

# The Asia Warehouse & Intralogistics Automation: Market Analysis & Vendor Landscape



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## Foreward

The warehouse and intralogistics automation market across Asia is evolving at an unprecedented pace. Rising labour costs, changing customer expectations, rapid growth in e-commerce, and the pursuit of greater supply chain resilience are driving organisations to rethink how their distribution and fulfilment operations are designed and managed. At the same time, the growing number of technology providers and solution architectures has made investment decisions increasingly complex.

This report has been researched and authored principally by **Brett Marshall**, Editor-In-Chief of LogiSYM Magazine, whose extensive analysis of the market, technology landscape, and competitive environment has produced a valuable resource for supply chain professionals.

The **LSCMS Shippers Council** has chosen to publish this report because one of its core objectives is to equip the industry with independent, evidence-based research that supports better strategic and operational decision-making. As a professional society, we believe that well-informed shippers, logistics service providers, and supply chain leaders make better investment decisions, foster innovation, and contribute to stronger and more resilient supply chains.

While this report evaluates a range of technologies and references individual solution providers, it should not be interpreted as an endorsement of any company, product, or commercial solution. Rather, it is intended to provide an objective assessment of the market, emerging trends, and the considerations that organisations should evaluate when planning their automation journey. The inclusion of any vendor or technology reflects its relevance to the market landscape and not any preference or recommendation by the Society.

It is our hope that this report will encourage informed discussion, thoughtful investment, and greater collaboration across the supply chain community. Through publications such as this, the LSCMS Shippers Council continues its mission of advancing knowledge, promoting professional excellence, and supporting the sustainable development of the logistics and supply chain profession throughout Asia.

**Dr. Raymon Krishnan**

President

The Logistics & Supply Chain Management Society (LSCMS)

# Asia Warehouse & Intralogistics Automation: Market Analysis & Vendor Landscape

## Executive Summary

The Asia-Pacific warehouse automation market reached USD 14.80 billion in 2025 and is tracking toward USD 32.87 billion by 2030 at a 17.3% CAGR<sup>[^1]</sup>. Within this, Southeast Asia is growing at 12.36% CAGR, driven by three concurrent forces: labour cost pressure across ASEAN manufacturing corridors, the throughput requirements of cross-border e-commerce, and supply chain migration from China into Vietnam, Thailand, Indonesia, and Malaysia<sup>[^2]</sup>. Against this backdrop, the automation solutions market in ASEAN is fragmenting into two structural tiers: large-scale, Western-heritage systems integrators serving tier-one multinational DCs, and a fast-moving cohort of Chinese-origin vendors competing on price-to-performance in the mid-market.

Three developments in H2 2025 and H1 2026 have materially changed the procurement context for intralogistics buyers across the region and are addressed as additions to this report:

- the conclusion of the ASEAN Digital Economy Framework Agreement (DEFA) negotiations and its cross-border data governance implications;
- the emergence of OPC UA/MQTT Unified Namespace as a live buyer-side connectivity specification;
- the growth of robotic palletising and automated dimensioning-weighing-scanning (DWS) as a separate but connected automation category.

# Technology Adoption by ASEAN Sub-Market

## Part I: Market Context

### Scale and Growth Drivers

The APAC warehouse automation market value of USD 14.80 billion in 2025 is underpinned by three structural demand factors that are specific to ASEAN rather than global in character[1][2]:

- **Labour arbitrage is narrowing:** Minimum wages in Vietnam, Thailand, and Indonesia have risen 15–25% in the past three years. The economic case for automation that previously required a 5–7 year payback now closes in 3–4 years across most ASEAN markets.
- **E-commerce cross-border volume:** ASEAN's digital economy is valued at approximately USD 300 billion in 2025 and is projected to reach USD 1 trillion by 2030[^3]. The fulfilment infrastructure required to support that trajectory - particularly cross-border order processing - drives demand for automated sortation, picking, and DWS.
- **Manufacturing FDI relocation:** Electronics, EV component, and pharmaceutical contract manufacturing investment flowing into ASEAN from China and Taiwan creates greenfield DC and factory logistics requirements, typically specified at international automation standards from project inception.

