

# *Increasing Supply Chain Flexibility and Cost Effectiveness*



*Procurement and Supply Chain Management Made Simple.*

## **Foreword**

*Supply chains are increasingly expected to achieve objectives that can appear contradictory: lower cost, greater resilience, faster response, stronger compliance, improved sustainability and consistently high service levels. The challenge is no longer to reduce expenditure, but to determine where efficiency should be maximised, where flexibility must be preserved and where additional capacity, capability or optionality creates greater long-term value than immediate savings.*

*Achieving that balance requires coordinated decisions across sourcing, logistics, outsourcing, inventory, technology, contracts, supplier relationships and network design. Flexibility and cost effectiveness need not represent opposing ambitions. With reliable data, commercial discipline, and effective governance, organisations can respond to changing demand and disruption while maintaining financial control, protecting service outcomes, and avoiding unnecessary complexity or high operating costs.*

*Experience across the public and private sectors demonstrates how automation, infrastructure investment, inventory visibility, outsourcing and network redesign can strengthen operational and financial performance. Organisations such as Tesco, Marks & Spencer, NHS Supply Chain and DP World illustrate different approaches to building capacity, improving productivity and creating resilience, while legal, regulatory, ethical and environmental responsibilities increasingly influence supply-chain decisions throughout the United Kingdom.*

*Ultimately, effective supply-chain management is not about pursuing the lowest cost within every activity. It is about directing resources towards the capacity, stock, technology, suppliers and relationships that create the greatest overall value, while eliminating duplication and avoidable expenditure. Organisations that understand these trade-offs are better positioned to scale, reroute, substitute and recover when circumstances change without sacrificing service, governance or commercial control.*

## **The Element of Supply Chain Design**

*Increasing supply chain flexibility and cost-effectiveness requires organisations to design networks around customer need, risk, service and total economic value rather than price alone. In the United Kingdom (UK), freight is economically significant: road freight generated approximately £16.871 billion of gross value added in 2023. During 2024, domestic freight movements totalled 206 billion tonne-kilometres, demonstrating how decisions on sourcing, inventory, transport and distribution influence national productivity as well as organisational performance.*

*Cost-led markets typically reward standardisation, high asset utilisation, disciplined purchasing and tightly controlled inventory, whereas service-led markets may justify additional capacity, faster transport or greater product availability. The trade-off is rarely binary. Organisations must understand cost-to-serve by customer, channel and product, because apparently profitable sales can become uneconomic after warehousing, handling, returns and delivery costs are included. Flexibility therefore means changing capacity and resources without allowing marginal costs to overwhelm the value created.*

*Space remains a strategic variable because factories, ports, warehouses, service centres and customers are rarely co-located. In 2024, 82% of UK domestic freight activity was moved by road, equivalent to 168 billion tonne-kilometres. Great Britain-registered Heavy Goods Vehicles (HGVs) also travelled 19.4 billion kilometres and lifted 1.59 billion tonnes. These volumes explain why network location, vehicle utilisation, consolidation and route planning can materially affect both operating cost and customer responsiveness.*

*Time performs an equally important role. Inventory bridges differences between supply and demand, but every additional day of stock ties up working capital, consumes storage space and exposes products to damage, deterioration or obsolescence. Conversely, inventories that are too lean can convert minor supply interruptions into lost sales or disrupted public services. Effective planning therefore combines demand forecasting, replenishment discipline, appropriate safety stock and transport scheduling rather than treating minimum inventory as an objective.*

*The UK's exposure to international supply networks reinforces that balance. Government analysis found that 75% of UK manufacturing trade between 2018 and 2020 depended on simultaneous imports and exports, while sea transport accounted for 86% of international freight by weight in 2024. Flexibility therefore depends on understanding upstream dependencies, ports, customs, critical materials and alternative sources, alongside downstream distribution. Cost effectiveness is strongest when efficiency is designed together with resilience, not pursued at its expense.*

## **Understanding Supply Chain Partners and Network Design**

*Supply chains operate through interconnected producers, importers, distributors, wholesalers, logistics providers, retailers and public-service organisations, each handling different volumes, risks and information. As products move towards final users, shipment sizes often reduce while handling intensity and service requirements increase. Producers may value long production runs and stable schedules, while retailers or hospitals require smaller, frequent deliveries. Effective network design recognises these differing economics and aligns responsibilities, incentives and information flows across organisational boundaries.*

