# Supply chain elasticity: driving successful transportation and warehouse management

EY
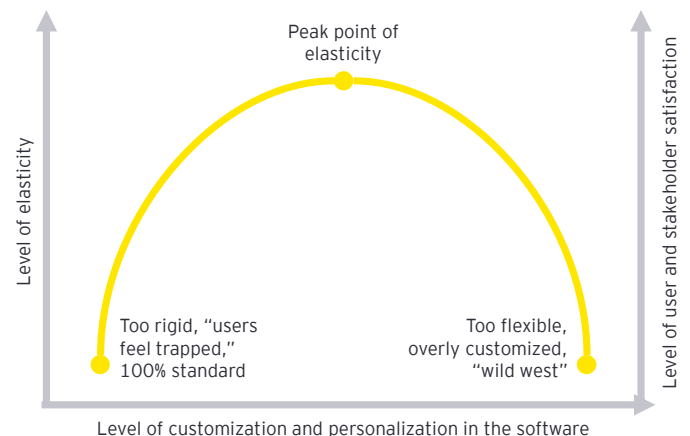Building a better working world

# Excellence in transportation and warehouse management: integration and elasticity hold the key to finding success in supply chain execution

The onset of the COVID-19 pandemic affected businesses in different ways. Most companies faced additional complexity and saw operational vulnerabilities exposed, particularly in their respective supply chain. For many companies, the pandemic increased the urgency of transformation programs and technology upgrades and intensified the perennial pressures to cut costs. Specifically, it reminded executives at manufacturers, CPGs, food companies and retailers of the need for more visibility, control and reliability in managing complex supply chains.

The companies that have been most successful in navigating the crisis were those that had highly responsive and flexible operations in warehouse and transportation management and strong underlying technology. Having strong digital capabilities was also a major plus as remote working became the rule and online channels were the only way customers could place orders and access service.

Many firms that thrived during the pandemic had "elasticity" built into the configuration and deployment of their supply chain software, which allowed them to respond to changing needs in a resilient and flexible manner. We define "elasticity" in this context as the optimal balance of standardization and customization of supply chain software. The art of software implementation is to find the "peak point of elasticity" where the software flexes to meet user needs but is not customized beyond the breaking point of what is healthy for the long term.

## Elasticity in software implementations

Peak point of elasticity

Level of elasticity

Level of user and stakeholder satisfaction

Too rigid, "users feel trapped," 100% standard

Too flexible, overly customized, "wild west"

Level of customization and personalization in the software

When companies embrace the concept of elasticity to guide software implementation, responsiveness and flexibility can be designed directly into core supply chain operations and instilled into underlying technology platforms. We view these attributes as the next level of agility and adaptiveness, two traits sought by many types of companies and promoted by many technology vendors.

Configuring supply chain technology for elasticity means taking advantage of the most powerful core features and modules and also customizing processes and workflows in line with specific operational needs and user preferences. It is not a fully "templatized" implementation, which often leaves users feeling stuck and fails to reflect the complexity of most supply chains. Neither is it a completely tailored solution, which most companies – no matter how distinctive they feel their operations are – simply don't want or need. In our view, the elasticity concept is a highly effective way to determine how users should interact with the system and how the software should be adapted to user's desired behaviors.

It's important to note that a lot of supply chain vulnerabilities exposed by COVID-19 were not necessarily new – we have dealt with a variety of supply chain disruptions in the past. To a large degree, today's supply chain risks and complexities result from longstanding challenges. They reflect running debates about how supply chains should be designed and how technology should be configured to support different parts of the supply chain, including warehouse and transportation management.

The tension between an IT organization's push for standardization and business users' desires for customization and personalization leads to constant struggles. However, scrutiny over decisions to significantly customize software has increased tremendously as company executives now realize that maintaining such customizations over time is costly and builds up barriers for future upgrades. At the same time, a disconnect between supply chain planning and execution presents risks and barriers that prevent many firms from realizing peak performance. Managing these conflicting goals is key in supply chain programs.

We believe we've reached a tipping point, where the convergence of a business-first focus and a strong technology solution can provide the capabilities and integration necessary to achieve excellence in supply chain execution. Further, we believe the concept of elasticity is critical to realizing this vision and ensuring the needs of multiple stakeholders - business executives, IT and end users of supply chain tools and technology – are satisfied.