## Technology Adoption by ASEAN Sub-Market

ASEAN is not a uniform market for automation uptake. The following characterisation reflects 2025 deployment data:

| Country  | Automation Maturity | Primary Demand Driver  | Dominant Deployment Type  |
|-------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Singapore                                                                                 | High                | 3PL, pharma, cold chain                                                                                 | AS/RS, goods-to-person, AMR                                                                                  |
| Malaysia                                                                                  | Medium-High         | E&E, semiconductor, 3PL                                                                                 | AMR, conveyor, WMS integration                                                                               |
| Thailand                                                                                  | Medium              | Automotive, FMCG                                                                                        | Palletising, conveyor, ASRS                                                                                  |
| Vietnam                                                                                   | Medium-Low          | Electronics assembly, FMCG                                                                              | AMR, basic conveyor                                                                                          |
| Indonesia                                                                                 | Low-Medium          | Retail, FMCG distribution                                                                               | Sortation, AGV, early-stage AMR                                                                              |
| Philippines                                                                               | Low-Medium          | FMCG, pharma, retail                                                                                    | Conveyor, basic AMR                                                                                          |

The "digital gap" - where traditional firms are still in early stages of integrating advanced automation - is most pronounced in Indonesia and the Philippines, and represents the largest volume of addressable new deployments over the 2026–2030 window<sup>[4]</sup>.

## Part II: Vendor Landscape

### Technology Clusters

The vendors in this market group into six functional clusters. Understanding these clusters is more useful for ASEAN procurement purposes than reviewing vendors alphabetically, because the clusters map directly to the operational challenges buyers are trying to solve.

#### Cluster 1 - Grid ASRS / Cube Storage

AutoStore, Kardex, Knapp. High-density robotic storage within a defined grid footprint. Best suited for high-SKU, compact operations: pharma wholesale, apparel, e-commerce fulfilment. Premium priced; AutoStore APAC revenue represents roughly 7% of its global total despite deployments across the region<sup>[5]</sup>.

#### Cluster 2 - Conventional AS/RS and Shuttle Systems

Dematic, SSI Schaefer, Knapp, Kardex. Traditional automated storage and retrieval with pallet, mini-load, and shuttle variants. Dematic's ASEAN presence is the most extensive of any Western vendor in this cluster, with a regional headquarters and dedicated technical teams<sup>[4]</sup>. SSI Schaefer operates manufacturing in Johor, Malaysia, giving it a structural cost and lead-time advantage for ASEAN projects<sup>[6]</sup>.

#### Cluster 3 - AMR Goods-to-Person

Geek+, Hai Robotics, Libiao Robotics. All three are Chinese-origin vendors with established ASEAN commercial operations. Geek+ holds approximately 9% global market share in warehouse robotics with 72% of revenue from outside China<sup>[7][8]</sup>. Hai Robotics pioneered the Autonomous Case-handling Robot (ACR) category and operates its SEA regional headquarters from Singapore<sup>[9]</sup>. Libiao opened a Singapore headquarters in May 2025<sup>[10]</sup>.

#### Cluster 4 - Full-Stack Intralogistics Automation

BlueSword, Dematic, SSI Schaefer, Knapp. Vendors in this cluster design, manufacture, and integrate across the full system: hardware (ASRS, conveyor, robotics), software (WMS, WES, WCS), and algorithms (slotting, routing, task orchestration). This is the category with the highest project value and the longest sales cycle.

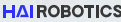
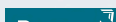
## Cluster 5 - Robotic Palletising and End-of-Line Automation

BlueSword, Dematic, ABB Robotics, FANUC, and specialist integrators. This is a growth category within ASEAN as FMCG, pharma, and electronics manufacturers automate pallet build and truck loading. Addressed in detail in Part V of this report.

## Cluster 6 - Niche and Emerging

Pudu Robotics (service/delivery robots, increasingly extending into warehouse), Colby (warehouse racking and shelving - not a robot vendor), Dexion (storage systems, limited ASEAN direct automation offer). These vendors occupy adjacent positions to the core intralogistics automation market and are noted for completeness.

