Supply Chain Management, Procurement and Retail

SPARK Matrix™: Warehouse Management System, Q3 2024

Market Insights, Competitive Evaluation, and Vendor Rankings

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Executive Overview

Quadrant Knowledge Solutions' SPARK Matrix™: Warehouse Management System, 2024 research includes a detailed analysis of the global market regarding short-term and long-term growth opportunities, emerging technology trends, market trends, and future market outlook. This research provides strategic information for technology vendors to better understand the market supporting their growth strategies and for users to evaluate different vendors' capabilities, competitive differentiation, and market position. The research includes detailed competition analysis and vendor evaluation with the proprietary SPARK Matrix analysis. SPARK Matrix™ includes ranking and positioning of leading Warehouse Management System vendors with a global impact.

Market Dynamics and Overview

Quadrant Knowledge Solutions defines a Warehouse Management System (WMS) as "a software suite that helps businesses to visualize, optimize, and manage end-to-end warehouse operations such as slotting, receiving, put-away, inventory management, picking, packing, and shipping. WMS also offers resource (labor, machine, material, and devices) management capabilities for effective order allocation and task optimization. Additionally, it leverages emerging technologies, such as AI/ML, analytics, digital twin, IoT, voice recognition, robotic process automation, and edge computing, to develop strategies for transforming and automating warehouse and distribution/fulfilment center activities."

A WMS was initially designed and developed to manage warehouses that had large-scale complex operations. WMS helped warehouse managers track inventory levels, manage orders, and improve warehouse efficiency. In the late 90s, a rise in the retail sector demand occurred due to a significant increase in population and globalization, leading to an increase in the number of warehouses and distribution centers across various geographies. This further created the added complexity of managing multiple products at multiple locations through the supply chain execution stages.

WMS vendors now incorporate out-of-the-box visualization and analytics tools to extract and analyze large amounts of data and provide key stakeholders with the right insights on warehouse/distribution centers' operations. In the recent decade, changes such as globalization 2.0, urbanization, an ageing population, and a shrinking labor force drastically changed customer spending, expectations, product availability, and competition.

The retail and eCommerce sector has grown significantly in the last decade and has the potential to grow exponentially in the coming years. Changes in anticipatory logistics, omnichannel logistics, and customized/faster delivery services are also being observed. Additionally, Business-to-Business (B2B), Business-to-Consumer (B2C), Direct-to-Consumer (D2C), and omnichannel fulfilments have increased magnificently. To cater to

ongoing trends and future market requirements, warehouses and distribution centers have expanded their model to support micro-fulfilment centers.

Vendors catering to the WMS market segment have started to add omnichannel order management, transportation management, labor management, and resource optimization capabilities to their WMS solution.

A modern-day Warehouse Management System (WMS) comprises both the software and processes required to manage warehouse administration. It optimizes resource utilization, such as warehouse space, equipment, labor, inventory flow, and material handling equipment. The WMS software improves warehouse productivity by effectively managing the day-to-day operations, such as planning, organizing, staffing, directing, and controlling the utilization of available resources. The key functions of WMS software include standardizing the stock receiving and returns process and optimizing inventory levels by tracking stock inventory by location, manufacturing/expiry date, supplier details, and low code. The WMS also provides seamless integration for order processing and managing the warehouse facility's logical representation and logistics.

The role of the WMS is to help users manage the inbound and outbound tasks in warehouse or distribution centers. Its inventory management capability enables users to track the inventory data from multiple devices and update the information across all connected systems. A WMS also offers integrations with Warehouse Control Systems (WCS), Warehouse Execution Systems (WES), Enterprise Resource Planning (ERP), Order Management Systems (OMS), Transportation Management Systems (TMS), and other supply chain software to simplify communication and enable users to import/export the right insights, facilitating data-driven decision-making and improving and optimizing supply chain execution processes.

In the coming years, WMS vendors are expected to secure added investments for technology development. The investments would enable them to restructure their WMS offerings based on market and verticals, facilitate cloud deployments, support automation and robotics, enhance product innovations, increase supply chain convergence by mergers and acquisition, expand product portfolio both horizontally and vertically, and support both manual and automated warehouse operations. It will also enable some

vendors to provide seasonal software. Additionally, the vendors are expected to incorporate emerging technologies, such as Artificial Intelligence (AI), Machine Learning (ML), Internet of Things (IoT), edge computing, and digital twins, to provide advanced analytics and visualization, resource optimization (man, machine, material, and movement), and improve overall supply chain performance.

A warehouse management system (WMS) is designed and developed to manage and optimize all core inbound and outbound warehouse operations such as receiving, receipt inspection, put-away, storage, cross-docking, picking, staging, packing, product consolidation, loading, and shipping, along with associated inventory and resource optimization processes. Furthermore, a WMS enables organizations to create client-specific inbound and outbound workflows to cater to customers' unique requirements.

The following is the description of the capabilities of a WMS:

- **Put-away:** A WMS directs warehouse associates to put the inventory into the right location based on the product's storage temperature and hazardous storage requirements. It enables users to configure put-away rules manually/automatically based on their management strategy.
- **Picking:** A WMS assists warehouse associates in accurately performing picking operations so that associates can pick the right products in the right quantity at the right time. It supports various picking methodologies, such as zone, batch, cluster, wave, waveless, single/multiple, container, order picking, cluster picking by labels, and user-defined.
- **Voice-based Picking:** A WMS's voice-based picking capability directs warehouse associates based on an organized picking sequence. Additionally, warehouse associates are provided earphones, microphones, and Radio Frequency (RF) terminal belts to guide mobile robots in performing inbound and outbound warehouse activities. The capability especially aids in performing activities such as order picking, material handling, transportation, sortation, repacking, labeling, and shipping.

- **Inventory Management and Order Fulfillment:** A WMS provides real-time unified visibility to inventories across internal and external warehouse locations, assisting warehouse associates with inventory management and order fulfilment. WMS supports automatic tracking and auditing of warehouse inventory through bar-code reading, Radio Frequency Identification (RFID), and warehouse robots. It also facilitates stock management by tracking and managing orders in multiple locations. Additionally, the platform enables the identification of product locations in the warehouse, product attributes, Bill of Material (BOM), cycle counting, serial numbers for tracking the order flow, and other valuable information in real-time.

  The inventory management capability of a WMS supports organizations in organizing inventory by batch, version, receipt date, release, production, and expiry, helping users categorize and optimize the inventory with efficiency. Using a WMS also helps organizations determine inventory levels and replenishment policies based on demand forecasts for each item location to avoid overstocks/stock-outs. Additionally, it supports the calculation of inventory costs, indirect labor costs, and overhead costs for accurate inventory planning, enabling organizations to maintain profitability.

- **Multi-device Support:** A WMS offers support for multiple devices, such as mobiles, laptops, desktops, tablets, bar code scanners, RFID sensors, wearables, and other handheld devices, which capture and update the right data in real-time across all connected systems to provide a single source of truth across the supply chain.

- **Visualization, Analytics, and Reporting:** A WMS offers analytics tools that enable organizations to define, measure, and monitor labor productivity, inventory levels, order movement, and other key metrics. The data gathered using these tools helps warehouse managers make tactical decisions for handling warehouse inefficiencies and optimizing warehouse operations. The tools also send alerts, notifications, and customized reports as per business rules to concerned stakeholders. Additionally, they help users gain real-time visibility on various levels, such as periods, type of activity, process, customer, order, and operator. They further enable users to gain visibility into previous and current warehouse

status through dashboards, reports, 3D visuals, heat maps, and warehouse mapping, enhancing user experience and reducing the time taken for decisions. The WMS also validates physical configuration set-ups and performs bottleneck congestion analysis and travel path analysis.

Some of the extended WMS capabilities vendors offer to achieve supply chain convergence are listed below. These extended WMS capabilities can be developed by vendors or offered through partnerships with third-party application providers.

- **Labor and Task Management:** A WMS offers labor and task management capability that helps organizations with intra-day planning and shift-wise planning by assigning specific/bundled tasks to warehouse associates as per business rules and compliance. It also supports releasing warehouse associates from a task or reassigning them to perform another task based on permissions, priority, and proximity. It optimizes the product flow and movement path to minimize the time taken for travel and optimize throughput. Additionally, it leverages machine learning techniques to reoptimize the tasks and assignments within a warehouse/distribution center based on real-time changes in order fulfilment. Furthermore, its labor management capability enables data-driven gamification on daily tasks, real-time digital communication, automatic recognition, and the creation of reward programs to enhance overall employee working performance and experience.

- **Slotting Optimization:** A WMS offers slotting optimization capability that enables organizations to set and reset pick locations based on customer expectations, product demand, and operational constraints. Additionally, it suggests suitable placement locations based on sales trends and product variations and groups orders for faster fulfilment. It also enables organizations to optimize slotting process based on product crushability, mixing rules, and fitting of items in a particular location.

- **Kitting & De-kitting:** A WMS supports kitting and de-kitting based on order types, such as make-to-order and make-to-stock. Additionally, it checks kitting options for successive warehouse deposits and pre-dispatch operations.

- **Yard Management:** For large warehouses, the yard management capability of a WMS facilitates safety checks, yard audits, yard viewing, dock location and trailer status determination, and optimal dock door selection based on trailer contents and current dock availability. Additionally, it assists truck drivers coming into a warehouse by finding the right loading docks as per the schedule.

- **Parcel Management:** The parcel management capabilities of WMS help users view carrier service rates as per requirement and select suitable carriers for shipping. It also helps users to track deliveries across geographies throughout the parcel journey. Additionally, it helps users generate required documentation while adhering to logistics compliance for parcelling.

- **Billing Management:** The billing management capability of WMS helps Third-Party Logistics (3PL) warehouse users bill clients for specific services. It supports 3PL service providers in defining types of services and billing schedules, charging applicable rates, invoicing, and performing other billing activities as per business needs.

- **Warehouse Control Systems:** A WMS can be integrated with WCS, WES, and Material Handling Systems (MHS). The combined solution enables users to make intelligent prioritization, grouping, and assignment decisions across all resources, thereby helping them optimize warehouse operations in real-time. The solution also automates the repetitive processes in a warehouse and helps organizations manage complex warehouse operations seamlessly.

Competitive Landscape and Analysis

Quadrant Knowledge Solutions conducted an in-depth analysis of major Warehouse Management System (WMS) vendors by evaluating their products, market presence, and value proposition. The evaluation is based on primary research with expert interviews, analysis of use cases, and Quadrant's internal analysis of the overall Warehouse Management System market. This study includes an analysis of key vendors, namely Blue Yonder, Deposco, Ehrhardt Partner Group (EPG), Generix Group, Infor, Körber, Made4net, Manhattan Associates, Mantis, Mecalux, Microlistics, Oracle, Reply, SAP, Softeon, SSI Schaefer, Synergy Logistics, Tecsys, and Vinculum.

Blue Yonder, Deposco, Generix Group, Körber, Manhattan Associates, Oracle, Softeon, Synergy Logistics, and Tecsys are the top performers and 2024 technology leaders in the SPARK Matrix™ for the global WMS solution market. These companies provide a comprehensive technology portfolio with the breadth and depth of solutions to support a variety of industry-specific and customized user-specific use cases. Many of these players are also frontrunners in providing modern and open architecture, comprehensive out-of-the-box capabilities, country-specific compliance, easy-to-use configurable user interface and dashboard, centralized repository, advanced analytics, and integration and interoperability with traditional supply chain solutions.

Blue Yonder offers a broad suite of solutions for supply chain planning, supply chain execution, and omnichannel commerce. Blue Yonder's extensive Supply Chain Execution (SCE) suite facilitates supply chain convergence through acquisitions, product enhancements, and the company's strong partner ecosystem. The Blue Yonder WMS solution can be seamlessly integrated with native labor management and transport management systems of organizations, helping them gain unified order visibility, plan and utilize warehouse space in real-time, and enhance user experience.

Deposco, through its Bright Suite platform, offers comprehensive warehouse management capabilities, which enable it to cater to various industry needs and complexities. The Bright Suite platform features a unified and intuitive interface that streamlines warehouse operations and enhances productivity. The platform also provides

robust capabilities such as task interleaving, dynamic slotting, and system-directed workflow creation, ensuring efficient and accurate task execution. Deposco differentiates itself with its cloud-based architecture, quick deployment, scalability, and easy integration with other enterprise systems.

Generix Group, through its Generix Supply Chain Hub platform, offers a scalable warehouse management solution that ensures high availability and rapid deployment. The platform's cloud-based infrastructure enables it to support businesses of all sizes, facilitate seamless integration, and perform real-time data synchronization. Its intuitive interface simplifies warehouse operations, enhancing productivity and operational efficiency. With a strong emphasis on collaboration and connectivity, the Generix Supply Chain Hub facilitates effective communication and coordination across the supply chain, driving synergies and optimizing processes.