*Intermediaries remain valuable when they aggregate demand or supply more efficiently than individual organisations could. Distributors can consolidate products from multiple manufacturers, wholesalers can serve fragmented demand, and specialist logistics providers can combine loads across customers. The economic test is whether each layer reduces total cost or improves service sufficiently to justify its margin. Removing an intermediary can appear cheaper, yet increase transaction volumes, inventory duplication, order-processing effort and transport cost elsewhere in the network.*

*Location choices determine how quickly and economically organisations can serve customers. Marks & Spencer offers a current example: its planned £340 million automated national food distribution centre in Northamptonshire will cover approximately 1.3 million square feet, support more than 1,000 jobs and open in 2029. The investment is intended to increase capacity while structurally reducing cost per case, illustrating how property, automation and network consolidation can be combined to support growth and operating efficiency.*

*Network design should also recognise infrastructure constraints and opportunities. DP World is investing £1 billion to expand London Gateway with two additional all-electric berths and a second rail terminal, increasing the port to six berths. London Gateway handled more than three million twenty-foot equivalent units in 2025, up more than 52% from 1.9 million in 2024. Such investments can change routing economics, warehouse location decisions and the resilience available to import-dependent organisations.*

### **Outsourcing and Logistics Models**

*Outsourcing can increase flexibility by letting organisations use specialist capacity without owning every vehicle, warehouse, system, or supporting process. The decision should be based on capability, scale, resilience and whole-life economics rather than assuming external provision is inherently cheaper. Providers serving several customers may achieve purchasing power, network density and labour utilisation that a single organisation cannot replicate. Equally, outsourcing can introduce supplier dependency, reduce direct control, and create contractual interfaces that require active management.*

*First-Party Logistics (1PL) describes an organisation managing its own freight and logistics resources. Second-Party Logistics (2PL) brings in external operators for defined activities such as transport or warehousing, while the customer retains coordination. These models suit organisations that need close operational control or predictable volumes. Their main limitation is that flexibility remains constrained by owned or contracted capacity, so seasonal peaks, expansion, or sudden disruption can require additional arrangements at short notice and higher marginal cost.*

*Third-Party Logistics (3PL) extends external provision across functions such as warehousing, transport, fulfilment, packaging and returns. A capable 3PL can spread fixed infrastructure and technology costs across several customers while offering scalable labour and capacity. This can convert fixed expenditure into activity-related charges, although savings depend on contract design and volume assumptions. Organisations must retain enough internal expertise to challenge performance, validate charges and ensure operational knowledge does not migrate entirely to the provider.*

*Fourth-Party Logistics (4PL) goes further by placing coordination of multiple logistics providers, systems and flows with an integrator, often without requiring that integrator to own major physical assets. Fifth-Party Logistics (5PL) typically adds wider network orchestration, technology, demand management and multi-client optimisation. These models can improve end-to-end visibility and buying leverage, but governance becomes more important because an external management layer concentrates decisions affecting inventory, carriers, data and customer service.*

*Marks & Spencer demonstrates how organisations can combine internal control with outsourced capability. Its Welham Green distribution centre was designed to serve 150 stores in the South East and employ more than 500 people through a third-party logistics provider. Its food transformation includes the £340 million Daventry investment operated through Gist, its logistics business. The comparison shows that sourcing models can vary by product category, network maturity and strategic importance rather than following one template.*

*Outsourcing should therefore be treated as a portfolio decision. Activities can be retained, outsourced, co-sourced or separated into strategic and transactional elements, with the model changing as markets evolve. A warehouse may be externally operated while inventory policy remains internal; transport execution may be outsourced while route planning is retained; or a*

4PL may coordinate several carriers under customer-defined standards. Flexibility comes from deliberately allocating responsibilities, not outsourcing as many activities as possible.

### **Make-or-Buy Decisions and Core Activities**

A make-or-buy decision should begin with strategic importance rather than immediate price comparison. Activities that create distinctive customer value, protect sensitive knowledge or determine regulatory performance may justify internal control even when an external quotation appears lower. Conversely, standardised activities with competitive supply markets and measurable outputs may be suitable for outsourcing. The assessment should consider capability, investment requirements, scalability, switching difficulty, data sensitivity and the consequences of supplier failure alongside forecast financial savings.

A structured assessment can distinguish core, enabling and transactional activities. Core activities may shape competitive advantage or public-service outcomes; enabling activities support those outcomes without necessarily requiring ownership; transactional activities are usually more standardised and contestable. The classification should not be permanent. Automation, market consolidation, new regulation or changing volumes can alter the economics. Periodic reassessment prevents organisations from retaining inefficient legacy arrangements or outsourcing capabilities that have become strategically important.