This article will highlight the opportunities presented by the convergence and reintegration of supply chain operations and supply chain technology. Specifically, it will describe how firms can realize breakthrough cost, performance and visibility improvements by applying the principle of elasticity into the configuration and implementation of supply chain technology and processes.

# A history of pendulum swings: standardization vs. customization

For decades, IT and business have battled over the best way to use technology. Typically, IT leaders want as many core functions as possible (including the supply chain) to run standardized processes on centralized technology platforms that are often viewed as "disciplinarians" for the organization. IT's historical perspective has been that the fewer the number of systems, applications and vendors to manage and support, the better. That thinking has merit. Managing many different systems increases security risks and administrative costs, as seen in the complicated spaghetti diagrams of large-scale IT environments. Plus, efficiency and accuracy increase when supply chain systems can connect directly to finance and other core systems.

For their part, business users want features and functionality geared towards doing what they need to do in the way they prefer to do it. In some instances, this desire reflects a hesitancy or outright opposition to change. In other cases, it reflects personal preference – business users wanting to do their work the way it has always been done, rather than leveraging best practice process models built into many advanced software platforms. Businesses often had very good reasons for wanting specific functionality. However, it's also true that some platforms offer too much flexibility and functionality, helping neither IT nor the business.

This state of affairs led to fragmented technologies across the supply chain. Supply chain planning and supply chain execution were thought to need their own technologies because the conventional wisdom held that they should be managed separately. (See the sidebar to the left for definition.)

Even warehouse management and transportation management were largely treated as independent functions rather than as complementary and overlapping processes – the reason often being the lack of integrated technology solutions. Tech vendors developed bespoke applications that didn't necessarily enable companies to realize the upside of investing in sophisticated warehouse equipment or execute advanced transportation strategies. Limited integration with core systems, including order management, inventory and finance, was another issue. Managing supply chain functions and activities independently has been shown to increase the risk of inefficiencies and errors, especially due to the lack of integration with core finance systems. One specific example we hear from clients is synchronization issues between different systems leading to significant daily efforts in reconciling inventory levels and potentially causing lost sales or dissatisfied end-customers.
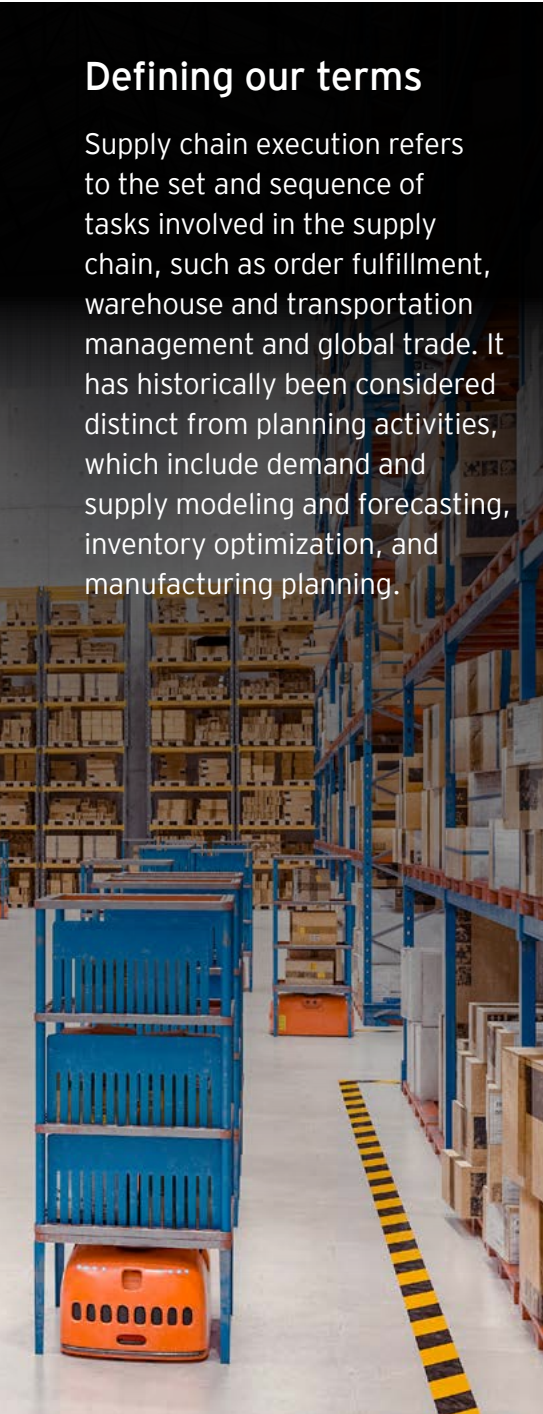
In the last decade, as technology has advanced and matured, the integration of supply chain processes and activities presented an increasingly clear and compelling value proposition that early adopters have realized. That's especially true when the concept of elasticity informs the configuration of supply chain technology and the design of supply chain processes. Indeed, such an approach can enable supply chain transformation with dramatic improvements across the most important metrics.