Körber's warehouse management solutions can be integrated with the offerings of various technology providers. The company has a strong customer value proposition due to its cloud-based WMS solution that enables organizations to optimize their end-to-end warehouse operations and gain real-time inventory visibility for informed decision-making. Körber One, its cloud-native platform with a microservices-based architecture, delivers a range of technical capabilities, such as a common data model, and low-code development tools.

Manhattan Associates, through the Manhattan ActiveTM platform, offers various WMS that cater to different markets and warehouses of varied complexities. The Manhattan ActiveTM platform includes Warehouse Management, an intuitive, intelligent, unified, and engaging suite. Manhattan Associates differentiates itself by providing supply chain execution solutions such as WMS, WES, OMS, TMS, and labor management.

Oracle offers multiple WMS solutions, which cater to all WMS industry verticals and provide a good partner ecosystem. It also offers an innovative, configurable, and robust WMS platform (supports Platform-as-a-Service layer) with analytics and machine learning capabilities, which automates warehouse operations, optimizes inventory costs, and delivers a tailored user experience. Additionally, its platform delivers increased

operational efficiency by providing comprehensive real-time visibility into the inventory and supply chain operations.

Softeon offers a broad suite of supply chain execution solutions. Softeon's WMS solution is augmented with additional integrated modules such as labor management, yard management, slotting optimization, assembly and kitting, parcel shipping, and distributed order management. The acquisition of the LUCA platform enabled Softeon to integrate, manage, and optimize its robotic picking, put walls, and voice recognition capabilities.

Synergy Logistics, through its SnapFulfil WMS, offers scalable warehouse management solutions. The SnapFulfil platform supports rapid deployment and seamless integration with existing systems. The key features of SnapFulfil include advanced inventory management, real-time data analytics, and flexible picking through batch, wave, zone, and cluster picking methods. The platform also supports automation through integration with robotics and Automated Guided Vehicles (AGVs), enhancing operational efficiency and accuracy. Synergy Logistics differentiates itself by offering adaptable and cost-effective cloud-based solutions that are suitable for businesses of all sizes, from SMEs to large enterprises.

Tecsys, through its EliteTM WMS, offers robust and comprehensive industry-specific capabilities. Tecsys WMS supports multiple picking methods, such as waving, wave-less, zone, batch, cluster, and user-defined. It also helps organizations with cartonization, dock and cross-dock management, and dynamic slotting. Additionally, the WMS platform offers system-directed RF task management and task interleaving functionality. It provides a wide range of advanced functionalities, such as receiving, put away, inventory moving, picking, packing, replenishment, shipping, loading, and cycle counting, to optimize warehouse operations. Furthermore, its patented Visual Logistics technology provides workers with clear visual instructions to increase the efficiency and accuracy of task execution. Tecsys also offers Distributed Order Management (DOM) and 3PL solutions, which enables it to attain supply chain convergence.

Ehrhardt Partner Group (EPG), Infor, Made4net, Mantis, Mecalux, Microlistics, SAP, SSI Schaefer, Reply, and Vinculum are positioned among the strong contenders owing to their limited market presence, strong product offerings, and potential to grow in the coming years.

Key Competitive Factors and Technology Differentiators

While the majority of vendors offering Warehouse Management Systems (WMS) provide several core and extended WMS functionalities, the breadth and depth of functionalities may differ based on different vendors' offerings. Driven by increasing competition and changes in market dynamics, vendors are increasingly looking to improve their technology capabilities and overall value proposition to remain competitive and achieve supply chain execution convergence. Vendors are also providing consultation services to help organizations identify key requirements of customers and specific solutions that reduce the Total Cost of Ownership (TCO) and improve productivity and Return on Investment (ROI). Some vendors are extensively investing in developing solutions associated with WMS, expanding integration with third-party application providers, forming long-term strategic partnerships, and acquiring application providers. Additionally, vendors are moving from on-premises to cloud deployment to provide flexibility, availability, extensibility, and data security to their WMS products and services.

Furthermore, vendors are offering value-added warehouse management services, such as allocation-as-a-service and data-as-a-service. Vendors are also developing solutions that successfully make large-scale deployments and aid organizations in carefully analyzing the existing case studies of those deployments. Emerging vendors are also expanding their global customer footprint by expanding product capabilities, introducing new features and functionalities, and expanding the partner ecosystem. The following are the key competitive factors and differentiators for the evaluation of the WMS market and its vendors:

- **Smart Warehousing:** Leading WMS vendors are investing in smart technologies to offer innovative platform offerings. With the help of technologies such as IoT, virtual reality, augmented reality, and digital twins, the leading vendors efficiently enhance warehouse operations and user experience. Organizations should look for vendors that offer features such as advanced picking devices, 3D warehouse representations,

dynamic asset positioning in the warehouse (forklifts), and collaborative robots. These features would help organizations gain more flexibility, real-time responsiveness, and prescriptive mobile workflows, enabling them to easily manage complex warehouse operations. Additionally, to enhance warehouse associates' working experience, organizations must choose vendors that are capable of incorporating gamification techniques into the labor management module.

- **Resource Orchestration to Optimize On-Time in Full (OTIF) Completion:** Vendors in the WMS market are developing supply chain execution solutions to help organizations with OTIF delivery. Organizations should look for vendors that provide resource orchestration solutions for managing warehouse associates. Vendors should also be capable of offering Autonomous Mobile Robots (AMR) and automation to help with intelligent work prioritization, synchronized interleaving, and the assignment and tracking of task completion times, thereby optimizing OTIF completion. Additionally, vendors must have the ability to maximize labor, machine, and space utilization for organizations by optimizing resource usage and material flows. Organizations should assess vendors based on their ability to provide integrated WMS, OMS, and TMS solutions that help in faster, expedited, and on-demand delivery as per customer needs.

- **Warehouse Automation:** Vendors are implementing automation-as-a-service technologies to help warehouses easily scale resources up or down and match variations in demand. Leading vendors are utilizing AMRs in the form of robotics-as-a-service to cater to seasonal demands across a few markets. These AMRs provide greater flexibility in terms of cost management, priority delivery, and distribution networks. Organizations should look for vendors that are investing in automated storage systems and handling equipment to reduce the dock-to-stock cycle by easily accessing stocks. Vendors should also be able to automate labor-intensive and repetitive warehouse operations to reduce manual errors, increase productivity and efficiency, ensure smooth workflow, and meet supply chain bottlenecks. Organizations should analyze and choose vendors by considering if it is more cost/time effective to automate all or some operations using elements such as

automatic unloading platforms, conveyors, checkpoints, and stacker cranes, based on their needs.

- **Visualization:** Leading vendors offer no-code digital twin 3D heat maps of the entire warehouse and enable organizations to visualize, simulate, and optimize key operations. Vendors should be assessed based on their ability to provide end-to-end visibility into warehouse operations such as inventory movement, goods-in-transit, picking, packing, replenishment, and slotting optimization. Organizations must choose WMS vendors that provide visibility into potential risks to resources (labor and material) and shortages and help them make tactical decisions to resolve the same. The WMS vendors must also provide visibility into orders returned from customers or shipped from various warehouses, stores, and distribution centers. Additionally, the vendors should offer complete inventory transparency to avoid stock-out situations and support available-to-promise inventory to enhance the customer experience.

- **Maturity of AI and ML Capabilities:** One of the reasons for adopting a WMS platform is its ability to provide comprehensive analytics, reporting, and AI capabilities. Many leading WMS vendors leverage AI, ML, and predictive analytics capabilities to offer deep-dive analytics and actionable insights that help organizations with inventory planning, inventory levels, transportation management, labor management, task optimization, yard management, omnichannel sales, backorders, overstocking, space utilization, and future demands. Organizations should look for vendors that provide wizards, reports, and label design tools to facilitate rapid execution and self-configuration of custom documents and analytics. They should also evaluate vendors' capabilities to deliver a robust platform with an easy, intuitive, and graphical interface. Additionally, the vendors must have the ability to invest in technologies, such as generative AI, IoT edge technologies, digital twins, virtual reality, and voice recognition, to develop WMS capabilities and automate warehouse operations.

- **Comprehensive Deployment Options:** Vendors in the WMS market have started to shift towards cloud deployment. Vendors are offering self-deployment tools to support remote deployment and reduce deployment time. Leading vendors are using a Service-Oriented Architecture (SOA) platform and a prescriptive workflow to provide

a seamless approach for customers to carry out warehouse and logistics operations. Leading vendors are also deploying their WMS on a subscription and seasonal basis to cater to midmarket customers. They should look for vendors with a concrete roadmap to develop their applications further and enable deploying their WMS as a platform. This would help the organizations implement the WMS in the form of modules rather than software.

- **Integration & Interoperability:** Seamless integration and interoperability with the organization's existing technologies are among the most crucial factors impacting the technology deployment and ownership experience. Leading vendors follow an API-first approach (upstream and downstream connectivity) to enable customers and partners to seamlessly access the vendors' applications and communicate. WMS vendors should provide out-of-the-box integration connectors, well-documented API, and a RESTful API to help organizations achieve seamless end-user experience, quick deployment, and faster ROI. They should also support seamless integration with existing ERP solutions of organizations. Additionally, they should be capable of integrating Global Trade Management (GTM). Material Handling Equipment (MHE), OMS, TMS, 3PL, WCS, WES, financial, Point-of-Sale (POS), and proof-of-delivery systems. Organizations must look for vendors that provide an integrated WMS solution that facilitates labor management, yard management, appointment management, slotting optimization, and billing management to drive value and innovation.

- **Ease of Configuration and Customization:** Leading vendors provide customized solutions for various industry sectors such as retail and eCommerce, wholesale and distribution, manufacturing, healthcare, 3PL, and consumer goods. Organizations should determine WMS vendors that support multiple types of inbound operations, such as direct, standard, inspection, and cross-docking. The vendors must provide configuration and process design tools, workflow capabilities, templates, and other out-of-the-box configurable plug-ins that support various transformation formats and mapping. Furthermore, the WMS vendors should support unique user experiences by providing low-code tools and customizing their platform as per the business needs of organizations with drag-and-drop functionality. Additionally, vendors must be able to

provide parameter-driven configuration with no-code customization by adding hooks into the business logic layer. Organizations should look for vendors that provide codeless editors to build business applications and integrate business logic rapidly.

- **Scalability:** Vendors should have the ability to perform cloud computing and enable systems to scale up and down as per various market segments and the complexity of warehouse operations. Organizations must look for WMS vendors that offer sophisticated solutions to manage inventory operations in a complex warehouse environment with peak orders, a large user count, and the highest Stock-Keeping Unit (SKU) with the lowest cycle count.

- **Vendors' Expertise and Industry Experience:** A vendor should have a deep understanding and subject matter expertise not only of the intricacies of the warehouse but also of the broader supply chain and the impact of actions in the WMS supply chain, transportation, and commerce. Organizations should evaluate vendors based on their years of experience, development over the years, market presence, and deployment options. Furthermore, organizations should assess vendors' ability to offer various WMS solutions in the form of standalone products as well as combined solutions as per business needs.

SPARK Matrix™: Strategic Performance Assessment and Ranking

Quadrant Knowledge Solutions' SPARK Matrix provides a snapshot of the market positioning of the key market participants. SPARK Matrix provides a visual representation of market participants and provides strategic insights on how each supplier ranks related to their competitors, concerning various performance parameters based on the category of technology excellence and customer impact. Quadrant's Competitive Landscape Analysis is a useful planning guide for strategic decision-making, such as finding M&A prospects, partnerships, geographical expansion, portfolio expansion, and similar others.

Each market participant is analyzed against several parameters of Technology Excellence and Customer Impact. In each of the parameters (see charts), an index is assigned to each supplier from 1 (lowest) to 10 (highest). These ratings are designated to each market participant based on the research findings. Based on the individual participant ratings, X and Y coordinate values are calculated. These coordinates are finally used to make the SPARK Matrix™.