Public bodies must add procurement law, transparency and accountability to the commercial assessment. Public authorities within the main Procurement Act 2023 regime collectively spend around £385 billion annually, while devolved Scottish authorities largely continue under Scottish procurement legislation. The decision to outsource therefore cannot bypass competition, value-for-money and governance requirements. A technically attractive operating model still needs a lawful route to market, realistic contract terms and sufficient internal capability to manage the resulting supplier relationship.

### **Operational Efficiency and Scalability**

Operational efficiency depends on removing non-value-adding movement, waiting, handling, duplication and rework while preserving capacity to respond when demand changes. Specialist logistics providers can improve vehicle fill, warehouse utilisation and labour productivity by combining volumes across several customers. Internal operations can achieve similar gains through better scheduling, mechanisation and standard work. The objective is not maximum utilisation everywhere, because systems operating permanently at full capacity usually have little room to absorb disruption or demand peaks.

Tesco's Save to Invest programme illustrates the scale of operational improvement available in a mature retail network. The group reported approximately £510 million of savings in financial year 2024/25 and £2.2 billion of cumulative savings over four years by financial year 2025/26. Its programme included robotic automation at Peterborough, a semi-automated fresh-food distribution centre at Aylesford, stock-flow review and simplified store replenishment. Tesco targeted a further £500 million of savings for 2026/27.

Automation can increase throughput and consistency, but it should match demand characteristics and recovery requirements. Highly automated facilities can reduce repetitive manual work and improve accuracy, yet they also create dependence on software, engineering support and specialised equipment. Marks & Spencer's Castle Donington centre, opened as a 900,000 square foot automated facility, was designed to hold 16 million products and process one million items a day, showing how scale can justify substantial automation.

Scalability is equally important in public services, where demand can rise because of seasonal pressure, emergencies or policy change. Capacity should therefore be considered across people, storage, transport, systems and suppliers. Contracted surge capacity may be cheaper than permanently owning spare assets, but only if the capacity is available when several customers need it at the same time. Frameworks, secondary suppliers and pre-agreed contingency rates can reduce the delay and premium associated with emergency

procurement.

*Efficiency is strongest when improvement is measured across the end-to-end process rather than within individual functions. A warehouse that minimises labour by dispatching fewer, larger loads may increase store inventory; purchasing larger quantities may secure unit-price reductions while raising obsolescence; and cheaper carriers may increase failure rates or claims. Cross-functional measures such as total cost-to-serve, order cycle time, perfect-order performance and working capital help prevent savings in one department from creating greater costs elsewhere.*

### **Total Cost of Ownership and Financial Flexibility**

*Headline price is only one component of Total Cost of Ownership (TCO). A credible assessment includes procurement, implementation, transport, warehousing, inventory, systems integration, management, quality failures, returns, indexation, financing, transition and exit. Outsourcing can transfer capital expenditure into operating expenditure, but that does not automatically reduce economic cost. The relevant comparison is the cost of delivering the required service over the expected life of the arrangement, including retained internal resources and foreseeable risk.*

*Transport costs can move materially even without changes in volume. Department for Transport data shows average UK diesel prices of approximately £1.48 per litre in 2024, compared with £1.58 in 2023 and a record £1.78 in 2022. Fuel volatility therefore affects carrier rates, surcharge mechanisms and tender assumptions. Contracts that ignore these movements may create windfall gains or losses, while transparent indexation can distribute risk more predictably between customer and provider.*

*Working capital should also be included because low unit prices can be offset by excessive stock. Larger minimum order quantities may improve manufacturing efficiency and freight utilisation but tie up more cash in inventory, storage, and obsolescence risk. Conversely, frequent small deliveries can reduce stock but raise transport and handling costs. Scenario modelling should test demand growth, downturns, inflation, supplier failure and lead-time changes so decision-makers understand expected cost and the range of plausible outcomes.*

*Public-sector measurement should distinguish genuine cash-releasing savings from cost avoidance, productivity improvement and wider value. Within the National Health Service (NHS), NHS England has introduced a procurement value and savings methodology to improve consistency across trusts and systems. NHS Supply Chain's Inventory Management Systems programme reported £15.3 million of savings by April 2026, alongside an average of 700 clinical hours saved per trust annually. Financial evaluation should capture operational and service benefits alongside purchase-price reductions.*