## Vendor Comparison Matrix

| Vendor                                                                                             | Origin      | ASEAN Presence                                         | Primary Technology                                                                                                          | Price Tier  | Cold Chain Validated           | Full-Stack |
|----------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------|------------|
|  AutoStore        | Norway      | Distributor                                            | Grid ASRS                                  | Premium     | Partial                        | No         |
|  DEMATIC        | Germany/USA | Direct (SG HQ)                                         | AS/RS, conveyor, robotics                | Premium     | Yes                            | Yes        |
|  SCHAEFER       | Germany     | Direct + Johor MFG                                     | AS/RS, shuttle, conveyor                                                                                                    | Premium     | Yes                            | Yes        |
|  KNAAPP         | Austria     | Distributor                                            | Grid ASRS, shuttle                                                                                                          | Premium     | Yes                            | Yes        |
|  kardex         | Switzerland | Distributor                                            | Vertical lift, carousel                                                                                                     | Mid-Premium | Partial                        | No         |
|  Geek+          | China       | Direct (SG)                                            | AMR goods-to-person, cold chain                                                                                             | Mid         | Yes (2025)[ <sup>11</sup> ]    | No         |
|  HAIROBOTICS    | China       | Direct (SG SEA HQ)                                     | ACR (case-handling AMR)                                                                                                     | Mid         | Partial                        | No         |
|  LIBBE ROBOTICS | China       | Direct (SG HQ, May 2025)                               | AMR goods-to-person                                                                                                         | Mid         | No                             | No         |
|  BlueSword      | China       | Expanding (SGS partnership July 2025)[ <sup>12</sup> ] | Full-stack: ASRS, AMR, palletising, WMS  | Mid         | Yes (GMP/GSP)[ <sup>13</sup> ] | Yes        |
|  damon          | Japan       | Direct (Japan primary)                                 | AS/RS, shuttle                                                                                                              | Mid-Premium | Yes                            | Partial    |
|  PUDU           | China       | Direct                                                 | Service/delivery robots                                                                                                     | Entry-Mid   | No                             | No         |

## Part III: DEFA as a Systems Integration Risk Driver

### Status and Implementation Risk

DEFA negotiations concluded at the 57th ASEAN Senior Economic Officials Meeting in Manila on 29 May 2026, with signing targeted for the 49th ASEAN Leaders' Summit in November 2026 and entry into force expected 12–18 months thereafter following domestic ratification. [16][17] The agreement covers cross-border data flows, digital identity, cybersecurity, and interoperability standards across all ten member states, and ASEAN's digital economy is projected to double toward USD 2 trillion by 2030 under its implementation scenario.[3]

For intralogistics buyers, DEFA's practical relevance sits in three areas: data residency rules for AMR, WMS, and analytics data crossing borders; pressure toward common device-to-fleet communication standards such as VDA 5050, which most ASEAN AMR fleets do not yet consistently specify in procurement; and a structural advantage for single-vendor, full-stack deployments, which sidestep multi-vendor interoperability risk entirely. [18][19]

Opinion diverges sharply on how quickly this translates into enforceable practice. Independent analysis published as negotiations concluded flagged that implementation will be “highly uneven,” with Singapore, Malaysia, and Thailand able to move quickly while other member states may require five- to ten-year transition periods, and that politically sensitive data-flow provisions could still delay domestic ratification in Indonesia or Vietnam. [36] A separate assessment published in August 2026, after negotiations closed, questioned whether the region is institutionally ready to realise DEFA's benefits at all. [37] Vendors should treat DEFA compliance as a differentiator to build toward rather than a near-term certification requirement, and buyers should beware of procurement language that assumes uniform, near-term enforceability across all ASEAN markets.

## Part IV: OPC UA/MQTT as a Buyer-Side Specification Topic

### The Current State of IT/OT Integration in ASEAN Warehouses

A Forrester survey cited by Siemens in May 2026 found that while 79% of companies in the intralogistics sector consider IT/OT integration to be a high or highest priority, only 36% had taken the necessary implementation steps<sup>[^20]</sup>. This gap - wide strategic intent, narrow operational execution - defines the current state of data connectivity in ASEAN warehouses. Most ASEAN distribution centres, outside of Singapore's tier-one 3PL operators, still run point-to-point integrations between PLC-level systems and WMS/ERP, creating brittle, vendor-specific architectures that cannot scale.

Smart warehouses generate high-volume data continuously across conveyors, AS/RS units, shuttles, sorters, AMRs/AGVs, lifts, scanners, and safety systems<sup>[^20]</sup>. To extract operational value from this data, it must be accessed, contextualised, and distributed to higher-level systems - WCS, WES, WMS, ERP, analytics platforms, and cloud applications - through a consistent, scalable architecture<sup>[^20]</sup>.