Technology Excellence	Weightage
WMS fundamental capabilities	10%
Resource Management (Associates, machines, & materials)	20%
WMS extended capabilities	15%
Advanced Analytics, Visualization, and Reporting	10%
Use of Emerging Technologies	10%
Integration & Partner Ecosystem	10%
Competitive Differentiators	10%
Multi-device support	5%
Scalability	5%
Technology Vision & Roadmap	5%

Customer Impact	Weightage
Product Strategy & Performance	20%
Market Presence	20%
Proven Record	15%
Ease of Deployment & Use	15%
Customer Service Excellence	15%
Unique Value Proposition	15%

Evaluation Criteria: Technology Excellence

- **WMS Fundamental Capabilities**: The ability to provide fundamental WMS capabilities such as receiving, put-away, sorting, stocking, cycle counting, order allocation, picking, packing, and shipping.
- **Resource Management**: The ability to provide a complete resource management capability by effectively managing inventory and assigning, tracking, & optimizing tasks of warehouse resources (labor, machine, material).
- **WMS Extended Capabilities**: The ability to provide support for extended WMS capabilities such as slotting optimization, kitting & de-kitting, yard management, parcel management, billing management, warehouse control system.
- **Advanced Analytics, Visualization, and Reporting**: The ability to import/export data from multiple systems to monitor, analyze, and provide end-to-end visibility to manage & optimize warehouse operations with a user-friendly user interface.
- **Use of Emerging Technologies**: The ability to invest & leverage emerging technologies such as AI, ML, NLP, voice-directed warehousing (Pick-by-voice), digital twin, IoT, voice recognition, RPA, and Edge computing for digitalizing & automating warehouse operations.
- **Integration & Interoperability**: The ability to offer a product and technology platform that supports integration with multiple best-of-breed technologies, provides prebuilt out-of-the-box integrations, and open API support and services.
- **Competitive Differentiation Strategy**: The ability to differentiate from competitors through functional capabilities and/or innovations and/or GTM strategy, customer value proposition, and others. The ability to demonstrate product deployment for a range of industry verticals and/or multiple use cases.
- **Multi-device Support**: The ability to seamlessly connect with multiple devices in a warehouse including wearables, scanners, RFID, mobile/desktop/laptop, and other hand-held devices.

- **Scalability**: The ability to demonstrate that the solution supports enterprise-grade scalability along with customer case examples.
- **Technology Vision & Roadmap**: Evaluation of the vendor's product strategy and roadmap with the analysis of key planned enhancements to offer superior products/technology and improve the customer ownership experience.

Evaluation Criteria: Customer Impact

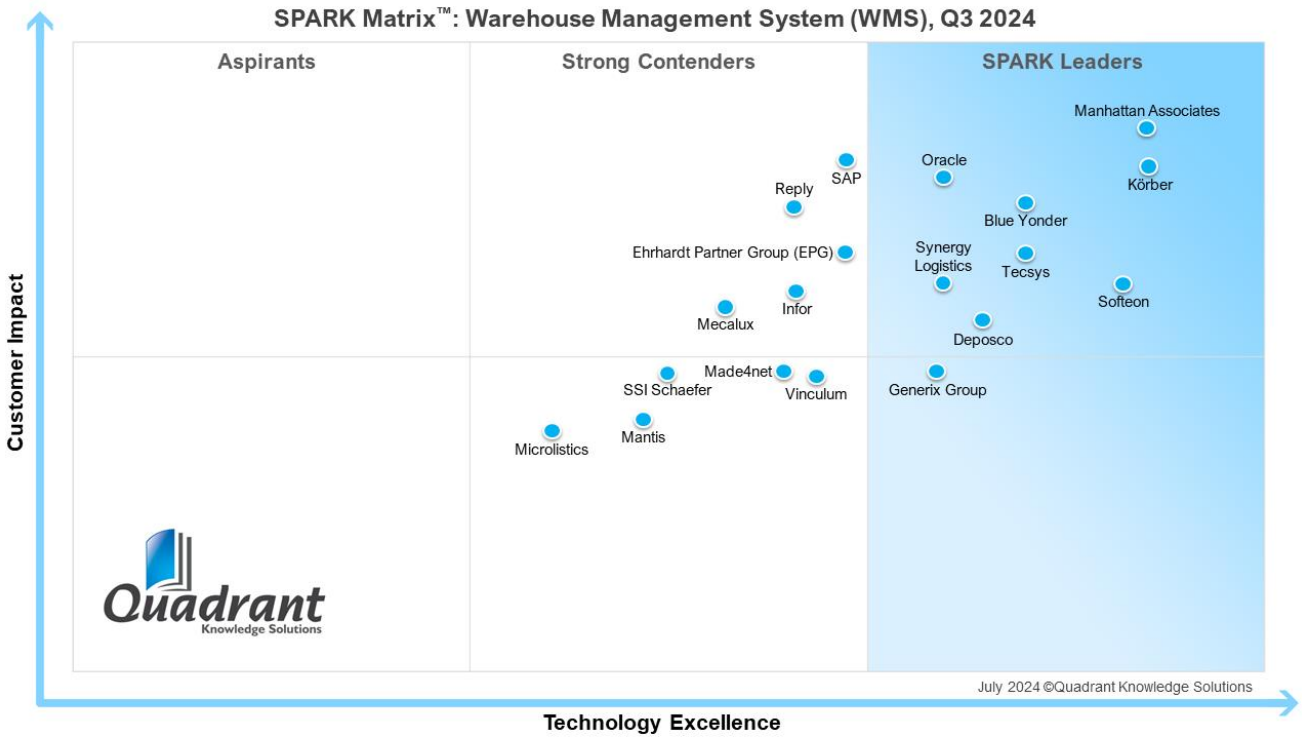
- **Product Strategy & Performance**: Evaluation of multiple aspects of product strategy and performance in terms of product availability, price-to-performance ratio, excellence in GTM strategy, and other product-specific parameters.
- **Market Presence**: The ability to demonstrate revenue, client base, and market growth along with a presence in various geographical regions and industry verticals.
- **Proven Record**: Evaluation of the existing client base from SMB, mid-market, and large enterprise segments, growth rate, and analysis of the customer case studies.
- **Ease of Deployment & Use**: The ability to provide superior deployment experience to clients supporting flexible deployment or demonstrate superior purchase, implementation, and usage experience. Additionally, vendors' products are analyzed to offer a user-friendly UI and ownership experience.
- **Customer Service Excellence**: The ability to demonstrate vendors' capability to provide a range of professional services from consulting, training, and support. Additionally, the company's service partner strategy or system integration capability across geographical regions is also considered.
- **Unique Value Proposition**: The ability to demonstrate unique differentiators driven by ongoing industry trends, industry convergence, technology innovation, and such others.

SPARK Matrix™: Warehouse Management System, Q3 2024.

Strategic Performance Assessment and Ranking

Figure: 2024 SPARK Matrix™

(Strategic Performance Assessment and Ranking)
Warehouse Management System Market



Vendors Profile

The following vendor profile has been written based on the information provided by the vendor's executives as part of the research process. The Quadrant research team has also referred to the respective company's website, whitepapers, blogs, and other sources for writing the profile. A detailed vendor profile and analysis of all the vendors, along with various competitive scenarios, are available as a custom research deliverable to our clients. Users are advised to directly speak to respective vendors for a more comprehensive understanding of their technology capabilities. Users are advised to consult Quadrant Knowledge Solutions before making any purchase decisions regarding Warehouse Management System and vendor selection based on research findings included in this research service.

Blue Yonder

URL: https://blueyonder.com/

Founded in 1985 and headquartered in Scottsdale, Arizona, USA, Blue Yonder is a provider of end-to-end digital supply chain management and omnichannel commerce fulfilment platforms. Blue Yonder offers a suite of solutions for supply chain planning, supply chain execution, and omni-channel commerce. The supply chain execution suite offers transportation management, a logistics network, supply chain modelling, warehouse management, labor management, a robotics hub, and warehouse tasking. The key features and functionalities of its warehouse management system (WMS) include inventory management, appointment & yard management, cross-docking, intelligent put-away, receiving & picking, wave planning, carton selection, analytics, and integration. Some of the extended WMS capabilities offered by Blue Yonder are slotting optimization, dock scheduling, parcel management, voice recognition, and billing management.

In past year, Blue Yonder has extensively acquired companies namely Doddle, flexis AG, and One Network Enterprises to expand its product portfolio and market reach to become end-to-end supply chain management provider. BlueYonder's flexis acquisition will gain expertise in manufacturing and supply chain planning technology. This addition strengthens Blue Yonder's capabilities, particularly for automotive and industrial original equipment manufacturer (OEM) sectors. Blue Yonder's One Network Enterprises acquisition will integrate the company's expertise in AI-driven demand forecasting with ONE's robust Multi-Enterprise Supply Chain Business Network (MESCBN), offering unparalleled visibility across the supply chains from raw material procurement to final product delivery.

Analyst Perspective

Following is the analysis of Blue Yonder's capabilities in the Warehouse Management System (WMS) market:

- Blue Yonder WMS, a cloud-based solution is deployed on Microsoft Azure. The company offers an integrated suite of TMS, labor, and warehouse management solutions to help organizations streamline and optimize end-to-end supply chains into intelligent manufacturing, dynamic transport, digital & automated warehousing, and smart retail.

- Blue Yonder's inventory management capability helps to track attributes such as lots and serial numbers. It supports rules-based replenishment strategies such as minimum shelf life and hazmat controls to optimize inventory control and replenishment. Furthermore, it supports inventory tracking from inbound receipts through the building to outbound orders & orderliness.

- Blue Yonder's wave planning capability enables users to define waves based on multiple criteria, such as customer information, order priority, and age/date of shipment. Additionally, it supports wave processing and grouping orders into logical sets to achieve efficient picking. The company supports multiple picking methods across paper, handheld technologies, and more complex automation.

- Blue Yonder's carton selection capability automatically selects the most appropriate carton during the cartonization process. The solution supports box-within-a-box, pick-to-box, and pick-to-tote types.

- The analytics and reporting capability of Blue Yonder provides a default dashboard and supports the configuration of custom dashboards. It provides real-time unified visibility into all warehouse activities utilizing AI.

- Blue Yonder offers differentiating WMS services, such as tasking, label design, allocation as a service, and data as a service that leverages AI/ML to extend best-in-class WMS orchestration capabilities. The company also offers a toolkit for 3PLs to leverage and drive any unique processes within the operation.

- The appointment and yard management capability of Blue Yonder offers directed hostler activities, yard audits, optimal dock door selection, safety checks, visibility of trailer inventory, and current dock availability. It also enables associates to interact with TMS appointment management, which helps

streamline and optimize processes. Additionally, the company offers integration of IoT Edge technologies for traditional warehouse functions such as yard management.

- Some of the use cases of Blue Yonder's warehouse management include end-to-end visibility, warehouse automation, inventory management, task optimization, ingestion of real-time data from across the supply chain, optimization of complex warehouse operations, dynamic scheduling, and labor retention/management.

- Geographically, Blue Yonder has a major presence in North America and Europe, followed by Latin America. The company has a fair presence in Asia Pacific, Middle East, and African regions. Blue Yonder's major industry verticals include logistics & transportation, 3PL, manufacturing, retail & eCommerce, household & CPG, food & beverage, electric & electronics, automotive, life sciences, aerospace, telecommunication, agriculture, and mining.

- Some of the key challenges Blue Yonder is growing competition from well-established supply chain management and business application vendors. Blue Yonder might face challenges in expanding its existing presence in Europe and Latin American markets as there is huge competition from local vendors that have a stronger partner ecosystem and offer customized solutions. While the company is moving towards SCE convergence, its legacy WMS customers may face challenges in upgrading to Blue Yonder's advanced supply chain solutions. However, with its comprehensive technology offerings, industry experience, strong domain knowledge, enterprise customer segment, investments in emerging technologies, and partner ecosystem, Blue Yonder is expected to continue to grow its revenue across industry segments and geographical regions.

- Blue Yonder has actively invested towards acquisition strategy to achieve the vision of end-to-end supply chain management solution provider to the global market. Blue Yonder has shown significant growth in customer acquisition and consistent year-on-year revenue growth. Blue Yonder's technology roadmap

includes investments to enhance WMS capabilities and develop WMS for a less complex warehouse environment to cater to customers' needs across various industry verticals. The company is continuously focusing on developing innovative capabilities for warehouse execution systems (WES) to streamline operations and manage robots & labor effectively.

Deposco

URL: https://deposco.com/

Founded in 2011 and headquartered in Alpharetta, Georgia, USA, Deposco is a provider of cloud-based supply chain solutions primarily focusing on warehouse management and fulfilment software. Deposco's proprietary product offers various solutions under the Bright Suite umbrella for unified commerce, including Bright Warehouse for warehouse management, Bright Forecast for demand planning, Bright Basics for SMB inventory management, Bright Performance for analytics & reporting, Bright Socket for integrations, Bright Store for store inventory & fulfilment, Bright Source for sourcing & purchasing, and Bright Order for order management & DOM. Deposco's Bright Warehouse's capabilities include core WMS capabilities, shipping, inventory management, order fulfilment, integrations, and other extended warehouse management capabilities.