Truly best-in-class capabilities and leading performance are only possible through the integration of the full range of supply chain functions and processes, including warehouse and transportation management. The return on investment will rise higher for companies that can embed elasticity-enabled software directly into supply chain technology and processes. Such elasticity protects not only against overly customized solutions but also against different forms of supply chain disruptions like natural disasters and the recent pandemic, allowing firms to respond more nimbly to changing market conditions.

The bottom line is that by treating warehouse management and transportation management as a single, intelligent and unified process, companies can achieve excellence in supply chain execution and integrate seamlessly into the broader organization. It's important to note that running these and other applications in either a public or private cloud infrastructure (rather than on-premises) provides clients another option to consume these technologies, allowing for greater flexibility in business case calculations.

## The SAP vision for supply chain integration

SAP has long offered tailored supply chain management solutions such as SAP Extended Warehouse Management (SAP EWM) and SAP Transportation Management (SAP TM). Today, its fully integrated supply chain platform reflects the close connection between these critical functions. Previously, functionalities for SAP EWM and SAP TM were in separate applications, largely due to computing limitations and scalability challenges. But gains in computing power have largely eliminated these concerns, while the launch of SAP S/4HANA® facilitated integration and the development of more robust capabilities' scalability. And, of course, SAP always featured links to finance and other core systems. For supply chain leaders, such integration streamlines order-to-cash and purchase-to-pay processes, consolidates vendor management and simplifies data sharing.

During the last three years, SAP has invested heavily to migrate its two historically standalone supply chain execution applications − SAP EWM and SAP TM − into a single platform. In fact, both solutions are now firmly embedded in SAP S/4HANA as a "single stack" application. For clients looking to build a strong business case for adopting SAP S/4HANA, SAP EWM and SAP TM offer compelling benefits, such as reduced IT costs and complexity. The nature of the single-stack application inside of SAP S/4HANA eliminates the need to manage separate hardware and software infrastructure, which can significantly reduce the total cost of ownership.

# Why elasticity matters and how to design for it

The concept of elasticity is especially useful when companies come to recognize supply chain execution as an end-to-end process that starts with order entry or procurement and manufacturing, extends to inventory and warehouse management, and is completed via transportation and distribution – notwithstanding the necessary touchpoints to the financial world. Because adjustments must be made, flexibility and agility are critical to overall operations. Configuring supply chain technology for elasticity is essential because occasionally the adjustments will be dramatic, as was the case with the COVID-19 pandemic.
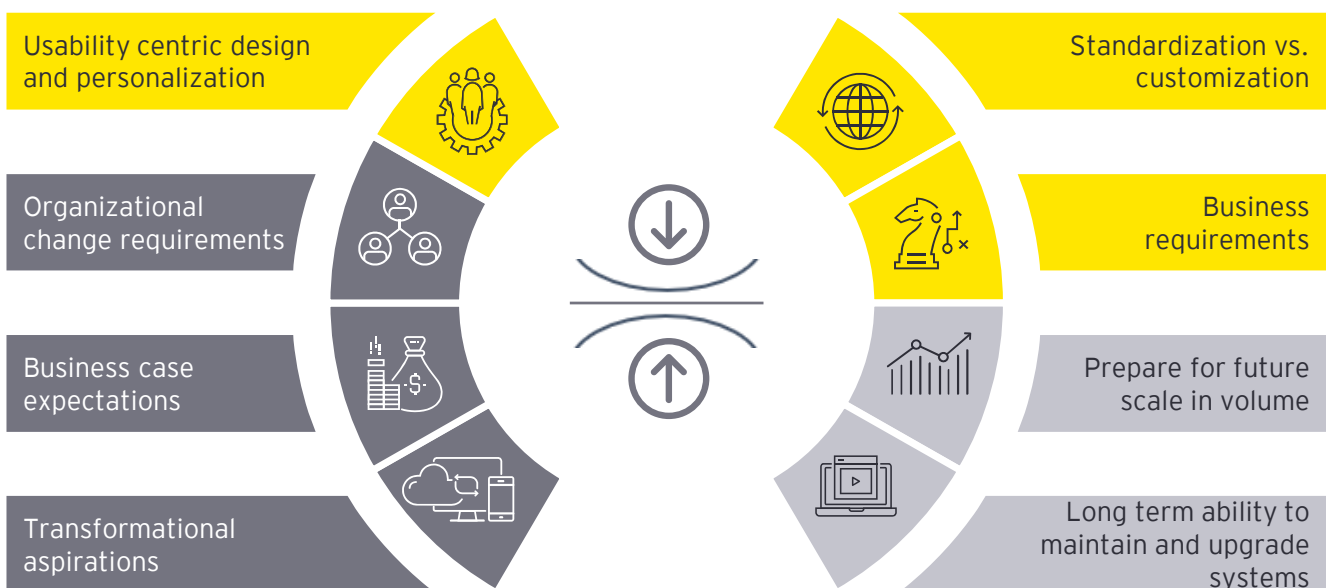
To achieve elasticity, supply chain leaders must address a few critical questions:

- How do we ensure that the system is flexible, usable and can absorb many requirements?

- How do we instill long-term flexibility so the system never bends too much or breaks – especially as system usage scales up and initial requirements adapt to new situations?

- How do we strike the right balance between unique business requirements and standardized processes to satisfy the user base?

Software implementations face constant pressures that threaten the elasticity of the software, hampering the ability to reach the "peak point of elasticity." Effective program governance needs to ensure that these pressures are documented, monitored, narrated and balanced to achieve success in both the short- and long-term.

## Pressures influencing the elasticity of the system



Usability centric design and personalization

Organizational change requirements

Business case expectations

Transformational aspirations

Standardization vs. customization

Business requirements

Prepare for future scale in volume

Long term ability to maintain and upgrade systems

Superior technology provides many of the answers primarily by integrating key processes and functions. For instance, transportation management modules can link customer service, procurement, manufacturing, logistics and finance together on a macro-level. Data models, unifying customer and purchase orders, deliveries, shipments and freight invoices so that they speak the same language, are key because they make supply chains more adaptive and resilient.

Similarly, the core functionality of warehouse management modules includes scenarios for outbound, inbound and internal warehouse processing. These standard function sets can be enriched with powerful functionality, like labor management, that can increase productivity and improve order fill rates, accuracy and cycle times, as well as reduce the overall cost per order. When a unified data model supports both warehouse and transportation management, the two modules can exchange load plans, communicate on inventory shortages and collaborate on warehouse billing scenarios. Those are very powerful capabilities.

The use of best practice models and industry templates embedded within the software is another important consideration for enabling elasticity. However, it's easier for some organizations to adopt such templates than it is for others. Industry landscapes and competitive situations, organizational maturity and culture all play a role in how successfully advanced software can be deployed and adopted. These factors also determine the impact of the typical traps of scope creep, budget overruns and missed deadlines.

To be clear, the definition of standardization varies by company, so the right level of elasticity in software implementations will vary, too. Customizing or enhancing standard templates is not necessarily bad or counterproductive; it just needs to be done for the right reasons, with the right approach and without compromising elasticity.

Failing to enhance or customize a supply chain platform might cause business stakeholders and users to feel their needs have not been heard or their requirements were not considered. Along with lack of training and poor documentation, this is a common reason why users reject new systems. The key is to find the healthy – and elastic – middle ground between customization and standardization.

Let's look at common scenarios included in configuration guides for transportation management – domestic outbound, international outbound or charge management. Few, if any, organizations can deploy these scenarios with 100% standardization out of the box. Successful deployments invariably tweak the scenarios for elasticity and user satisfaction.