### **Building Resilience into Flexible Supply Chains**

*Resilience is the ability to anticipate, absorb, recover from and adapt to disruption without accepting high cost. The Department for Business and Trade recommends five approaches: diversification, international partnerships, stockpiling and surge capacity, onshoring, and demand management. Select these measures based on consequence and likelihood rather than applying them universally. Holding twelve months of stock for every item would be expensive, while maintaining no buffer for critical components could expose operations to disproportionate risk.*

*The UK's international dependence makes concentration risk particularly important. Government analysis identifies limited supplier bases, concentrated domestic production and concentrated global exports as distinct vulnerability lenses. Organisations should therefore map critical products beyond tier-one suppliers, identifying important subcomponents, raw materials, manufacturing locations, transport chokepoints and substitutes. Supplier financial health and geopolitical exposure also matter. A nominally dual-sourced product may provide little resilience if both suppliers depend on the same factory, port or commodity source.*

*Inventory remains one of the simplest resilience tools, but it should be segmented. Critical medical supplies, maintenance components or production bottlenecks may justify strategic reserves, whereas fast-moving, widely available products may require only safety stock. The correct buffer reflects demand variability, replenishment lead time, service consequence and recovery options. Inventory policy should also define rotation, shelf life and ownership so resilience stock does not quietly become obsolete, unusable or financially invisible within routine warehouse balances.*

*NHS supply chains demonstrate the value of better inventory control. By April 2026, NHS Supply Chain's Inventory Management Systems programme was live across 19 trusts and 83 locations. Participating trusts reported £15.3 million in savings from reduced wastage, overstock, obsolescence and rationalisation. One trust reduced stock-related cancelled operations from several each month to one in seven months, showing that inventory visibility can improve resilience, patient safety and financial efficiency simultaneously.*

*Resilience can also be created through transport choice. Government policy notes that a single freight train can replace up to 129 HGVs and that rail freight produces roughly one-quarter of the carbon emissions per tonne moved by road. The Mode Shift Revenue Support scheme helped remove around 900,000 lorry journeys from Great Britain's roads in 2022/23. Alternative modes and routes provide environmental benefits while reducing dependence on constrained road corridors or single distribution channels.*

*Business continuity plans should convert risk analysis into executable responses. Organisations need named decision-makers, alternative suppliers, emergency logistics routes, minimum service priorities, recovery-time expectations and tested communication arrangements. Contracts should identify which party holds contingency stock, who pays for expedited freight and how scarce capacity is allocated. Periodic exercises are essential because supplier lists, personnel and systems change. A plan never tested may create reassurance without demonstrating that recovery can actually be delivered.*

### **Supplier Relationship and Performance Management**

*Outsourced flexibility depends on supplier relationships that are commercially disciplined but operationally collaborative. Contracts establish obligations, yet day-to-day performance is shaped by data quality, governance, communication and the willingness to resolve root causes. Service Level Agreements (SLAs) should define measurable outputs, responsibilities and remedies without encouraging behaviour that optimises one measure at the expense of the overall service. Governance should distinguish routine operational issues from strategic decisions, material risks and matters requiring executive escalation.*

*Key Performance Indicators (KPIs) should reflect outcomes that matter to customers and service users. Useful measures include On Time In Full (OTIF) delivery, order accuracy, damage rates, inventory accuracy, forecast accuracy, cost per unit, cost per delivery, returns, carbon intensity and complaint resolution. A small balanced set is usually stronger than dozens of metrics. Targets should specify measurement methodology, data source, exclusions and reporting frequency so performance cannot be disputed because parties calculate it differently.*

*Public-sector contract management now has additional statutory transparency. Under the Procurement Act 2023, contracts within scope with an estimated value above £5 million generally require at least three KPIs unless performance cannot appropriately be assessed that way. From 1 January 2026, authorities must ordinarily assess and publish performance information at least annually. The regime strengthens the connection between contract design, evidence and supplier accountability, although devolved Scottish authorities generally remain under separate Scottish procurement legislation.*

*Performance management should move beyond retrospective scorecards. Persistent late delivery may arise from inaccurate forecasts, unrealistic order cut-offs, poor master data or congestion created by customer processes rather than carrier failure. Joint root-cause*

*analysis helps identify the real constraint and allocate corrective action fairly. Improvement plans should include owners, deadlines and expected benefits, while material failure should trigger contractual escalation. Mature relationships combine challenge with openness so suppliers identify problems before they become service failures.*

*Gainshare arrangements can align incentives where improvement depends on joint effort, but savings must be defined rigorously. The baseline, treatment of inflation, implementation cost, benefit period and verification method should be agreed before savings are claimed. Otherwise, customers may pay incentives for changes that would have occurred anyway. Strong arrangements reward measurable additional value, protect service quality, and preserve auditability, particularly in public-sector contracts where finance teams and auditors may scrutinise reported savings.*