Analyst Perspective

Following is the analysis of Deposco's capabilities in the global Warehouse Management System (WMS) market:

- Deposco's unified Bright Suite platform empowers organizations to optimize & standardize fulfilment operations to drive agility across their business. The platform also helps organizations streamline end-to-end warehouse operations to maximize productivity and improve employee efficiency. It helps organizations to monitor & control resources/inventory by providing complete visibility and enhancing overall demand sourcing & fulfilment processes.

- Bright Warehouse's core capabilities include receiving, picking, waving, put-away, stocking, order allocation, and packing. Organizations can quickly manage and optimize picking strategies (batch, bulk, case/pallet, waveless picking) quality control & compliance, cross-docking, return management, monitor system/user-directed put-away, and stock replenishments. Bright's inventory

management capability helps organizations handle processes such as cycle counting, tracking, quality control, and VAS within the warehouse. Furthermore, the system helps organizations adhere to a three-tier hierarchy of facility, zone, location, and stock unit levels.

- Deposco's analytics and reporting capability helps organizations to capture fulfilment & inventory data such as order count, fill rate, backorders, and mis-ships to benchmark and monitor adherence to service-level promises. Users can build custom reports and generate alerts & notifications for key KPIs.

- Deposco's WMS solution facilitates the processing of B2B orders by leveraging retail-compliant labels for multimodal shipping with UPS, UPS Freight, and regional & global carriers. Bright Socket, Deposco's integration software, promotes faster implementations by offering +150 pre-built sockets to connect easily to an organization's systems, including eCommerce shopping carts, marketplaces, accounting & financial (ERP) applications, shipping carriers, TMS, and MHE solutions. For example, an organization can use Deposco's WMS to directly integrate parcel & local carriers and LTLs to calculate dimensional weight, rate shop, auto-generate shipping labels & documentation, and track the entire shipping process.

- Deposco's differentiating factors include offering end-to-end warehouse management, company-wide inventory visibility, and automated, real-time tracking ability. Having a common platform and single repository of orders & inventory across all warehouses & stores enables organizations to meet surging requirements during peak seasons, promotions, and new product launches. Additionally, Deposco's cloud-native platform is built on multi-tenant architecture specifically for handling large peak volumes and complexity.

- Some of the use cases of Deposco's WMS include advanced work planning and management, omnichannel fulfilment for both eCommerce & brick-and-mortar retail, and multi-channel integration including Direct-to-Consumer (DTC). Businesses leverage Deposco to allocate inventory through the platform's segmentation feature to run pre-sales. Other use cases include the digital

transformation from legacy systems, seamless inventory management for B2B and B2C orders, implementation of cartonization processes including labelling, visibility into order information and inventory location through mobile devices, and real-time reporting to optimize operations.

- In terms of geographical presence, Deposco has a strong presence in North America, especially in the U.S. Deposco's presence is majorly in industry verticals including retail, 3PL, wholesale, consumer goods brands, and eCommerce.

- Some of key areas of improvement suggested by referenced customers include streamlining demand-based replenishment management without customization and the segmentation of service offerings. Deposco may face competition from WMS vendors with a market presence across geographies. However, with its broad supply chain product portfolio and comprehensive functional capabilities, Deposco is well-positioned to expand its market share in the global WMS market.

- Deposco's technology roadmap includes further developing its recently launched end-to-end omnichannel planning and fulfilment software platform. The company is focusing on its recent release of automation solutions for 3PL customers by providing rules logic to automate fulfilment processes. Furthermore, the company is heavily focused towards AI enhancements in areas such as knowledge automation; actionable insights and articulation; robotics systems integration; and process optimizations.

- Referenced customers preferred Deposco due to its comprehensive technology features, pricing structure, and competitive offerings, followed by existing vendor relationships and a strong partnership ecosystem.

- Deposco offers a cloud-based supply chain planning and execution platform majorly focusing on warehouse and omnichannel fulfillment. Despco's offerings are suitable for the mid-market segment, especially retail and 3PL industries. However, the company significantly caters to customers in all business segments. The company is also investing in enhancing its product offerings, its

technology implementation process, and its market reach, expanding across industry verticals to stay competitive in the global WMS market.

EPG

URL: https://www.epg.com/gb/

Founded in 1987 and headquartered in Germany, EPG is global provider of supply chain execution solutions. EPG offers comprehensive capabilities for Logistics, Warehouse Management, Software, Logistics Consulting, Warehouse Planning, WMS, Hardware, Logistics Training, Voice Technology in the Warehouse, TMS, WCS, Voice Picking Software, Workforce Management, Contract & Billing, supply chain control tower, and Aviation. EPG WMS is a fundamental warehouse management system that provides a comprehensive set of features for mid to complex level warehouse operations. It offers labor performance management, inventory sorting/allocation, warehouse automation, intelligent picking/packing management, replenishment, slotting, and receiving.

Analyst Perspective

Following is the analysis of EPG's capabilities in the global Warehouse Management System (WMS) market:

- The EPG ONE warehouse management system is a high- performance warehouse management system that allows for active control of all operations and material movement, as well as all available warehouse resources. EPG's warehouse management offers a unified view of inventory throughout the supply chain and fulfilment process, the platform is suitable for 3PL and wholesale clients, allowing them to enhance delivery time, increase inventory management efficiency, and minimize inventory management risk.

- EPG warehouse may be configured to work with your current and future workflows. It is intended to develop alongside your business as your needs evolve. It is simple to interface with the majority of main enterprise resource planning (ERP) systems and all major technological platforms. This provides easy integration with present and future infrastructure, whether in the cloud or on-premises.

- The warehouse management system can be seamlessly integrated into any business and logistics operations and includes great support for any system transition at organization.

- From a geographical presence perspective, EPG has a strong presence in Europe, followed by North America. From an industry vertical perspective, the company mainly caters to automotive & spare parts, trade & retail, e-commerce & fashion, manufacturing, food & beverages, and retail in-store.

- EPG's primary challenge is the increasing competition from new vendors with innovative technology offerings. The global warehouse management system market is highly competitive, and various players are vying for market share & expanding their geographical presence. However, EPG with its strong customer value proposition, comprehensive vision & roadmap, and sophisticated technology platform, is well-positioned to expand its market share in the voice-directed picking systems market.

- EPG's technology roadmap includes planned technological advancements are in line with the continuing digital transformation trends. In addition, the company is constantly improving and incorporating AI capabilities into its WMS platform. The company intends to implement numerous automation capabilities that will be coupled with their WMS.

Generix Group

URL: https://www.generixgroup.com/en

Founded in 1996 and headquartered in France, Generix Group is a provider of supply chain management solutions with specialization in retail, distribution, EDI, EAI, WMS, TMS, portals, collaboration, yard management, and e-Logistic. Generix Group offers Generix Supply Chain Hub (supply chain execution, Generix collaborative network, B2B integration, collaboration, and visibility solutions), Generix Omnichannel Sales (sales marketing orchestration and local POS solutions), and other solutions such as TradeXpress. The company offers a warehouse management system (WMS) as two solutions namely Generix WMS and SOLOCHAIN WMS. The WMS solution offers native capabilities including receipt and returns, storage and preparation, packing and shipping, connectivity and control, and yard management.

Analyst Perspective

Following is the analysis of Generix Group's capabilities in the Warehouse Management System (WMS) market:

- Generix WMS solution enables organizations to drive continuous business growth and helps to fulfill the needs of rapidly growing market demands. The solution allows organizations to achieve product traceability and accelerate the in-store placement of products. With advanced picking support, organizations can expedite the shipping process and reduce the associated additional cost. The voice-directed picking system helps organizations to drive service quality and minimize the overall time consumed in training the provisional workforce. Besides, Generix Group possesses expertise in catering to manufacturers, logistic service providers (3PL/4PL), and distributors.

- Generix delivers a strong customer ownership experience to its clients by providing them comprehensive data visibility across their supply chain to make informed decisions and acknowledge their customers' requirements and

demands. It provides organizations the ability to efficiently manage their business, optimize and collaboratively manage processes, and focus on quality improvement. The solution is also infused with a robust integration engine that enables organizations to easily connect applications and hardware solutions. The WMS solution caters to various use cases including enhancing inventory management & warehouse operations, driving operational efficiency, increasing warehouse productivity, and more.

- The solution offers quick and differentiated packing and labelling services using which organizations can easily trace, group, and manage their order shipments. Using connectivity and control capability, organizations can synchronize scheduling and operational control of their WMS with various production tools such as automation/AGV and mechanized chains. Additionally, Generix also offers a yard management capability that enables organizations to harmonize their warehouse operations with the incoming and outgoing carriers. This capability enables users to analyze the logistics provider's performance and minimize the waiting period.

- From a geographical presence perspective, Generix Group has a strong presence in Europe followed by North America. From an industry vertical perspective, the company serves various sectors such as manufacturing, retail, and 3PL.

- The primary challenge for Generix Group includes growing competition from WMS vendors offering innovative product offerings. However, with its strong customer value proposition, proven record, and robust technology platform, Generix Group is well-positioned to expand its market share in the global WMS market.

- Generix Group has significantly invested in R&D towards WMS features enhancements such as resource planning, resource forecasting, predictive and prescriptive analytics. Generix's pricing strategies stand out in the WMS market.

Infor

URL: https://www.infor.com/

Founded in 2002 and headquartered in New York, USA, Infor is a provider of cloud-based applications, solutions, & services for industry-specific requirements. The company offers Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Workforce Management (WFM), Product Lifecycle Management (PLM), financial solutions, and HR & talent management. Infor's SCM offerings include visualization & analytics, global trade & finance management, planning & demand management, warehousing & transportation, product lifecycle management, and integration capabilities. Infor's warehouse management system (WMS) majorly supports B2B and B2C fulfilments. Some of the key features & functionalities of Infor WMS are omnichannel optimization, warehouse automation, labor management, and visualization & integration capabilities. Infor WMS offers advanced warehousing capabilities such as 3D visualization, value-added services, 3PL billing, and labor, task, & inventory management.

The unified SCM suite helps organizations optimize supply chain operation costs, gain real-time actionable insights, build agility & resilience, enhance enterprise-wide visibility & traceability, and optimize productivity & performance.

Analyst Perspective

Following is the analysis of Infor's capabilities in the Warehouse Management System (WMS) market:

- Infor provides a version-less cloud-based WMS platform that supports advanced warehouse operations, voice & RF-enabled inventory activities, mixed warehouse operations, and multi-pallet operations by seamlessly integrating with ERP and other internal & external systems.

- Infor WMS also offers a real-time inventory management capability that helps organizations gain granular visibility into bin location levels. Organizations can

leverage these insights to perform attribute-based cycle counting. It also assists organizations in reducing obsolescence with configurable rotation rules and LPN-controlled tracking.

- Infor WMS also offers a wave & task management capability to provide intelligent task allocation, B2B & B2C fulfilment, rule-based cycle time & workload balancing, intuitive visualization for employee performance, and future task prediction.

- Infor WMS labor management capability helps organizations view, track, and assess labor-related warehouse activities in real-time. It offers configurable labor standards and real-time performance metrics through scenario analysis.

- Infor differentiates itself by offering customized solutions to mid-market customer segments by utilizing its resources/technologies to enhance WMS in areas such as integration and analytics. Infor WMS offers 3D visualization to help organizations visualize distribution centers through an interactive interface enabling users to look into workflow, bottlenecks, & inventory, make corrective actions, reduce delays and improve productivity. The company's WMS value-added services include kitting, bundling, light assembly, compliance labelling, and special packaging. Infor offers 3PL billing that incorporates account-specific workflows, traceability, and services to support multi-warehouse/multi-owner operations. This aids organizations by costing, billing, and invoicing at a customer level.

- Some of the use cases of Infor WMS include optimization of traffic throughout the warehouse, streamlining putaway & picking processes, managing unique customer inventory, analyses of labor productivity to provide the right compensation, providing visibility & agility to warehouse operations, and development of predictive estimated time of arrival (ETA) notifications.

- Geographically, Infor has a major presence in North America and Asia Pacific, followed by EMEA and Latin America. Infor's major industry verticals include 3PL, retail & e-commerce, wholesale distribution, and CPG & food.

- Some of the key challenges include the expansion of its WMS deployment beyond its existing ERP customer base and improving market penetration in the enterprise customer segments. The company's WMS is majorly limited towards solving small to mid-level complexities of warehouses. The company also faces competition from supply chain specialists and innovators in the WMS market. However, with its strong brand recognition and large customer base in the ERP market, Infor is expected to continue to grow its revenue across geographical regions.

- Infor's recent activities mainly focus on WMS customer acquisition, majorly in Latin American and European regions. Additionally, the company's roadmap focuses on expanding its WMS sales in Latin America region, aiming to generate higher year-on-year regional revenue growth.