However, within advanced platforms, dozens of critical process steps can easily be fully automated so they run automatically in the background without any user intervention, freeing up resources for more productive tasks. Among the steps that can be automated:

‣ Transportation planning and scheduling

‣ Inbound or outbound optimization, cross docking, pool distribution

‣ Delivery creation based on transportation plans

‣ Carrier selection based on rule sets

‣ Freight cost calculation, freight invoice creation and settlement

‣ Physical inventory handling and task management

‣ Slotting and rearrangement

‣ Warehouse order creation and optimization
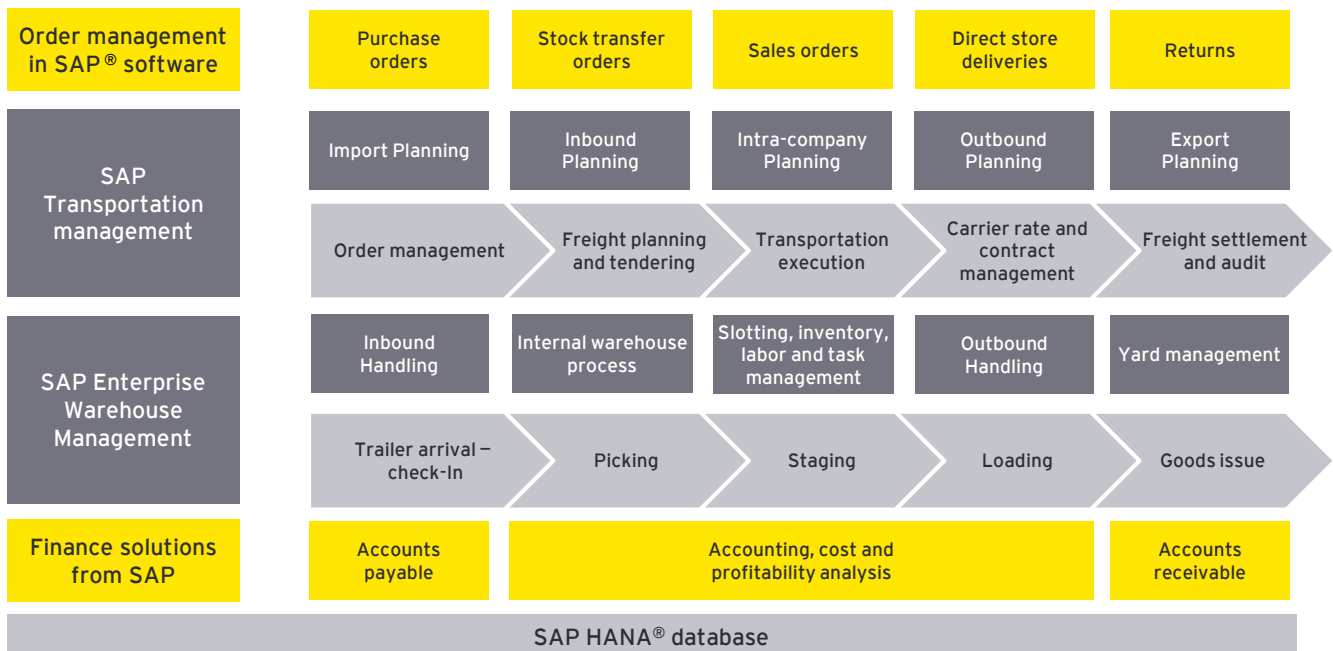
‣ Yard management

With the introduction of SAP S/4HANA, SAP has invested significantly over the last five years to bring advanced transportation and warehouse scenarios and functionalities into what SAP calls the "digital core." Through this native integration, clients avoid investments into additional hardware or subscription fees for cloud-related infrastructure services. In S/4HANA 2020, SAP provides the latest "Advanced Shipping and Receiving" enhancements, further streamlining processes between order, transportation and warehouse management and finance as illustrated in the below graphic.

Most companies – and those with limited degrees of automation today – will benefit from staying close to the system's templates and capabilities. SAP S/4HANA, by definition, is a best-in-class enterprise platform and brings many core functions together across supply chain, customer service and sales, as well as procurement, accounts receivable, accounts payable and accounting.

To truly optimize supply chain performance through elasticity, firms will need an advanced architecture that considers linkages to the broader enterprise environment. Further, every company will need to define its own unique scenarios, user stories and process models to understand the best ways to configure and deploy this very powerful technology. Because every company will have a unique business case and user community, the ideal degree of elasticity will vary. The difference between above average and outstanding ROI is determined by the details and fine points of customization.