### The Unified Namespace Approach: OPC UA and MQTT

Two protocols are now the live specifications in advanced intralogistics deployments globally, and are beginning to appear in ASEAN tender documents:

**OPC UA (Unified Architecture):** The information exchange standard for secure, reliable, manufacturer-independent industrial communication<sup>[^21]</sup>. The OPC UA in logistics automation market was valued at USD 3.8 billion in 2025 and is projected to reach USD 9.7 billion by 2034 at a 10.9% CAGR<sup>[^22]</sup>. OPC UA provides the semantic data model - defining what data means, not just how it travels - and is the machine-level standard for PLC and device connectivity.

**MQTT (Message Queuing Telemetry Transport):** A lightweight, event-driven publish/subscribe protocol used for reliable communication between industrial devices and applications<sup>[20]</sup>. MQTT brokers act as central intermediaries that decouple data producers (PLCs, sensors, robots) from data consumers (WMS, analytics, ERP), enabling any system to subscribe to exactly the data it needs without impacting machine-level operations<sup>[20]</sup>.

**Unified Namespace (UNS):** The architectural concept that combines OPC UA and MQTT into a single logical data layer for the entire warehouse, organised according to the ISA-95 hierarchy (company → site → building → zone → system → machine)<sup>[20]</sup>. A UNS architecture provides a single source of truth for operational data and enables machine builders, system integrators, and software vendors to contribute to and consume from a common data fabric regardless of vendor origin.

### What ASEAN Buyers Are Beginning to Specify

Advanced ASEAN warehouse buyers, primarily in Singapore, Malaysia, and Thailand are beginning to include connectivity requirements in automation RFQs and RFPs. The questions being asked are:

- Does the system publish machine-level data via OPC UA or MQTT?
- Can the WMS/WES layer be integrated with SAP, Oracle WMS, or Blue Yonder through a standardised API rather than a bespoke connector?
- Does the vendor support a Unified Namespace architecture, or does integration require custom development for every new software consumer?
- In brownfield environments, can OPC UA point-to-point connections at cell level coexist with a MQTT-based UNS being implemented in parallel?

The last question is particularly relevant for ASEAN buyers retrofitting automation into existing facilities. This is a common scenario given the age profile of distribution infrastructure in Indonesia, Thailand, and Malaysia<sup>[20]</sup>.

## Implications for Vendor Selection

The OPC UA/MQTT specification trend advantages full-stack vendors over AMR-only vendors in the following way: an AMR-only vendor can commit to publishing robot telemetry via MQTT/VDA 5050[^18], but it cannot own the broader data architecture of the warehouse. A full-stack vendor - one that controls the ASRS, conveyor, WMS, and robotics layer - can design and guarantee the Unified Namespace architecture end-to-end. This is a technically defensible position that vendors like BlueSword, Dematic, and SSI Schaefer can make but that Geek+, Hai Robotics, and Libiao may not be able to.

## Part V: Robotic Palletising and Automated DWS

### Market Scale and Growth

The global robotic palletising systems market was valued at USD 1.2 billion in 2024 and is projected to reach USD 2.5 billion by 2033, registering a CAGR of 9.4%<sup>[^23]</sup>. The Asia-Pacific segment leads this growth, driven by electronics, pharmaceutical, and FMCG manufacturing automation requirements<sup>[^24]</sup>. A parallel DWS (Dimension, Weigh, Scan) systems market is growing alongside it, valued at approximately USD 759 million in 2026 and projected to reach USD 1.24 billion by 2035 at a 5.6% CAGR<sup>[^25]</sup>.

These two technologies are increasingly deployed as a connected end-of-line solution: robotic palletisers build the pallet; DWS systems capture dimensional, weight, and barcode data for each carton or pallet before it leaves the fulfilment zone. The combination feeds freight billing accuracy, WMS inventory updates, carrier compliance documentation, and export customs declarations - all data streams that cross-border ASEAN operators must maintain under existing customs rules and, increasingly, under DEFA's digital trade facilitation provisions.