- Infor's technology roadmap includes continuous enhancements of its WMS capabilities and increased investments in emerging technologies to automate warehouse operations. The company is focusing on expanding its WMS customer base to various geographies and industry verticals through upselling, cross-selling, acquiring new customers, and partnerships. Infor's SCE strategy is well-supported by Infor technology investments such as advanced analytics from Birst, AI & machine learning from Coleman, and Intelligence Open Network (ION) for integration & open APIs. The company is also continuously making significant investments in improving its cloud transformation strategy, developing GenAI capabilities, and go-to-market strategy to expand its global market share.

Körber

URL: https://www.koerber.com/en

Founded in 1946 and headquartered in Hamburg, Germany, Körber is a provider of consulting and software solutions focusing on business segments such as digital, pharmaceutical, supply chain, technology, and tissue paper. Körber offers end-to-end supply chain execution products & services. Körber's offerings for warehouse management include K.Motion Warehouse Edge for SMBs, K.Motion Enterprise 3PL for LSP/3PLs, K.Motion Warehouse Advantage for enterprises, and K.Motion WMSX with line manufacturing for the automotive industry (mainly for the European market). The warehouse management functionality of Körber includes receiving & put-away, slotting, warehouse transferring, inventory management, cross-docking, order & wave management, picking & packing, shipping management, load & route optimizing, returns management, visualizing, and integrating capabilities.

Körber offers additional operational modules associated with warehouse management system (WMS), such as K.Motion Yard Advantage, K.Motion Container Advantage, K.Motion Labor Advantage, and K.Sight Pulse Operational Analytics to enhance WMSs insights and operational efficiency.

Analyst Perspective

Following is the analysis of Körber's capabilities in the Warehouse Management System (WMS) market:

- Körber offers a variety of WMS, as integrated solutions or modules, to cater to warehouses with basic operations, advanced/complex operations, and 3PL. The company has integrated/unified with various technology providers in areas of consulting, software, and automation, helping them solve level 1 to level 5 warehouse complexities. Körber One is a cloud-native, microservices-based architecture that delivers a range of technical capabilities, such as a common data model, low-code development tools, and FlexPages. It also offers a UX

platform for developing an intuitive and consistent UI to facilitate the training and onboarding of users.

- Körber offers configurable 3PL, Edge, Warehouse Advantage, and WMSX products to drive agility across the warehouse processes and meet the unique needs of the customers. The company also offers configurable shipping rules & engines to meet client-specific requirements. Körber's robust voice technology facilities organizations to execute tasks hands-free and maximize efficiencies throughout the operation.

- Körber WMS, through its inventory and resource management capability, provides complete visibility into warehouse associates, machines, materials, & devices and optimizes the tasks enhancing productivity.

- Körber's differentiating factors include its expertise in warehousing, robotics, material handling, voice recognition, process simulations, implementation/integration of support tools, adapting/configuring products, simulation & designing, Körber cloud, and K.Sight Pulse advanced analytics. The company provides its own WCS to customers that work with its WMS to manage and control material handling equipment. The WMS supports users in making minor changes without affecting the overall process and eliminates the need for Körber's support team.

- Körber's K.Sight Pulse's advanced analytics provide solutions across multiple operational areas to deliver visibility to WERC and SCOR KPIs. Additionally, it allows customers to create customized KPIs for modifying work queues based on indicators in the toolset.

- Some of the use cases of Körber warehouse management include optimizing the area of receiving, put-away/flow-through processes, inventory management, order processing, replenishment, scalability & flexibility of WMS, enabling users to build their processes, complete visibility on resources & inventory, measuring employee performance against set expectations, ensuring right inventory at the right time, and eliminating excess/shortage of stocks.

- Geographically, Körber has a major presence in North America, especially in the USA, followed by Europe. It has a good presence in Asia Pacific, Latin America, Middle East, and Africa. Körber's major industry verticals include logistics & transportation, 3PL, manufacturing, retail & e-commerce, food & beverage, automotive, household & CPG, and life sciences segments.

- Körber may face challenges due to increased competition from other WMS vendors that are focusing on incorporating AI/ML-driven capabilities to offer best-in-class products & solutions. However, with Körber's wide-range product portfolio & add-on modules, comprehensive technology roadmap & vision, strong customer base, configurable technology platform, and proven records, Körber is well-positioned to drive a significant market share.

- Körber's technology roadmap includes the recent update to enhance warehouse operations and extend Warehouse Management Systems (WMS) capabilities. These solutions include Gamification, which boosts worker productivity and engagement through recognition and competition; Slotting.IQ optimizes inventory placement using dynamic algorithms for improved order-picking efficiency; and the Unified Control System (UCS), which integrates automated and manual workflows to streamline fulfillment processes. These advancements aim to increase efficiency, flexibility, and end-to-end visibility in supply chain operations.

Made4net

URL: https://made4net.com/

Founded in 2005 and headquartered in Teaneck, New Jersey, USA, Made4Net is a provider of cloud-based supply chain execution solutions with an exclusive focus on warehouse management systems (WMS). Made4Net's SCExpert suite offers a wide range of supply chain solutions, such as warehouse, labor, transportation, and yard management. Made4Net SCExpert's platform is made of a suite of product-related applications designed with a service-oriented architecture. The company offers a WMS, known as WarehouseExpert, as its core offering. Some of the key features and functionalities of WMS include items management, location management, receiving, put away, cycle counting, cross-docking, quality control, wave management, picking, staging, task management, replenishment, packing, loading, shipping, and inventory management. Some of the extended warehouse capabilities include appointment management, yard management, and labor management.

In 2023, Ingka Group acquired Made4net. IKEA, a part of Ingka Group, will implement Made4net's WMS and order fulfillment solutions to all its stores across geographies. The investments has helped Made4net to enhance its supply chain execution platform and expand its customer base across various industry verticals, especially in the retail sector.

Analyst Perspective

Following is the analysis of Made4net's capabilities in the Warehouse Management System (WMS) market:

- Made4net's SCExpert suite consists of a wide range of offerings, such as WarehouseExpert, RoutingExpert, DeliveryExpert, YardExpert, and BillingExpert. WarehouseExpert is natively integrated with enterprises such as SAP, Dynamics, NetSuite, and Sage.

- Made4Net's WMS platform can scale & cater to warehouses from L1 to L5 complexities and support seamless integration with multiple other warehouses to gain unified inventory visibility. The platform offers out-of-the-box features such as wireless & voice technology to automate the users' warehouses, RF barcoding, and data receiving.

- The WMS platform integrates with Autonomous Robots (AMR) through its native voice-driven warehouse control to enhance productivity, performance, TMS, YMS, proof of delivery, and ERP systems.

- The WMS platform also integrates with voice recognition systems, TMS, YMS, labor management systems, proof of delivery, and ERP systems to import/export data across various systems and enhance warehouse productivity. It offers integration with autonomous mobile robots (AMR) through its native warehouse control system.

- Made4net's LaborExpert helps organizations map warehouses, pre-define labor standards elements for labor calculations, and track KPIs, time & attendance for analyzing labor productivity.

- Made4net's differentiators include its services-oriented technology architecture, partner ecosystem, integration capabilities, code-free customization & configurations based on business rules, and visualization & analytics. The company offers a customer access portal to organizations to help them obtain inventory visibility. It also offers an API ecosystem that includes various configurable plugins to connect with in-house or third-party solutions seamlessly. Its screen generator helps organizations build application screens with related business logic using a code-less editor. The company's analytics and reporting feature provides organizations with real-time notifications & alerts regarding any warehouse event, enabling them to analyze performance and gain a unified view of ongoing tasks/ operations through its single intuitive dashboard. Made4net's WMS offers multi-language support as its customer base is across multiple countries. The company's year-on-year customer growth is notable compared to various vendors in the market. Made4net WMS tracks inventory on

an LPN level across all stages of inbound, internal transfers, adjustments, and outbound warehouse operations.

- Some of the use cases of Made4net's WMS include accessing business intelligence reports to view distribution KPIs, eliminating manual warehouse processes, supporting various picking options, assigning various product attributes based on customer requirements, providing seamless integration & visibility across multiple warehouses, supporting complex order fulfilment, and tracking of entire product journey within the warehouse over time.

- In terms of geographical presence, Made4net has a major presence in Europe, the Middle East, & Africa, and North America, followed by China and Latin America. Made4net's major industry verticals include retail & eCommerce, 3PL, food & beverages, manufacturing, household & CPG, wholesale distribution, and automotive.

- Some of the key improvement areas that Made4net might have to focus on are the updating of the user interface and provision of users access to existing inventory details upon receipt. The company is also facing challenges in expanding its market presence in Asia. However, Made4net is well-positioned to expand its market share in the global warehouse management market, owing to its sophisticated technology platform, comprehensive functional capabilities, seamless integration capabilities, a roadmap towards supply chain convergence, and strong customer value proposition.

- Made4net's long-term roadmap includes in area of technology upgrades with the implementation of AI-driven capabilities, and enhancements in WMS, TMS, and LMS offerings. Made4net has continued its development of SCExpert Supply Chain Execution Software. This enables redesigning action bars for a better user interface, providing single sign-in options across devices, introducing new label designers, improving inventory control capabilities, and enhancing voice-supported processes. Additionally, Made4net has expanded its integration capabilities to integrate with rate shopping and distributed order management modules. Furthermore, Made4net is investing in leveraging

emerging technologies such as AI, ML, and others to automate, streamline and optimize warehouse operations. Made4net's recent activities include development in the area of acquisition, alliance/partnerships, and customer acquisition.

- Customers preferred Made4net over its competitors due to their relationship with the vendor and Made4net's pricing structure followed by comprehensive technology features/functionalities.

Manhattan Associates

URL: https://www.manh.com/en-in

Founded in 1990 and headquartered in Atlanta, Georgia, USA, Manhattan is a provider of supply chain commerce solutions. The company, through the Manhattan Active® Platform technology, offers a suite of solutions, for supply chain, inventory, and omnichannel. The key features of Manhattan Active® Warehouse Management include labor management, slotting optimization, order streaming, integration capabilities, and employee engagement. Manhattan offers a wide range of extended warehouse management system (WMS) capabilities, such as wave & waveless fulfilment, resource planning, yard management, and parcel management.

Manhattan provides additional offerings for WMS, such as Manhattan SCALE built on the Microsoft technology stack and catering to SMB & 3PL companies; and Manhattan WMi, catering to IBM i-series customers.

Analyst Perspective

Following is the analysis of Manhattan Active Warehouse Management (WM) offerings in the Warehouse Management System (WMS) market:

- Manhattan Active Warehouse Management (WM) is a cloud-native, micro-service, multi-tenant, mobile-support, AI-based, and version-less WMS system that can upscale and downscale to help organizations adapt to any market change. Manhattan Active WM provides purpose-built capabilities for a wide range of industries to improve customer experience and provide unified warehouse management functionality. The inventory, omnichannel commerce, and supply chain solutions are built on the Manhattan Active Technology Platform.

- The Manhattan Active WM helps organizations obtain real-time inventory information from various sources, such as hand-held devices, voice recognition, and material handling equipment integration across the warehouse. It also

supports native appointment scheduling, dock door management, and yard management capability to enhance inventory visibility, order liability, and warehouse operation performance.

- Manhattan Active Labor Management leverages machine learning to re-optimize tasks and corresponding resources to help associates achieve targets efficiently. Additionally, it offers data-driven gamification, real-time digital communication, automatic recognition, and a reward program to enhance overall employee working performance and experience.

- Manhattan Active WM's slotting optimization capabilities help organizations automatically determine inventory allocation and optimize order fulfilment cycle time and warehouse operations. It enables organizations to configure workflows based on picking patterns and run the model for selecting suitable configurations in real-time.

- Manhattan Active WM's key differentiators include order streaming, employee engagement, and unified execution. Order streaming uses machine learning to manage both wave and waveless processes simultaneously, which helps distribution centers to accommodate any workflow in real-time. The company's seamless integration of its products with organization's systems for streamlining the data stands out in the market.

- Manhattan Active WM includes WES and further automates warehouse operations using the Manhattan Automation Network. The Manhattan Active WM seamlessly integrates with advanced material handling equipment such as sortation equipment, put wall systems, and automated storage & retrieval systems (AS/RS).

- The solution's unified distribution control tool offers real-time, comprehensive visibility into end-to-end warehouse operations through an intuitive, unified dashboard. It helps the organization gain a facility-level view of inbound status based on advanced shop notices, outbound status based on orders, and employee performance.