## Integration of transportation and warehouse management in the SAP S/4HANA® digital core
### SAP S/4HANA® and the Digital Supply Chain Execution Core

| Order management in SAP® software | Purchase orders | Stock transfer orders | Sales orders | Direct store deliveries | Returns |
|---|---|---|---|---|---|
| **SAP Transportation management** | Import Planning | Inbound Planning | Intra-company Planning | Outbound Planning | Export Planning |
| | Order management | Freight planning and tendering | Transportation execution | Carrier rate and contract management | Freight settlement and audit |
| **SAP Enterprise Warehouse Management** | Inbound Handling | Internal warehouse process | Slotting, inventory, labor and task management | Outbound Handling | Yard management |
| | Trailer arrival – check-In | Picking | Staging | Loading | Goods issue |
| **Finance solutions from SAP** | Accounts payable | Accounting, cost and profitability analysis | | | Accounts receivable |
| **SAP HANA® database** | | | | | |

# Building the business case and getting to value faster

Companies that can embrace the right approach and set up the technology properly stand to gain substantial near-term value and set the stage for longer-term transformation. The business case, which is clear and compelling, is built on the following core components.

**Cost savings:** EY experience suggests 6–15% savings on transportation costs annually, which are among the biggest expenses for industrial firms, manufacturers and distributors. Firms with the most complex supply chains and most outdated technology stand to realize the most significant gains. The cost savings can take many forms, including:

‣ Delivery and shipment consolidation

‣ Carrier selection and dynamic pricing

‣ Better cost tracking and more accurate customer billing and internal chargebacks

‣ More effective freight procurement and negotiations

‣ Lower freight invoicing and administrative costs

‣ Decrease of inbound transfer costs

‣ Improved cash flow for freight transportation

Going back to the elasticity concept, a business case should explore various elements. The natural tendency in the case of a Transportation Management Solution is to look exclusively at bottom-line savings, often overlooking benefits that can be found in other areas that increase the top-line, improve customer service, provide the ability to scale for future growth and harmonize processes across the globe. We encourage our clients to look beyond the low-hanging fruit of simplified cost savings as illustrated in the graphic below.

## Transportation Management Solution business case – it's not all about the bottom line



| Delivery and shipment consolidation | | Carrier selection and dynamic pricing | Freight invoicing and auditing | Freight procurement and negotiations | Higher throughputs create opportunity | | Better service levels and customer satisfaction |
| Shrinking planning cycles free up planners | Detailed load plans remove uncertainty | | Freight invoicing is much less work intensive | Simplify maintenance of freight rates | Effective passing on of freight charges | Commercialize freight charges | |
| Single source of truth for finance charges | | Harmonization of freight contracts | Putting tribal knowledge into rule sets | | | Templatize processes and scenarios | Plan globally or regionally, execute locally |
| Master data synchronization is key | No expensive interfaces between ERP and TM | Track cargo and resources across your supply chain | | Give your clients the information they deserve | Charge back the costs to the business they cause | Create accountability across your organization | |

Within warehouse management, overall cost-per-order rates can fall by 15–30%, thanks to more productive workers and increases in order accuracy and perfect order completion. Gains in inventory accuracy can reduce carrying costs by 8–15%, as our experience has demonstrated. Warehouse Management Systems, much like Transportation Management Systems, provide benefits in different categories that should be explored on a very granular level.

**Improved performance and new capabilities:** With the right process design and integrated technology, firms can take advantage of leading practices and more advanced capabilities. The possibilities range from smarter and more harmonized contracting to centralized planning and standardized processes. Better customer service and higher throughputs almost invariably result when warehouse management and transportation management processes are linked and synchronized. That's true because more orders are delivered accurately and on time. In our experience, improvements of 5–15% in these critical areas are well within reach.

**Better data, reporting and advanced analytics:** The move to a system that can support end-to-end supply chain execution processes provides a huge advantage in terms of actionable insights and decision-making confidence in real-time, as well as more efficient reporting. Companies that don't have to gather or reconcile data from different systems or cut-and-paste across different spreadsheets to complete reports have a huge advantage.

Consider how business users can make better decisions based on clearer visibility and actionable insights relative to delivery, cargo and cost tracking and labor savings. For instance, better cost tracking means that more freight expenses can be assigned and passed along to customers or be attributed to clients or procurement for profitability purposes. Increased confidence in the data (e.g., a single source of truth for costs) plus analytical insights can close the loop between execution and planning. Systems nowadays have advanced analytics embedded in the system, enabling quick activation and reducing the need for data replication in data warehouses.