### **Contracting and Commercial Models for Outsourced Logistics**

*The commercial structure determines which party bears volume, inflation, capacity, and performance risk. Fixed-price arrangements can provide budget certainty where requirements are stable, while transactional pricing may better suit variable demand. Cost-plus models can support transparency in uncertain environments but require strong cost controls and audit rights. Open-book arrangements can help customers understand underlying economics, although transparency alone does not guarantee value. Pricing should follow the cost drivers that the supplier can genuinely influence.*

*Contracts should explicitly address indexation, minimum volumes, peak capacity, change control, subcontracting, and exceptions. Fuel, labour and property costs can move differently, so a single general inflation index may poorly reflect the supplier's real cost base. Volume bands can reduce the risk of paying prices based on unrealistic forecasts. Conversely, customers should understand whether lower volumes leave them funding stranded capacity and whether higher volumes trigger economies of scale that should reduce unit prices.*

*Risk should sit with the party best able to manage it. Transferring uncontrollable risk to a supplier can lead to higher contingency pricing, bid qualifications, or disputes. Customers may be better placed to control demand accuracy, specification changes and access to sites, while logistics providers may control route planning, labour deployment and warehouse productivity. Effective contracts define responsibilities and consequences clearly enough to support accountability without attempting to convert every uncertainty into a financial penalty.*

*Public procurement layers statutory requirements onto commercial design, and the numbers involved can be modest. In Scotland, the Procurement Reform (Scotland) Act 2014 catches goods and services contracts from just £50,000 excluding Value Added Tax (VAT). It applies to contracts from £2 million, with higher thresholds under the Public Contracts (Scotland) Regulations 2015. England, Wales and Northern Ireland generally sit under the Procurement Act 2023, so a contract's location can matter as much as its price.*

### **Regulatory Compliance, Safety and Ethical Supply Chains**

*Supply-chain efficiency cannot be separated from legal compliance and safe operation. In Great Britain, the Health and Safety at Work etc. Act 1974 sets general duties for employers, employees and relevant self-employed people, while the Management of Health and Safety at Work Regulations 1999 require risk assessment. Warehousing and logistics expose workers to moving vehicles, loading activity, lifting equipment, and manual handling, so productivity initiatives must not shift time or labour savings into unsafe work.*

*Workplace risk remains material. Health and Safety Executive data recorded 126 worker fatalities in Great Britain during 2025/26, including 15 in transportation and storage. Across all industries, 24 workers were killed after being struck by a moving vehicle. Warehouse layout, pedestrian segregation, reversing controls, loading procedures and competent vehicle operation therefore have direct importance. Automation can reduce some manual and vehicle interactions, but new machinery introduces guarding, maintenance and competence*

requirements.

Manual handling remains particularly relevant to warehousing, fulfilment and last-mile operations. The Manual Handling Operations Regulations 1992 require employers to avoid hazardous manual handling where reasonably practicable, assess unavoidable hazardous operations and reduce injury risk so far as reasonably practicable. The Health and Safety Executive does not prescribe a universal safe lifting weight because risk depends on the task, individual, load and working environment. Mechanisation should therefore follow proper assessment rather than arbitrary weight thresholds.

Road-transport compliance also affects capacity planning. For goods vehicles within assimilated drivers' hours rules, drivers generally require a 45-minute break after no more than 4.5 hours of driving, with normal daily driving limited to nine hours and weekly driving to 56 hours. Great Britain domestic rules apply to many vehicles outside that regime, while Northern Ireland has separate domestic rules. Route plans and delivery promises must reflect legally available driving time rather than idealised utilisation.

Ethical compliance should extend through subcontractors and upstream suppliers. The Modern Slavery Act 2015 transparency requirements are one example, but organisations should also define evidence, audit and remediation expectations proportionate to risk. NHS England's 2023 review found that, within a snapshot covering 60% of medical-consumables spend, 21% of suppliers were assessed as high risk for modern slavery and 16% as medium risk. Such findings demonstrate why low prices alone cannot establish responsible supply-chain value.

### **Supply Chain Visibility, Data and Control Towers**

Flexibility depends on seeing problems early enough to act. Supply chain visibility should connect demand, inventory, purchase orders, production status, transport milestones and supplier performance rather than display vehicle locations. An Enterprise Resource Planning (ERP) platform can provide transactional control, while a Warehouse Management System (WMS) and Transport Management System (TMS) add operational detail. Integration matters because isolated systems can create multiple versions of stock, demand and delivery truth.