- Manhattan has a significant number of use cases for all its WMS offerings. The platform is scalable and can be extended to customers' unique requirements. Some use cases of include click-to-ship, warehouse gamification, workload planning, configurable warehouse operation, and advanced tracking.

- Geographically, Manhattan has a major presence in North America, followed by Europe and APAC. Manhattan's major industry verticals include grocery, food & beverages, manufacturing, medical & pharmaceutical, retail, 3PL, trucking, and wholesale.

- The company's strength lies in providing innovative cloud-native solutions, catering to a significant number of satisfied customers. This will ensure that all customers can leverage the end-to-end solutions from the vendor's offerings with ease. With a strong market share in North America, the company seeks to further expand its global presence. By strategically focusing on growth opportunities in other regions including Europe, Latin America, and Asia Pacific, the company aims to strengthen its position as a leading provider of cutting-edge solutions worldwide.

- Manhattan's product & technology roadmap includes the recently launched Manhattan's Unified supply chain planning and Manhattan Active Maven. Manhattan's Unified supply chain planning integrates demand planning, supply planning, and replenishment into a single platform. This platform can integrate with solutions such as OMS, WMS, and TMS, enabling coordination of inventory, labor, and transportation planning, thereby ensuring optimal visibility across the organization as a whole. Manhattan Active Maven, a Generative AI-powered solution, can help the Manhattan WMS by providing customer service capabilities. Maven's GenAI chatbot features streamline pre- and post-purchase interactions, enhance efficiency, and personalize customer experiences.

Mantis

URL: https://www.mantis.group/

Founded in 1996 and headquartered in Chalandri, Greece, Mantis is a provider of Logistics Vision Suite (LVS), a "self-serve" WMS/logistics platform. It is suitable for companies with sophisticated warehousing & distribution operations and automation. Mantis WMS is a fundamental warehouse management system that provides a comprehensive set of features such as Warehouse Management Systems, Supply Chain Management, Logistics, 3PL, Wholesales, Retail, Manufacturing, and e-commerce.

With additional capabilities like value-added services, kitting, light manufacturing, dock & gate management, logistics customer/partner service, parcel management, centralized control of local and remote warehouses, advanced slotting, labor management, inventory optimization, flexible 3PL billing, thorough traceability management, and strong warehouse analytics, LVS goes far beyond managing the warehouse. Through task interleaving, task optimization, slotting optimization, labor management, and inventory optimization, the platform's architecture and features enable the optimization of warehouse operations in real-time.

Analyst Perspective

Following is the analysis of Mantis' capabilities in the Warehouse Management System (WMS) market:

- Mantis' flagship WMS/logistics software suite, Logistics Vision Suite (LVS), is an integrated state-of-the-art collection of expanded Supply Chain Execution software tools.

- Mantis has integrated its LVS with flexible and affordable automations such as Voice Picking, Pick-to-Light, Put-Walls / Sort- to-Light, Smart Pick Carts, Smart Glasses, RFID, and so on, using advanced proprietary technology (WCS, Mobile App Servers, and so on) that significantly improves automations' overall

performance while reducing costs due to the elimination of any relevant 3rd party control software. In addition, the firm provides its own sophisticated (embedded in LVS) WCS for integrating with Automated Material Handling Systems (AMHS) such as Shuttles, Carousels, Mini- Loads, Mobile Selves & AGV-like robots, Sorters, Packing line systems, and so on. All of Mantis' unique technologies are intimately connected with its Warehouse Execution System (WES), which orchestrates manual and automated processes and employs innovative put-away, replenishment, pre-cubing, picking, and sorting techniques.

- Mantis has shown significant year-on-year growth especially in Europe, Middle East and Africa regions. Mantis WMS is suitable for mid to complex level warehouse operations and is suitable for all business segments. Mantis' Slot Master provides a unique inventory slotting vision that is offered through slotting as a service. Furthermore, Mantis offers automation as a service to cater to mid-market 3PL clients.

- Geographically, Mantis has a presence in Europe, followed by North America. From an industry vertical perspective, the company mainly caters to 3PL, e-commerce, manufacturing, retail, and distribution sector.

- Some of challenges faced by Mantis include its limited global presence, a smaller number of cloud deployments for WMS, lack of partner ecosystem. However, with its comprehensive functionalities, its recent go-to-market strategies, industry experience, the company is well positioned to expand its market share in the global WMS market.

- Mantis roadmap includes planned technical developments in areas such as platform architecture, usability, and advanced analytics. Mantis recent activities are in areas of customer acquisition, product enhancements, and building partner ecosystem.

Mecalux

URL: https://www.mecalux.com/

Founded in 1966, and headquartered in Barcelona, Spain, Mecalux is the leading provider of Warehouse logistics in storage systems market. Mecalux offers Easy WMS solution with multi-owner, multi-site and multi- language functionalities, which streamlines warehouse management. It controls, coordinates and manages all movements, processes and operations, multiplying profitability in all areas: receipt, storage, picking and dispatch of exit orders. The Mecalux WMS solution enables organizations to optimize the inventory fulfilment operations, drive operational efficiency, and reduce overhead costs.

The Mecalux Easy WMS offers native warehouse management capabilities, including receiving, put away, stock inquiry, inventory adjustment, replenishment, sales order picking, cycle counting, stock allocation, and analytics reporting & intuitive dashboards. Additionally, Mecalux WMS offers various pre-template for cold storage, third-party logistics, and retail operations. The platform offers a wide range of industry-specific add-on features that helps organizations perform various warehouse operations required according to end- user business needs. The platform includes features such as real-time multi-chamber temperature control for perishable goods, third-party billing, insight dashboards, configurations (for quickly on-boarding new customers, products, or services), and advanced picking (pick-to-parcel, wave picking, multi-order picking).

Analyst Perspective

Following is the analysis of Mecalux's capabilities in the Warehouse Management System (WMS) market:

- The Mecalux Easy WMS is an advanced comprehensive, scalable, and customizable warehousing solution that assists large and complex organizations in streamlining and optimizing the performance of their warehousing operations. Organizations can flexibly tailor their rules-based engine to automate the entire

warehouse process seamlessly. The platform assists organizations in managing multi-sites and multi-client within the same facility. The platform also provides a real-time intuitive analytics dashboard that helps organizations to measure & track labor productivity, inbound & outbound trends and performance, warehouse space, inventory levels, and stock movements. It also includes a generic interface engine that enables organizations to transfer data related to warehouses, as well as the ability to transfer data with third-party software, hardware, and web fronts.

- Mecalux provides real-time system-directed task management, which improves work efficiency and accuracy and assists businesses in achieving quantifiable results. The versatile rules-based engine of the Mecalux WMS enables enterprises to drive process automation across their warehouse operations. It enables enterprises to create their own automated processes, increasing warehouse efficiency, repeatability, and accuracy without affecting the results. To improve scalability and safety across the user's warehouse.

- The Mecalux Easy WMS platform allows integration with warehouse automation and robotics technologies. Automated storage and retrieval systems (ASRS) and pick-to-light benches, automated guided vehicles (AGV), autonomous mobile robots (AMR), and other technologies are among those included. The platform also enables Radio Frequency (RF) barcode scanning, allowing businesses to acquire real-time inventory visibility and improve picking accuracy by utilizing RFID tags.

- Geographically, Mecalux has a strong presence in European region, followed by Latin America and North America. From the industry vertical perspective, Mecalux has a presence across Automotive & Auto Parts, Chemical and Pharmaceutical, Retail, Food & Beverage, Industrial Manufacturing, Third Party Logistics (3PL), and Consumer Electronics.

- Some of key challenges faced by Mecalux include increased competition from both established and rising WMS suppliers. The company might have to focus on expanding its market presence in fast growing market namely North America

(especially USA) and Northern Europe Mecalux provides a wide range of WMS portfolios for various sectors, as well as solutions for SMBs to large businesses. However, Mecalux is well-positioned to expand its market share and customer base in the global WMS market due to its comprehensive functional capabilities, compelling customer references, cloud-native, mobile- native, and multi-site & multi-client capability, and the extensive company offering with high scalability.

- Mecalux recent activities are in areas of customer acquisition across various geographies and industry verticals, building partner ecosystem. Additionally, the company has enhanced warehouse automation market through launching autonomous mobile robots for warehouse optimization.

Microlistics

URL: https://www.microlistics.com/

Founded in 1994 and headquartered in Melbourne, Victoria, Australia, Microlistics, a part of the WiseTech Global group, is a provider of warehouse management solutions. Microlistics warehouse management system (WMS) includes modules for operations such as enterprise, express, cold storage, and third-party logistics. Microlistics integrates with WiseTech's supply chain execution platform CargoWise One to deliver end-to-end execution, control, and visibility of the supply chain. The Microlistics WMS solution enables organizations to optimize inventory fulfillment operations, drive operational efficiency, and reduce overhead costs. Microlistics provides six distinct warehouse management systems (WMS) solutions: enterprise, express, 3PL, chilled, expansion module, and retail. The Microlistics WMS offers native warehouse management capabilities, such as receiving, put-away, stock inquiry, inventory adjustment, replenishment, sales order picking, cycle counting, stock allocation, analytics reporting, and intuitive dashboards.

Analyst Perspective

Following is the analysis of Microlistics capabilities in the Warehouse Management System (WMS) market:

- Microlistics provides a single flexible WMS platform with out-of-the-box pre-templates for rapid deployment and custom configurations to cater to the most complex multi-client, multi-site operations. The integration between Microlistics WMS and CargoWise One's capabilities helps logistics providers to optimize warehouse operations, enhance warehouse productivity, and increase operational efficiency.

- Organizations can leverage the platform's capabilities by deploying it through the on-premise infrastructure or private Microlistics Cloud. Microlistics Express WMS comes with a pre-configured and pre-templated set of modules designed

for small & medium-sized businesses looking to quickly implement a warehouse, with the ability to scale up to Enterprise WMS.

- Microlistics' Enterprise WMS assists large and complex organizations in streamlining and optimizing the performance of their warehousing operations. Organizations can flexibly tailor their rules-based engine to automate the entire warehouse process seamlessly. The platform assists organizations in managing multi-sites and multi-clients from a single facility.

- The platform provides a real-time intuitive analytics dashboard that helps organizations to measure & track labor productivity, inbound & outbound trends and performance, warehouse space, inventory levels, and stock movements. It also includes a generic interface engine that enables organizations to transfer data related to warehouses with third-party software, hardware, and web fronts.

- The platform offers a wide range of industry-specific add-on features that helps organizations perform various warehouse operations according to end-users business needs. The platform includes features such as real-time multi-chamber temperature control for perishable goods, third-party billing, insight dashboards, cloneable configurations, and advanced picking (pick-to-parcel, wave picking, multi-order picking).

- Microlistics offers differentiating factors, such as real-time system-directed task management features that augment the task efficiency & accuracy and help organizations obtain measurable progress to the results. The Microlistics WMS's flexible rules-based engine enables organizations to drive process automation across their warehouse operations. It helps organizations build their automated processes and amplify warehouse efficiency, repeatability, & accuracy without any change in the outcomes. The Microlistics WMS platform supports integration with warehouse automation and robotics technologies to enhance the scalability and safety across the warehouses of various users. These technologies include automated storage & retrieval systems (ASRS) and pick-to-light benches, automated guided vehicles (AGV), and autonomous mobile robots (AMR). The platform also supports Radio Frequency (RF) barcode

scanning, allowing organizations to gain real-time inventory visibility and enhance the accuracy of picking operations using RFID tags or labels. It also supports various wearable technologies such as pick-by-voice and pick-by-vision, finger scanners, and portable printers.

- Some of the use cases of Microlistics warehouse management include providing visibility of inventory, supporting stock rotation, seamless integration & implementation services, managing inventory, optimizing warehouse operations, helping users gain access to real-time information on stock & orders, connecting online WebFronts to the WMS, restructuring of WMS, and supporting automated picking systems such as pick-to-light, automated cranes, multi-pick trolleys and warehouse robotics.

- From a geographical perspective, Microlistics has a presence in the Australia, Europe, Asia Pacific, and North American regions. Microlistics' major industry verticals include 3PL, retail, cold storage, food & beverages, FMCG, fashion & apparel, manufacturing & industrial, and pharmaceutical.

- The primary challenge for Microlistics is the increasing competition from relatively well-established as well as emerging WMS vendors. The company may face challenges in expanding beyond its current market presence and executing its market growth strategies to expand in the rapidly growing markets of North America and Europe. Microlistics offers a comprehensive range of WMS portfolios for various industries and solutions. The company needs to focus on effective growth and competitive strategies to overcome its challenges. However, with its comprehensive functional capabilities, compelling customer reference, cloud-native, mobile-native, multi-site, & multi-client capabilities, and extensive company offerings with high scalability, Microlistics is well-positioned to expand its market share and customer base in the global WMS market.