Easier tracking of sustainability metrics is another important benefit. As regulatory and societal scrutiny on environmental impact increases, sustainability reporting will become a more complex — and onerous — task, especially for firms that lack the systems to collect and track relevant data.

**Increased employee engagement and productivity:** It may seem counterintuitive that automated processes and powerful technology will improve employee engagement. However, experience shows that people equipped with the right technology are more productive and engaged, as well as empowered to focus on high-value activities (e.g., focus on exceptions) rather than administrative tasks (e.g., data gathering). Proper training and consistent communication can help increase user adoption, which boosts technology ROI. For many firms battling for scarce talent, better tech can even help improve retention.

Within warehouse operations, advanced analytics and execution tools enable clear prioritization of tasks and automated exception alerts to keep people focused and working productively. Warehouse leaders can more effectively "manage by walking around" when they are equipped with tablets that offer real-time performance analytics and updates.

# Finding the right path to value

It's important to note that the business case and best approach to optimizing supply chain execution processes and supply chain technology will vary by company, depending on the scale and complexity of current operations and the current state of the organization. Technology maturity and levels of automation, existing skills and talent and senior leadership engagement are among the factors that will determine the optimal business case. In measuring value, companies should incorporate a broad range of metrics; defining the business case too narrowly can dilute the benefits.

The nature of the implementation approach – full transformation vs. lift-and-shift – is another critical variable. For some firms, taking a holistic, end-to-end view and significantly upgrading and integrating transportation and warehouse management capabilities will yield the best results and the biggest gains in supply chain execution. Such a transformational approach involves redesigning and automating processes as well as rationalizing vendor management strategies, such as those for logistics service providers.

Embedding advanced technologies, such as predictive analytics or machine learning, directly into processes is another key tactic, helping day-to-day operations run more smoothly and empowering supply chain managers and teams to focus on the most important tasks. Wouldn't we all want to anticipate the next disruption and be better prepared to react accordingly?

The lift-and-shift model will be used by firms that are seeking more incremental gains. Ideally, this approach is used to design and deploy solutions to be self-funding as soon as possible and to shorten the path to value. This is the classic "walk before we run" strategy, and there is much to recommend it when organizations are simply not ready for a broad transformation.

No matter the implementation approach, companies should be sure they adopt a few design principles to make the most of their investments into supply chain execution technology:

▸ **Design for "elasticity":** Adaptability and agility are critical in uncertain times, so supply chain processes should be designed to flex when necessary. How thoughtfully companies customize (see below) goes a long way to determining just how elastic supply chains can be.

▸ **Automate as much as possible:** The fewer spreadsheets and manual tasks supply chain managers and teams need to use, the better, as they invariably lead to inefficiencies and increase the risk of errors. A word of caution: automate only when key users understand how the system came up with the results!

▸ **Configure technology based on use cases and scenarios:** Technology platforms should reflect the everyday realities of your supply chain. For instance, order volumes, data loads, user profiles and preferences, division of labor between departments and teams, and decision-making timelines should be factored into use cases. Similarly, scenarios need the right level of granularity and should reflect common variations, such as different types of "truckloads" (e.g., single-stop, multi-stop or pool loads).

▸ **Customize thoughtfully:** Because there are degrees of customization to consider, companies should exhaust built-in customization options within a technology platform. Typically, these are most useful when defining different types of documents and change control examples (e.g., how planned shipments should react to order changes or the definition of number ranges and templates for bills of lading).

▸ **Deploy based on your needs and objectives:** Another big question relative to supply chain technology ROI is whether to deploy in the cloud or on-premise and whether companies should advance to the latest platforms. The right answer will vary by company, and this is an area where IT and the business must work together. However, business needs and objectives – the specific goals you are trying to achieve through enhanced supply chain execution – should be the key decision-making criteria.

# The bottom line: excellence in supply chain execution is within reach

Supply chain excellence will always be a moving target given the nature of competition and constant technological evolution in industries where manufacturing, warehousing and distribution are critical to success. However, companies that adopt the right technology strategy and design for elasticity across the supply chain have the best chance to achieve and sustain high levels of performance and realize a higher return on their supply chain execution investments. Strong technology for warehouse management and transportation management is an essential variable in that equation.

