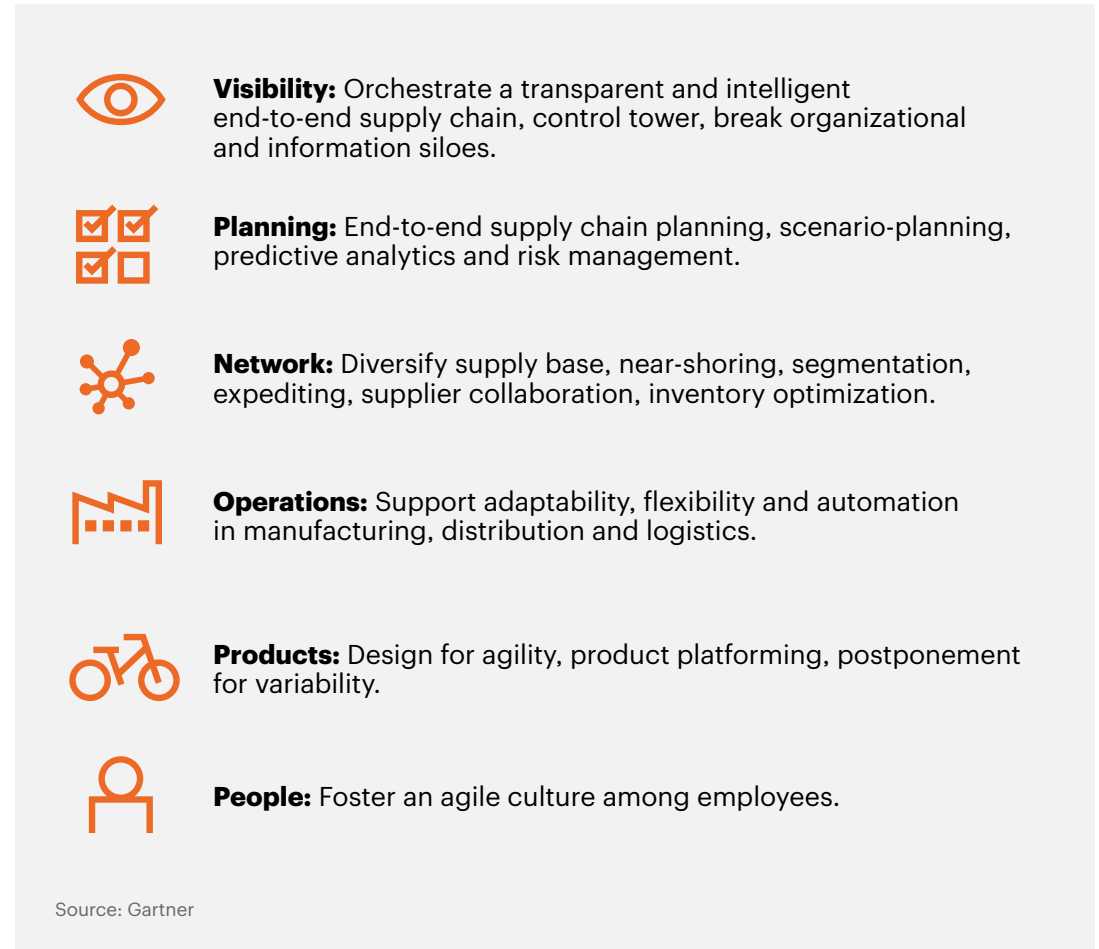


Source: Gartner

Analysis is also important — associating performance gaps with disruptions and the responses the supply chain undertook. On the basis of the analysis performed, CSCOs should determine if the level of agility should vary to improve the impacted metrics. They should determine what capabilities should be activated or deactivated to vary the level of agility and, consequently, the business performance.

See Figure 5 for a checklist with the most impactful capabilities that can increase the level of agility, and in turn, improve performance.

Figure 5. A Checklist With the Key Capabilities Increasing Supply Chain Agility



# Actionable, objective insight

Position your organization for success.  
Explore these additional complimentary  
resources and tools for supply chain  
leaders:

Already a client?  
Get access to even more resources  
in your client portal. [Log In](#)

## Report

Weather the Storm: Supply Chain Resilience  
in an Age of Disruption

Discover key strategies for greater supply chain  
resilience and supply chain management.

[Download Report](#)



## Article

The Route to a More Resilient Supply Chain

Learn a framework for navigating pathways to supply  
chain resilience.

[Download Article](#)



## Blog

Antifragile Supply Chain Management

Understand how the best supply chains operate and  
thrive under increasingly uncertain conditions.

[Read Blog](#)



## Report

Improve Supply Chain Effectiveness &  
Efficiency

Identify and prioritize the right capabilities for advancing  
supply chain performance.

[Download Report](#)



# Connect With Us

Get actionable, objective insight to deliver on your mission-critical priorities. Our expert guidance and tools enable faster, smarter decisions and stronger performance. Contact us to become a client:

**U.S.:** 1 855 811 7593

**International:** +44 (0) 3330 607 044

[Become a Client](#)

**Learn more about Gartner for Supply Chain Leaders**

[gartner.com/en/supply-chain](https://gartner.com/en/supply-chain)

**Stay connected to the latest insights**



© 2023 Gartner, Inc. and/or its affiliates. All rights reserved. Gartner is a registered trademark of Gartner, Inc. and its affiliates. This publication may not be reproduced or distributed in any form without Gartner's prior written permission. It consists of the opinions of Gartner's research organization, which should not be construed as statements of fact. While the information contained in this publication has been obtained from sources believed to be reliable, Gartner disclaims all warranties as to the accuracy, completeness or adequacy of such information. Although Gartner research may address legal and financial issues, Gartner does not provide legal or investment advice and its research should not be construed or used as such. Your access and use of this publication are governed by [Gartner's Usage Policy](#). Gartner prides itself on its reputation for independence and objectivity. Its research is produced independently by its research organization without input or influence from any third party. For further information, see "[Guiding Principles on Independence and Objectivity](#)." CM\_GBS\_2083549