- Microlistics' technology roadmap focuses on enhancing its Warehouse Management System (WMS) capabilities through advanced features and integrations. Key developments include the deployment of flexible, rules-based

engines that allow for process automation within warehouses, and the introduction of analytics dashboards for improved operational insights.

Oracle

URL: https://www.oracle.com/

Founded in 1977 and headquartered in Austin, Texas, USA, Oracle is a global provider of cloud-based solutions for enterprises. Oracle offers end-to-end products & services to the supply chain industry through its Oracle Fusion Cloud Supply Chain Management (SCM) & Manufacturing suite. The suite offers a range of solutions for Logistics, such as logistics network modelling, warehouse management, transportation management, transportation operational planning, fleet management, global trade management, and intelligent technologies. Some key features and functionalities of Oracle warehouse management include resource management, task management, inbound/outbound processing, inventory management, facility management, reverse logistics, warehouse configuration, container & license plate management, multi-device support, and visualization & integration capabilities. Some value-added services of Oracle's WMS include kitting, de-kitting, customer compliance labelling, and mixed-mode manufacturing.

Analyst Perspective

Following is the analysis of Oracle's capabilities in the Warehouse Management System (WMS) market:

- Oracle offers an innovative, configurable, and robust WMS platform. The platform leverages its analytics and machine learning capabilities to automate inventory fulfilment operations, optimize inventory costs, and deliver a tailored user experience. The platform is competent to deliver increased operational efficiency by providing comprehensive real-time visibility into the inventory and supply chain operations. With its cloud-native approach, the company enables organizations to implement the platform without any IT involvement rapidly. This allows the organizations to quickly leverage logistics & integration capabilities and gain a competitive edge.

- The Oracle warehouse workforce management capability assists organizations in establishing material handling objectives for warehouse tasks, value-added services, and manual activities. It also reduces labor inefficiencies, optimizes manufacturing performance, and improves accuracy by providing unified visibility into workforce operations.

- The platform also offers real-time reporting and analytics tools that help organizations gain actionable valuable insights. The platform enables organizations to create, edit, and build customizable analytical dashboards based on business requirements.

- Oracle warehouse management system differentiates itself by offering advanced picking methodologies, supporting paper-based & automated environments, and seamless integration with internal & external systems. The company's value-added services, such as order assembly postponement, resource management, task management, and cross-docking, help organizations optimize order fulfilment effectively.

- Some of the use cases of Oracle Warehouse Management include implementation & integration with various internal & external systems, training on inventory management, efficient order fulfilment, support for work from anywhere using the warehouse operations management functionalities in the cloud, digital transformation, automation of warehouse activities, optimized scheduling & organizing warehouse operations, and effective inventory management from in-depth visualization & traceability.

- Oracle has a global footprint in terms of geographical presence, although it primarily serves customers in North America and Latin America, followed by EMEA. The company also has a fair presence in Asia Pacific. Oracle's major industry verticals include retail, consumer goods, 3PL, life science, automotive, professional services, and manufacturing.

- The primary challenges of Oracle include the growing competition from emerging vendors with innovative technology offerings. These vendors have

successfully gained a strong market position with increased penetration amongst small to mid-market organizations and are among the primary targets for mergers and acquisitions. However, with its strong customer value proposition, comprehensive vision & roadmap, and sophisticated technology platform, Oracle is well-positioned to maintain and grow its market share with continued success amongst large enterprise segments.

- Oracle's technology roadmap includes recent updates that support the Outbound logistics module and Inventory operations module. Oracle WMS has added new features to its Outbound logistics modules, including the ability to modify quantities for order lines in allocated or partially allocated statuses and support for integrating WMS with third-party logistics using a RESTful API. Additionally, the Inventory Operations modules now offer features such as label and document print management, improved task interleaving to release picks dependent on replenishment, and the ability to allocate and pick specific serial numbers for orders.

Reply

URL: https://www.reply.com/

Founded in 1996 and headquartered in Turin, Italy, Reply offers solutions for digital services, technology, and consulting with specialization in supply chain execution, digital experience, digital workplace, digital transformation, and other services. Reply offers both software and services for effective warehouse management through LEA Reply and Click Reply. The key features and functionalities of the warehouse management system are receiving, put-away, packing, inventory management, order planning & fulfilment, multi-device support, yard management, labor management, warehouse performance, warehouse billing, and visualization & integration capabilities.

LEA Reply, the cloud-native digital platform, offers solutions for specific business needs in the supply chain execution, visibility, and collaboration areas. Click Reply is the warehouse execution suite, provided on-premise or cloud-hosted, that ensures effective operations and control of supply chain execution processes for distribution warehouses and production plants.

Analyst Perspective

Following is the analysis of Reply's capabilities in the Warehouse Management System (WMS) market:

- Reply specializes in the design and implementation of technological solutions. It has a strong WMS customer base due to its customized WMS solutions for various industry verticals. The company's Click Reply and LEA Reply warehouse management solutions offer native capabilities to manage and automate end-to-end warehouse operations seamlessly.

- Click and LEA Reply WMS provide organizations with unified inventory and inbound shipment visibility to optimize inbound operations seamlessly. They also provide organizations with real-time control of automated processes and assist in managing various inventory operations such as sorting, labelling, quality

control, put-away, flow-through, and out-of-stock situations. The outbound functionality enables organizations to manage automated outbound warehouse operations such as replenishment, picking (bulk-picking, zone, and lot/batch picking), packing, and sorting.

- Some of the key differentiators of Reply in warehouse management include its microservices-based innovative multitenant cloud platform, customized offerings based on industry verticals and warehouse complexities, end-to-end warehouse offerings, seamless data migration & integration with internal & external systems, space management, and an extensive support team in the European region.

- Some use cases for the development & implementation of industry-specific WMS are supporting advanced worldwide distribution activities, supporting the management of the resources requested by the business line, handling distribution, warehouse processes, & reverse logistics processes, supporting the use of Wi-Fi terminals, automating warehouses, use of barcode or RFID technology, and seamless exchanging of all WMS related information flows between trading partners.

- Geographically, Reply has a major presence in Europe. The company has a fair presence in North America & Latin America and a minute presence in Asia Pacific, Middle East & Africa. Reply's major industry verticals include automotive, high tech, 3PL, retail & e-commerce, fashion, telecommunication, food & beverage, and pharmaceutical & chemical.

- Some of the key challenges of Reply are growing competition from well-established ERP, supply chain management, and business application vendors. These companies are increasingly broadening solution offerings by developing in-house capabilities, developing partnerships, and focusing on supply chain execution convergence. The percentage of the company's WMS revenue compared to its overall revenue is considerably less. However, with its strong market presence, extensive partner ecosystem, and robust technology platform, Reply is well-positioned to expand its market share in the global WMS market.

- Reply's roadmap focuses on developing business strategies for delivering supply chain execution convergence beyond WMS. The company is focusing on expanding the functionalities of the LEA Reply, using generative AI and machine learning, to enhance supply chain visibility and decision-making. The company is strengthening user experience, providing advanced analysis tools, and real-time interaction through radio-frequency terminals or voice recognition.

SAP

URL: https://www.sap.com/india/index.html

Founded in 1972 and headquartered in Walldorf, Germany, SAP is a provider of enterprise software solutions with specialization in ERP, financials, business intelligence, procurement, human resource management (HCM), supply chain management (SCM), business, planning, efficiency, sustainability, innovation, analytics, reporting, and dashboarding. The company offers a warehouse management system titled SAP Extended Warehouse Management (EWM) as a part of its supply chain management offering. The WMS solution offers capabilities including inbound delivery processing, outbound processing, architecture and communication, transfer and inventory management, customer returns processing, quality management, and transportation cross-docking.

Analyst Perspective

Following is the analysis of SAP's capabilities in the Warehouse Management System (WMS) market:

- SAP's EWM solution provides comprehensive visibility into the order fulfilment processes to enable organizations to seamlessly manage and optimize end-to-end warehouse operations. The company helps organizations to minimize labor and inventory costs and drive operational efficiency with best-in-class technology integration such as programable logic controllers (PLCs), pick-by-voice, and radio frequency identification (RFID). Organizations are leveraging the SAP EWM for enhancing resource utilization and allocation as well as streamlining and standardizing warehouse operations, with transparent & accurate inventory, adaptive resource management, and flexible, scalable system & process configuration. SAP offers flexible deployment options such as on-premises or SAP HANA private cloud, offered as a part of a stand-alone module or supply chain execution platform.

- SAP EWM offers inbound delivery processing capability which allows organizations to create and process inbound deliveries and also post goods movements. It supports data receiving and validation for advanced shipping notifications. This capability directs the receipt from production, determines put away and put away bin, manages returns for eCommerce, handles the transportation unit and other such activities.

- SAP EWM offers an outbound processing capability that generates outbound deliveries based on the confirmed schedule lines in the sales order. It leverages the outbound deliveries to execute logistical processes in the warehouse. This capability performs various functions such as route determination in deliveries, wave management, picking, packing, and staging, creation of warehouse orders, loading and issuing goods, kitting to order, direct outbound delivery, production staging and consumption, shipping, work assignment, production supply, reduction of order quantities, cross-delivery handling units and more. The architecture and communication feature provides an understanding into the communication of ERP systems with the EWM system. It gives information on various tools leveraged to monitor the data transfer amongst the systems.

- SAP gives organizations a competitive edge by automating and orchestrating end-to-end warehouse processes (from inbound to outbound) with the use of complete warehouse and material flow systems modelling. EWM's ability to offer industry-specific and cross-industry functionality enhanced with robust analytics and technologies empowers organizations to meet the changing customer demands. The solution delivers complete process transparency by leveraging extensive reporting, alerting, and management tools along with a native labor-management component. SAP EWM caters to various use cases including delivering consistent employee experience across all locations, optimizing operations and empowering people with unified data, standardizing global processes, and improving supply chain agility.

- SAP may face growing competition from WMS vendors offering innovative product offerings and significantly expanding across geographical regions.

However, with its strong customer ownership experience, comprehensive functional capabilities, and comprehensive roadmap and vision, SAP is well-positioned to expand its market share in the global WMS market.

- In terms of geographical presence, SAP has a presence in the Americas, Europe, the Middle East & Africa, and the Asia Pacific region. From an industry vertical perspective, the company has a customer base in energy & natural resources, financial services, consumer industries, discrete industries, service sector, and public services.
- SAP's roadmap focuses on enhancing technological capabilities in the WMS space through continues R&D investments, expanding its market share across geographies through unique sales strategies.

Softeon

URL: https://www.softeon.com/

Founded in 1999 and headquartered in Reston, Virginia, USA, Softeon is a provider of cloud-based supply chain execution solutions catering to large enterprises. Softeon is one of the few vendors exclusively focusing on the Warehouse Management System (WMS) market. Softeon offers solutions for warehouse management, warehouse execution, warehouse automation, direct store delivery, and distributed order management. Softeon's WMS basic capabilities include receiving, inventory management, order picking & packing, putaway, loading, cycle counting, and shipping. Some of the add-on modules offered by the company include resource management, yard management, slotting optimization, assembly & kitting, 3PL billing, transportation management, and integration capabilities.

In 2023, Softeon acquired GetUsROI LLC and AttunedLabs. GetUsROI LLC is a technology & implementation firm, and AttunedLabs is its software development subsidiary. The acquisition will help Softeon to effectively utilize low-code tools for integration & orchestration of MHS & mobile robots and improve analytics & user interface.

Analyst Perspective

Following is the analysis of Softeon's capabilities in the Warehouse Management System (WMS) market:

- Softeon provides end-to-end solutions for basic & advanced warehouse-associated operations. Softeon utilizes technologies for voice, robotic pick-to-cart, and put walls.

- The platform helps organizations gain real-time warehouse inventory visibility through an intuitive dashboard. Users can leverage the dashboard to quickly resolve bottlenecks, optimize resources, and improve warehouses' operational productivity with timely alerts & notifications. The platform provides graphical

tools for designing warehouse layouts and mapping these layouts for pick route optimization.

- Softeon's WMS platform offers an inventory control capability that helps organizations gain real-time unified inventory visibility across the channels. The platform supports RFID and barcode scanning in real-time.

- Softeon's WMS outbound capabilities help organizations streamline and standardize various outbound activities, such as picking and packing. The platform also provides efficient grouping & consolidating and advanced cartonization & palletization for bulk orders.