For most companies, it's about building a strong and flexible foundation for success, looking beyond great technology to center on people and intelligent processes. This foundation must be robust enough to offer connections to other parts of the business, but flexible enough to suit unique supply chain designs, business objectives and customer needs. Elasticity lies at the core of the balance between that strength and flexibility, allowing for a resilient supply chain designed to thrive through any disruptions the future has in store.

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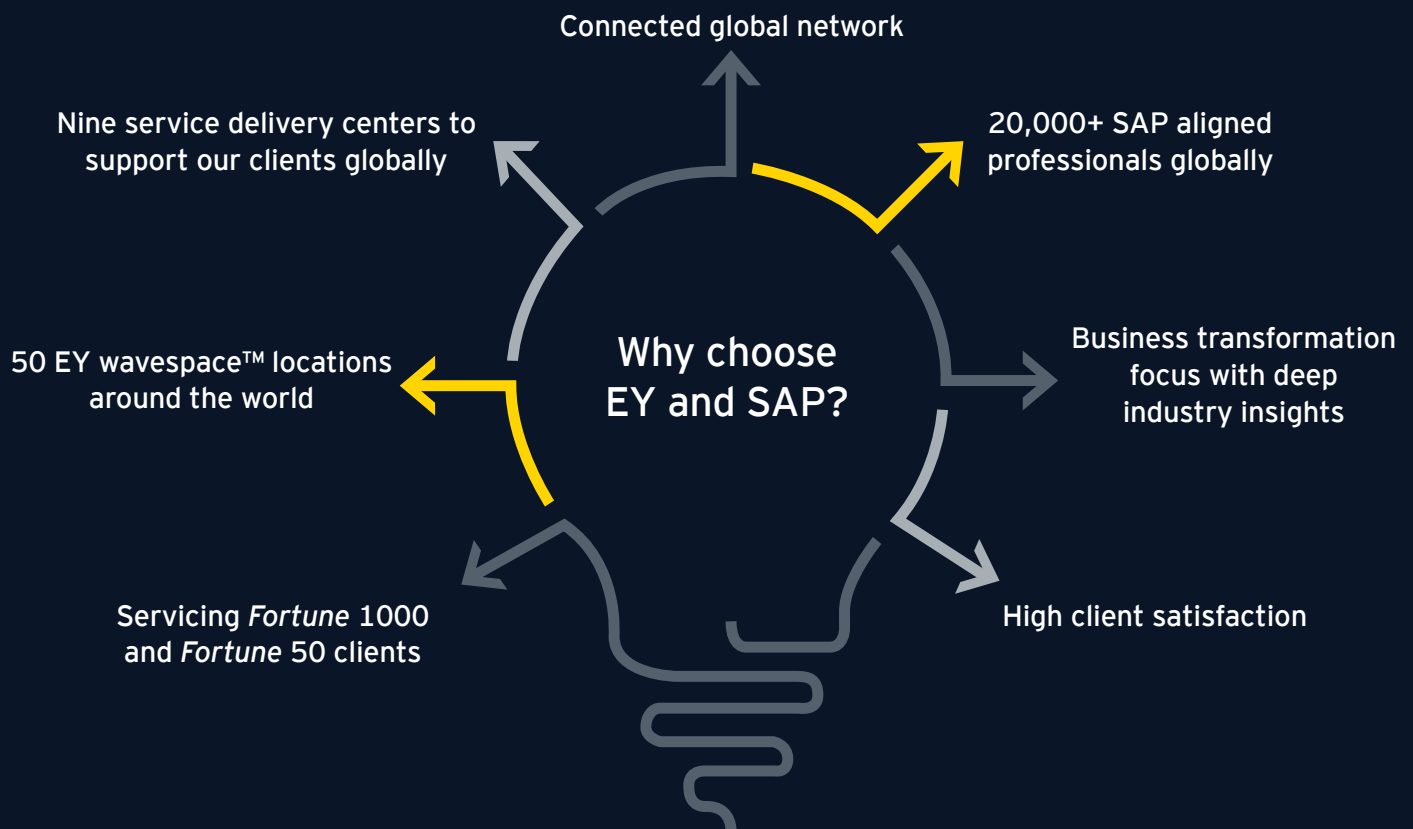# EY and SAP: a business-first view to transforming your enterprise

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▸ IDC MarketScape Leader in Worldwide SAP Implementation Services, 2020

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