Control towers bring data from several systems and organisations into a common operational view, allowing teams to focus on exceptions rather than manually checking every transaction. Useful alerts include late supplier dispatch, inventory falling below safety levels, port delay, temperature excursion and missed delivery slots. The value lies less in the dashboard itself than in agreed responses. An alert without ownership, decision rights and escalation rules merely makes a problem visible without improving the outcome.

Artificial Intelligence (AI) and machine learning can improve forecasting, routing and anomaly detection when training data is reliable, and the operating environment is understood. Models should support, not replace, accountable decision-making where consequences are material. Forecast accuracy must be tested by product, location and horizon because an apparently strong aggregate result can conceal serious item-level errors. Organisations should also monitor model drift when customer behaviour, promotions, supplier lead times or network structures change.

NHS England's Spend Comparison Service provides a public-sector example of using data to improve commercial decisions. It consolidates purchase order, accounts payable and NHS Supply Chain transaction data so trusts and integrated care systems can compare prices, examine supplier fragmentation and benchmark procurement performance. The service now includes generative AI and analytical capability. Better visibility can therefore reveal both immediate price opportunities and structural issues, such as fragmented demand that prevents aggregation or standardisation.

Private-sector investment is moving in the same direction. Marks & Spencer's Northamptonshire food distribution centre is planned to use pallet cranes, high-speed shuttles

and hands-free picking, while Tesco has combined automation with end-to-end stock-flow review. These investments show that digital transformation is most valuable when physical process design changes with technology. Installing sophisticated software over inefficient layouts, poor master data or unnecessary handling can automate waste rather than remove it.

Data governance should therefore be treated as part of operational design. Product codes, units of measure, locations, lead times, supplier records and customer addresses need clear ownership and controls. Performance reporting should use consistent definitions so managers can meaningfully compare sites and suppliers. Organisations should also decide which data needs real-time visibility and which does not. High-frequency integration carries cost, and collecting more data than teams can interpret may reduce clarity instead of improving control.

### **Cybersecurity, Data Protection and Technology Dependency**

Digitally integrated supply chains create cyber and data risks alongside operational benefits. Logistics providers may access customer addresses, employee information, purchasing data, vehicle locations and commercially sensitive forecasts. Where personal data is processed on another organisation's behalf, the United Kingdom General Data Protection Regulation (UK GDPR) requires an appropriate written processor contract. Controllers must also select processors providing sufficient guarantees that suitable technical and organisational measures will protect the information and individuals' rights.

Cyber resilience should therefore form part of supplier selection and contract management rather than remain solely with information-technology teams. Due diligence can examine security governance, access controls, incident response, backup arrangements, vulnerability management, subcontractors and recovery testing. Contracts should specify notification duties, audit rights, data return or deletion and support during incidents. Operational plans should also consider how goods will continue moving if interfaces, warehouse systems, carrier portals or customer platforms become temporarily unavailable.

Technology concentration creates another form of dependency. A highly automated warehouse may be extremely efficient until a specialist component, proprietary software service or communications link fails. Organisations should understand critical technology dependencies, replacement lead times, manual workarounds and vendor support arrangements before eliminating redundant capability. The strongest business case therefore considers both normal operating savings and recovery costs, because a cheaper platform with weak resilience can create disproportionate losses during a prolonged outage.

### **Sustainability, Social Value and Scope 3 Emissions**

Cost effectiveness increasingly intersects with environmental performance because fuel, energy, packaging and empty mileage carry financial and carbon consequences. In 2024, domestic transport generated 110.4 million tonnes of carbon dioxide equivalent, representing 30% of UK domestic greenhouse gas emissions. Better vehicle utilisation, route consolidation and fewer failed deliveries can lower operating costs and emissions simultaneously. Sustainability is most credible when environmental measures are embedded in procurement and network decisions rather than treated as reporting exercises.

Modal choice can materially change environmental impact. Government analysis indicates that moving a tonne of freight by rail produces around one-quarter of the carbon emissions of road transport. In contrast, a single freight train can replace up to 129 HGVs. Rail will not suit every route, product or timetable, but distribution centres near intermodal terminals create options. The Department for Transport has extended Mode Shift Revenue Support and Waterborne Freight Grant arrangements to March 2027.