### Why These Categories Matter in ASEAN

End-of-line automation has historically been the last step in ASEAN warehouse automation projects - buyers automated inbound and storage first, often deferring outbound automation. Three forces are pulling this forward:

- **Labour injury risk and regulatory exposure:** Palletising is among the highest injury-risk tasks in warehouse operations. ASEAN jurisdictions, particularly Singapore and Malaysia, are tightening workplace safety enforcement. Manual palletising of heavy cartons carries measurable insurance and regulatory liability.

- **Cross-border shipment documentation compliance:** ASEAN cross-border e-commerce volume requires accurate dimensional and weight data for every shipment for courier billing, carrier compliance, and customs. Manual measurement is too slow and too inaccurate at volume; DWS automation directly addresses this operational bottleneck.
- **Cold chain pharmaceutical requirements:** In temperature-controlled environments, manual end-of-line operations create compliance risks - staff dwell time in controlled zones, potential for temperature excursions during manual handling. Automated palletising in pharma cold stores, combined with automated chain-of-custody documentation, directly addresses GMP and GDP compliance requirements.

## Robotic Palletising in the ASEAN

The competitive context for robotic palletising in ASEAN is as follows:

| Vendor                                                                                           | Palletising Offer  | Vision System                 | Mixed-SKU Handling   | ASEAN Reference                     |
|--------------------------------------------------------------------------------------------------|--------------------|-------------------------------|----------------------|-------------------------------------|
|  DEMATIC      | Yes (integrated)   | 2D/3D                         | Yes                  | Multiple                            |
|  SCHAFER      | Yes (integrated)   | 3D                            | Yes                  | Malaysia factory                    |
|  ABB ROBOTICS | Yes (standalone)   | 3D                            | Yes                  | Multiple ASEAN                      |
|  FANUC        | Yes (standalone)   | 2D/3D                         | Partial              | Multiple                            |
|  Geek+        | No native; partner | -                             | No                   | -                                   |
|  HAI ROBOTICS | No                 | -                             | No                   | -                                   |
|  BlueSword    | Yes (integrated)   | 3D AI vision <sup>[^26]</sup> | Yes <sup>[^27]</sup> | Sinopharm (pharma) <sup>[^13]</sup> |

Geek+ and Hai Robotics do not have native palletising products. Their deployment footprint in ASEAN is strong for goods-to-person picking but ends at the pallet build station. A Geek+ or Hai Robotics installation requires a separate robotic palletiser from ABB, FANUC, or a local integrator - introducing exactly the multi-vendor integration complexity that DEFA's interoperability trajectory will penalise.

## Part VI: Vendor Technology Coverage Map

The table below maps the 15 vendors covered in this report against the four technology categories that are now active buyer-specification topics in ASEAN: AS/RS and shuttle systems, AMR goods-to-person, full-stack WMS/WES integration, robotic palletising, and DWS.

| Vendor                                                                                                                 | AS/RS / Shuttle | AMR G2P | Full-Stack WMS | Robotic Palletising | DWS                  | Cold Chain GMP                  |
|------------------------------------------------------------------------------------------------------------------------|-----------------|---------|----------------|---------------------|----------------------|---------------------------------|
|  AutoStore                            | ✓               | -       | Partial        | -                   | -                    | Partial                         |
|  DEMATIC                              | ✓               | ✓       | ✓              | ✓                   | Partner              | ✓                               |
|  SSI SCHAEFER                         | ✓               | ✓       | ✓              | ✓                   | Partner              | ✓                               |
|  KNAPP                                | ✓               | Partial | ✓              | Partial             | Partner              | ✓                               |
|  kardex                               | ✓               | -       | Partial        | -                   | -                    | Partial                         |
|  Geek+                                | Partial         | ✓       | Partial        | -                   | -                    | ✓ (cold storage)                |
|  HAIROBOTICS                          | -               | ✓       | Partial        | -                   | -                    | Partial                         |
|  Libao ROBOTICS                     | -               | ✓       | Partial        | -                   | -                    | -                               |
|  BlueSword                          | ✓               | ✓       | ✓              | ✓                   | Gap <sup>[^26]</sup> | ✓<br>(GMP/GSP) <sup>[^13]</sup> |
|  Damon                              | ✓               | -       | Partial        | -                   | -                    | ✓                               |
|  PUDU                               | -               | Partial | -              | -                   | -                    | -                               |
|  Kolby                              | -               | -       | -              | -                   | -                    | -                               |
|  Dexion<br>Corvusri Pallet Handling | ✓ (racking)     | -       | -              | -                   | -                    | -                               |

BlueSword appear to have the broadest coverage across operational categories of any single vendor in this table, with one documented gap (DWS) and one documentation gap (OPC UA/MQTT connectivity credentials not publicly published)<sup>[^31]</sup>. Dematic and SSI Schaefer match or exceed BlueSword's breadth but at price points that price them out of the ASEAN mid-market segment where the largest volume of new deployments will occur over 2026–2030.