The NHS demonstrates why supply-chain emissions matter in the public sector. NHS England reports commercial activity of about £30 billion across approximately 80,000 suppliers, while the supply chain accounts for about 66% of NHS emissions. The NHS requires a minimum

10% net-zero and social-value weighting in procurements and aims to reach net zero by 2045 for emissions it can influence through purchased goods and services. Procurement decisions therefore directly support clinical and environmental objectives.

Social value extends beyond carbon. Labour standards, modern slavery, local employment, skills, accessibility and community benefit can affect supplier selection and contract management. Under section 54 of the Modern Slavery Act 2015, qualifying commercial organisations carrying on business in the UK and supplying goods or services must publish an annual slavery and human-trafficking statement when turnover is at least £36 million. Responsible supply-chain management requires visibility into labour conditions, not just price and delivery.

Investment can align resilience, efficiency and sustainability. DP World's £1 billion London Gateway expansion includes two all-electric berths and a second rail terminal, while Marks & Spencer's £340 million Northamptonshire centre is targeting the Building Research Establishment Environmental Assessment Method (BREEAM) Outstanding rating and includes rooftop solar, rainwater harvesting and electric-vehicle charging. These projects show how infrastructure decisions can combine capacity expansion with lower-emission operating models rather than treating decarbonisation solely as an added cost.

### **Managing Dependency, Concentration and Exit Risk**

Outsourcing can reduce asset ownership while increasing dependence on external organisations, so concentration risk should be visible at supplier, site, technology and geography levels. A customer may contract with several suppliers yet remain exposed to a single subcontractor, software platform, or warehouse cluster. Dependency mapping should extend beyond contractual counterparties. Critical relationships need contingency options, financial monitoring, and clear escalation triggers, particularly where switching providers would require data migration, stock transfer, recruitment, or regulatory approval.

Exit planning should begin before contract signature, not when performance deteriorates. Agreements should define ownership and return of data, stock, equipment, documentation, intellectual property and customer records, together with reasonable transition assistance. The customer should understand how long re-procurement, insourcing or transfer to another provider would take. Where service continuity is critical, contracts may need step-in rights, escrow arrangements, contingency stocks or access to key subcontractors, subject to proportionality and legal advice.

Supplier financial resilience also requires more than reviewing annual accounts at tender stage. Credit indicators, insurance, parent-company support, debt, profitability, cash generation and covenant pressure can change during a multi-year contract. Operational signals such as slower payment to subcontractors, reduced maintenance, labour turnover or repeated requests for accelerated payment may also merit investigation. Monitoring should be proportionate to criticality because intensively reviewing every low-value supplier would consume resources without materially reducing organisational risk.

The UK Government's critical-import strategy reinforces the importance of diversification rather than indiscriminate reshoring. It identifies alternative sourcing, international partnerships, strategic stocks, surge capacity, onshoring and demand management as complementary tools. The appropriate response depends on the product and the consequences of failure. A low-value component that can stop a high-value production line may justify dual sourcing or buffer stock. Conversely, an expensive item available quickly from several suppliers may require little additional inventory.

### **Measuring Value and Continuous Improvement**

A flexible supply chain should be measured against financial, operational, customer, resilience and strategic outcomes rather than a single savings figure. Financial measures may include cost-to-serve, inventory carrying cost, transport cost and working capital. Operational

measures can include OTIF, lead time, stock accuracy, utilisation and forecast accuracy. Customer measures should capture complaints and service reliability, while resilience measures can assess recovery time, alternative capacity and critical-stock coverage. These measures provide a balanced view of value.

Baselines are essential because you cannot demonstrate improvement reliably without a credible starting point. Organisations should record volumes, service levels, inflation assumptions, process scope and exceptional events before calculating benefits. Separate savings from lower prices from reductions caused by lower demand, specification changes, or market movements. Productivity gains should distinguish released capacity from theoretical time savings. This discipline matters where management incentives, gainshare payments, or public reporting depend on claimed financial benefits.

NHS Supply Chain provides an example of broader value measurement. Its inventory programme reported £15.3 million of savings by April 2026, but also recorded clinical time released, fewer stock-related cancellations and environmental benefits. Northumbria Healthcare NHS Foundation Trust reported a 729-tonne carbon reduction within six months through the programme. Measuring several outcomes makes it easier to identify whether inventory improvement has strengthened service delivery rather than reduced stock on the balance sheet.

Benchmarking can expose variation that internal trend reporting misses. Comparing sites, suppliers, regions or product categories may identify unexplained differences in price, inventory days, transport utilisation or service performance. NHS England's Spend Comparison Service is designed for this purpose, allowing trusts to compare procurement activity and identify supplier fragmentation. Private-sector groups can apply the same principle across distribution centres and business units, provided they standardise definitions and understand differences in operating context before concluding.

Continuous improvement should convert measurement into a repeatable cycle of diagnosis, intervention and verification. Techniques such as process mapping, root-cause analysis and controlled trials can identify whether changes improve outcomes. Suppliers should be encouraged to contribute ideas because they often observe inefficiencies across multiple customers. However, innovation proposals require commercial evaluation: new automation, packaging or routing should be assessed against implementation cost, operational disruption, benefit durability and any new dependencies introduced into the supply chain.

Governance should reconsider whether the operating model remains appropriate. A contract that represented good value five years earlier may become uncompetitive after market entry, automation or network change. Equally, previously outsourced activities may become strategic, while internal activities may become commoditised. Regular make-or-buy review, benchmarking and market engagement support flexibility and cost discipline. Continuous improvement is strongest when organisations are willing to redesign the model, rather than only negotiate incremental savings from an unchanged structure.

### **The Future of Supply Chain Flexibility and Cost Effectiveness**

Future supply chains will increasingly combine physical capacity with digital orchestration. Automation, predictive analytics, robotics and connected infrastructure can improve throughput and decision speed, but competitive advantage will come from using those tools to redesign networks rather than digitising existing processes. Marks & Spencer's £340 million Daventry project and Tesco's automated distribution investment illustrate the scale of capital directed towards logistics productivity. The challenge is preserving adaptable capacity as networks become technologically sophisticated.

National infrastructure will also influence organisational options. DP World's £1 billion London Gateway expansion is adding two berths and a second rail terminal. At the same time, government rail-freight policy seeks to increase rail freight and reduce road dependency. Such investment alters the economics of ports, warehouse locations and transport modes.

*Organisations should avoid treating current lead times, route capacity and transport costs as permanent assumptions when making property or outsourcing decisions with long-term consequences.*

*The most resilient operating models will combine cost discipline with optionality. Diversified sources, interoperable data, alternative transport routes, proportionate inventory, scalable contracts and retained expertise all carry some cost, yet can reduce the financial impact of disruption. Flexibility should therefore be valued as an economic capability rather than spare capacity always eliminated. Organisations that understand where optionality matters can remove genuine waste while preserving the ability to respond when demand, technology or supply conditions change.*

### **Summary - Achieving Flexible, Cost-Effective Supply Chains**

*Increasing supply chain flexibility and cost effectiveness requires coordinated decisions across sourcing, inventory, logistics, technology, contracts and supplier relationships. Low purchase prices or high asset utilisation do not by themselves demonstrate value. The strongest operating models consider total cost, service consequence, working capital and resilience together. They use data to identify waste, but retain enough capacity and alternative supply to absorb uncertainty without routinely paying for resources that produce little operational benefit.*

*Outsourcing can contribute significantly when external providers offer scale, specialist capability, network reach or technology that would be uneconomic to reproduce internally. It is not, however, a substitute for supply-chain capability within customer organisations. Effective customers retain commercial knowledge, data visibility, governance and the ability to challenge suppliers. They also structure contracts around realistic cost drivers and measurable outcomes, ensuring flexibility does not become uncontrolled expenditure, or that apparent savings conceal dependence and operational risk.*

*Evidence from Tesco, Marks & Spencer, NHS Supply Chain and DP World shows that flexibility can be built through very different mechanisms: automation, network consolidation, inventory visibility, infrastructure investment and modal choice. The common feature is deliberate design around service and economics. Public-sector organisations must additionally integrate transparency and procurement-law obligations. In contrast, private-sector organisations face the same fundamental need for measurable value, resilient sourcing and disciplined capital allocation across increasingly interconnected supply networks.*

*Ultimately, cost effectiveness is not achieved by pursuing the lowest possible expenditure in every activity. It comes from directing resources towards the capacity, stock, technology and supplier capability that create overall value while removing duplication and avoidable cost. Flexible supply chains make those choices explicit. They can scale, reroute, substitute and recover when conditions change, while maintaining governance and financial control. That combination supports competitiveness in commercial markets and dependable outcomes across essential public services.*

*Additional articles can be found at [Procurement and Supply Chain Management Made Simple](#). This site looks at procurement and supply chain management issues to assist organisations and people in increasing the quality, efficiency, and effectiveness of their product and service supply to the customers' delight. © Procurement and Supply Chain Management Made Simple. All rights reserved.*

### **Sources and Further Reading**

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