## Part VII: Market Opportunity

The Asia-Pacific warehouse automation market's shift from a 17.3% CAGR growth story into a more technically demanding procurement environment carries three concrete ramifications for the region's supply chain community.

First, the vendor landscape is bifurcating: Western-heritage integrators retain the premium, high-compliance segment, while a fast-moving cohort of full-stack, China-origin vendors is closing the capability gap in mid-market cold chain, e-commerce, and FMCG deployments, with palletising, DWS, and Unified Namespace connectivity now differentiating vendors within that cohort as much as core storage technology does.

Second, the digital and regulatory backdrop against which these decisions are made — DEFA's data governance provisions, OPC UA/MQTT connectivity specification, and tightening end-of-line safety and documentation requirements — is moving in the same direction across markets even where implementation speed varies, meaning buyers should evaluate vendors on data architecture flexibility and standards alignment now rather than treating these as future concerns.

Third, Indonesia and the Philippines represent the largest pool of unautomated addressable demand in the region, and the vendors and systems integrators that establish credible local service and compliance capability in these markets over 2026–2030 are positioned to capture a disproportionate share of the region's next wave of automation investment.

For vendors, the implication is that full-stack architecture, cold-chain and pharma-grade validation, and credible connectivity credentials (OPC UA/MQTT, VDA 5050) are becoming pre-conditions for competing in the mid-market rather than differentiators reserved for premium Western suppliers.

For buyers, the ramifications are equally direct: procurement decisions made over 2026–2028 will set the technical and data architecture of ASEAN distribution networks for the following decade, at a time when DEFA's cross-border data rules, connectivity standards, and end-of-line automation requirements are all still in flux. Organisations that treat vendor selection as a narrow price-and-throughput exercise, without evaluating data architecture, interoperability commitments, and regulatory readiness, risk locking in integration costs and compliance exposure that will compound as the region's digital and automation standards mature.

*All market data, vendor references, and DEFA status citations in this report are sourced from verifiable primary and trade sources as of July 2026.*

## Acknowledgements

The Logistics & Supply Chain Management Society (LSCMS) gratefully acknowledges the individuals whose vision, expertise and commitment made this publication possible.

Our sincere appreciation goes to **Brett Marshall**, the principal author of this report, whose rigorous research, technical expertise and extensive analysis of the Asian warehouse and intralogistics automation landscape form the foundation of this publication. His commitment to producing an objective and comprehensive assessment has resulted in a valuable resource for supply chain professionals across the region.

We also extend our gratitude to **Dr. Raymon Krishnan**, President of The Logistics & Supply Chain Management Society, whose longstanding commitment to advancing supply chain thought leadership and promoting independent, practitioner-led research continues to shape the Society's knowledge agenda. His foresight in championing evidence-based industry publications has enabled initiatives such as this to benefit the wider logistics and supply chain community.

Special thanks are due to **Stefan Pun**, Chair of the **LSCMS Shippers Council**, for endorsing this publication and for his continued leadership in strengthening the voice of shippers within the Society. His support reinforces the Council's commitment to providing independent insights that help organisations make better-informed supply chain decisions.

The Society also acknowledges the contributions of the many logistics practitioners, technology providers, academics and industry experts whose published research, market intelligence and public insights have informed the analysis presented in this report. Their collective work continues to advance the global body of knowledge on warehouse automation and intralogistics.

Finally, we thank the members of the **LSCMS Shippers Council** and the broader LSCMS community for their continued encouragement and commitment to fostering collaboration, professional excellence and knowledge sharing across the logistics and supply chain profession.

*This publication has been produced by the LSCMS Shippers Council as part of The Logistics & Supply Chain Management Society's ongoing industry research programme. While every effort has been made to ensure the accuracy of the information presented, the Society does not endorse any specific organisation, technology or commercial solution, and readers should undertake their own due diligence when making business decisions.*

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