- Softeon offers a fully integrated, cloud offering of both WMS/WES and DOM. Softeon's customized solutions with extensive WMS capabilities, unique configuration wizard, and fixed-price deployments stand out in the market. Softeon distinguish itself by offering industry specific capabilities for healthcare sector including DSCSA compliance, and advanced inventory tracking. Softeon WMS solution's key differentiators include quick order fulfilment, real-time warehouse visibility, resource & inventory optimization, efficient labor management & space utilization, and seamless event execution.

- Softeon offers advanced picking methodologies that enable organizations to configure picking operations by incorporating attributes such as pick-by-label, cluster picking, batch picking, batch-zone picking, and pick-and-pass. The platform also provides integrated parcel manifesting and voice-picking services.

- Some of the challenges faced by Softeon include its major focus on the Americas region, and competition from vendors expanding to the North American region. However, with its industry-leading functional capabilities, robust supply chain convergence strategy, ongoing product demonstration, ease of use, and comprehensive roadmap & vision, Softeon is well-positioned to expand its market share in the global WMS market.

- Some of the use cases of Softeon warehouse management include migration from paper-based warehouse operations to advanced, automated, voice-based

warehouse operations, real-time view of inventory across the network, seamless & enhanced record keeping of all warehouse activities, implementation of WMS with minimum disruptions, product slotting & travel path optimization, and enabling voice picking for piece pick & case pick.

- Geographically, Softeon has a major presence in North America, especially the USA. Softeon has a minute presence in Europe, Latin America, and Asia. Softeon's major industry verticals include logistics & transportation, 3PL, healthcare & life science, food & beverages, retail & eCommerce, household & CPG, electric & electronics, manufacturing, and automotive.

- Softeon's technology roadmap includes its recent updates in WMS offerings such as a new user interface, enhanced onboarding, multi-user customization, integration with automation tools, and improved picker efficiency with task interleaving. These updates are mainly industry verticals such as 3PL, healthcare, and food & beverages. The company is focusing on offering its WES as a stand-alone module that can be added to any existing WMS system. Additionally, Softeon is further improving its 'Innovation Lab' to help its team enhance the platform's capabilities by extensively focusing on R&D and automating features within its WMS and WES suite.

- Softeon continues to invest in enhancing its products and expanding its industry vertical reach. Softeon's WMS helps to solve warehouses' mid-level to high-level complexities that is suitable for large & enterprise clients. Softeon is one of the few vendors catering to the healthcare & life sciences industry vertical by offering industry-specific solutions. Customers prefer Softeon over its competitors due to the company's comprehensive technology offerings and pricing structure.

SSI Schaefer

URL: https://www.ssi-schaefer.com/en-us

Founded in 1937 and headquartered in North Carolina, USA, SSI Schaefer is a provider of modular warehousing and logistics solutions for innovative industry-specific solutions. The company offers Customer-specific aftersales services and maintenance for all warehouse and material flow management processes. SSI Schaefer offers native capabilities including conveying and picking, material handling, storage and retrieval machines, warehouse shuttles, automated guided vehicles, boxes, containers, racking & shelving, and warehouse automation.

In 2023, the company acquired DS Automation to enhance its material handling automation integration. The company has restructured to form SSI Schaefer Software Development focusing on WAMAS WMS that can be offered as standalone product from material handling systems.

Analyst Perspective

Following is the analysis of SSI Schaefer's capabilities in the Warehouse Management System (WMS) market:

- The SSI Schaefer's Enterprise Solution business produces and maintains logistics management technologies for storage, transportation, and enterprise resource management.
- SSI Schaefer enterprise solutions include the development of the whole supply chain operation, including end-to-end logistical operations and sales channels. This comprises cross-channel logistics planning, scheduling, and administration as part of a flexible warehouse management system.
- The solution's conveying and picking capabilities enable organizations to manage goods receipt against PO or ASN, barcoding, labelling, goods disposition, quality control & compliance, cross-docking, and returns. Organizations can use putaway to control system-directed putaway, user-

directed putaway, stock replenishments, and cross-dock putaway. Organizations can also use company solutions to optimize picking strategies (batch, bulk, case/pallet, waveless picking) and organize orders for packing stations, labelling, and palletization.

- With the material handling, storage and retrieval machines, warehouse shuttles, automated guided vehicles, boxes, containers, totes, racking & shelving, and warehouse automation capability allows organization to provide warehouse associates with better visibility, control and, ultimately, allow them to fully automate supply chain processes from order to distribution and shipping. SSI Schaefer aids organization to help managers plan and automate daily routines across the warehouse, keep and locate inventory, manage staff operations and create unique workflows.

- SSI Schaefer's analytics and reporting capability help organizations to capture the fulfilment and inventory data such as order count, fill rate, backorders, and mis-ships in order to benchmark as well as monitor operational performance. This capability facilitates organizations to create and customize comprehensive reports and enables the setting of automated alerts and notifications regarding various business aspects such as performance, sales, inventory, finances, processes, and more.

- The key technological differentiators of the solutions, such as end-to-end warehouse management and monitoring, company-wide inventory visibility and automated tracking, and a common platform that includes a single repository of orders and inventory across all warehouses and stores, assist organizations in meeting the surging demands during peak seasons, promotion, and new product launches.

- From a geographical presence perspective, SSI Schaefer has a strong presence in the European region and a fair presence in other regions. From an industry vertical perspective, the company has a presence in the retail, manufacturing, logistics, and e-commerce sectors.

- SSI Schaefer may encounter competition from WMS vendors with a strong market presence in many geographical areas. SSI Schaefer, on the other hand, is well-positioned to enhance its market share in the worldwide WMS market due to its large supply chain product range and complete functional capabilities.
- SSI Schaefer roadmap includes investment towards product portfolio enhancements, and technology enhancements of Supply Brain for predictive models.

Synergy Logistics

URL: https://www.snapfulfil.com/

Founded in 1972 and headquartered in Castle Donington, Derbyshire, UK, Synergy Logistics is a provider of cloud-based warehouse management systems (WMS), majorly catering to the SMB segment. Synergy Logistics offers its solutions as SnapFulfil, SnapControl, and SnapData.

The key features and functionalities of SnapFulfil WMS include inventory management, order fulfilment, lot/batch/serial control, shipping management, dynamic replenishment, yard & load management, labor management, 3PL billing, parcel management, integration, and reporting. SnapControl, a multiagent orchestration platform, controls, prioritizes, & optimizes the tasks of associates, devices, and robots.

SnapData is an analytics & reporting solution that provides a unified view of inventory resources, operational metrics, and KPIs through customized dashboards & reports, enhancing the user experience and helping in data-driven decision-making.

Analyst Perspective

Following is the analysis of Synergy Logistics' capabilities in the Warehouse Management System (WMS) market:

- Synergy Logistics' ability to execute at the scale and breadth of WMS vision helps the company to deliver value to its clients, enabling adaptation to changing business needs. Synergy Logistics' WMS solution can manage & support complex multi-site rollouts and business processes. The WMS solution helps organizations enhance space & resource usage, streamline returns handling, pick the shortest travel distances, and improve customer service. The native rules engine enables organizations to act instantly on business changes through

better management of warehouse-related workflows and other business processes.

- The solution includes yard and load management tools that empower organizations to handle the processes efficiently and effectively. It also enables users to manage trailer schedules to increase throughput. SnapFulfil also offers a customer returns station as an add-on module for organizations to manage returns with or without an RMA (returns material authorization) code.

- Synergy Logistics differentiates itself through its configurable and flexible WMS solution. The company's product SnapControl is device agnostic offering a unified approach to automation by streamlining the tasks. Its SnapBuddy solution offers training & implementation support for seamless customization & configuration as per business and industry needs. Additionally, the company is expanding its geographical presence through customer acquisitions indicating its product's assurance, industry experience, and value-added services offered to the market.

- Some use cases of Synergy Logistics' WMS include improvement of inventory management & warehouse operations, increasing warehouse productivity, remote implementations, and optimizing inventory, space, & resources within the fulfilment center.

- In terms of geographical presence, Synergy Logistics is majorly present in Europe and North America. The company has a fair presence in the Asia Pacific, the Middle East, and Africa. Synergy Logistics' major industry verticals include retail & eCommerce, 3PL, wholesale distribution, household & CPG, healthcare & life science, manufacturing, food & beverages, and electronics & electricals.

- Synergy Logistics' primary challenges are due to its major focus on SMBs. The company might have to focus on expanding its market segment. The company's self-implementation tools might not suit customers with complex warehouse operations. Referenced customers suggested on enhancing the training provided during pre/post-implementation, and offering more control/options for

end-users creating/altering reports. However, with its growing year-on-year double digits revenue, significant investments towards R&D, continuous product enhancements, and notable year-on-year customer growth, the company is well-positioned to expand its market share in the global WMS market.

- Synergy Logistics' technology roadmap includes its recent enhancements in self-service dashboards, SnapControl MAO, report designer, document designer, email designer, UI/UX, and cartonization. Additionally, the company's roadmap is focusing on providing marketplace integration through third-party partnerships, new carrier updates, webUI changes, interleave replenishment picking, ship-to-bin by-ship method, STU within STU, reprocessing some interfaces, and additional SnapControl integrations. The company is focusing on expanding its geographical presence to Asia Pacific regions. The company is continuously involved in expanding its technology offerings and customer acquisitions.

- Referenced customers preferred Synergy Logistics over its competitors due to its pricing structure, existing relationship with the vendor, and competitive offerings.

Tecsys

URL: https://www.tecsys.com/

Founded in 1983 and headquartered in Montreal, Canada, Tecsys is a supply chain platform provider. Tecsys offers an SCM Elite platform for various segments such as enterprise, healthcare, pharmacy distribution, complex distribution, 3PL and Omni Retail. It provides unique warehouse management solutions for enterprise, healthcare, and complex distribution customers. The key features and functionalities of its warehouse management system include task optimization, picking, voice recognition, slotting, recall management, batch management, sampling, inbound/outbound auditing, inventory management, labor management, operational intelligence with analytics & visualization, and integration capabilities with strategic partners.

Analyst Perspective

Following is the analysis of Tecsys' capabilities in the Warehouse Management System (WMS) market:

- Tecsys offers an extensible WMS solution catering to warehousing operations with low to high complexities. The company also offers industry-specific and customer-specific solutions to serve its clients' business requirements best. Elite warehouse management system (WMS) offers integration with transportation management systems (TMS), delivery management, distribution, ERP, billing, multicarrier routing, labelling & manifesting, and event tracking tools & solutions. It also enables 3PL teams to manage billing and achieve market trends through supply chain convergence. The platform also offers value-added services such as special productions, kitting, and custom labelling.

- The Tecsys Elite WMS offers an embedded TMS capability that helps organizations have unified inventory visibility across their supply chain network. This capability optimizes warehouse inventory management, improves inventory

distribution movement, reduces transportation time & costs, and improves supplies & customer service.

- Elite analytics provides complete operational intelligence with visibility on resources, inventory, and warehouse operations, in real-time, by analyzing data from various sources to make data-driven decisions. It helps organizations measure & track labor performance, generate warehouse operations reports, and set performance metrics and KPIs.

- Tecsys' differentiating factors include its Visual Logistics application, automation for manual processes, business analytics processes, customer service support, seamless API integration, bi-directional scalability, and configurable workflows. The company also differentiates itself in the healthcare domain with its numerous partnerships, specialized capabilities, exhaustive industry knowledge, security & compliance (DSCSA and 340B) with new & old guidelines, and wide scope for configuration & customization via its low-code application platform (LCAP) capabilities, Itopia platform.

- Some of the use cases of Tecsys warehouse management include automating the inventory tracking process, seamless integration with internal & external systems, use of analytics for cart optimization, handling multiple units of measures for a given item, intuitive point of use system, supporting multiple picking methods, and implementation of demand forecasting to anticipate customer requirements for the healthcare industry.

- In terms of geographical presence, Tecsys has a significant presence in North America, followed by Europe. The company has a fair presence in Latin America and Asia. Tecsys' major industry verticals include healthcare, distribution, 3PL, pharmacy, and retail & eCommerce.

- Some of the key challenges Tecsys faces include competition from well-established vendors and emerging vendors with a local/global presence. The company might also have to focus on expanding to various industry verticals. However, with its strong financial balance sheet, comprehensive functional

capabilities, compelling customer references, cloud-native & mobile-native flexible deployment options, and extensive company offering with high scalability, Tecsys Elite WMS is well-positioned to expand its market share and customer base in the growing, global WMS market.

- Tecsys' technology roadmap includes further development to strengthen its offerings for the healthcare sector with its Elite™ WMS and Elite™ Healthcare platform, which serve as core technologies. The company has introduced a new hospital receiving capability that integrates supply chain operations from the receiving dock to the point of care. This system supports a wide range of healthcare supply chain activities, including nursing, perioperative operations, pharmacy, medical/surgical distribution, and outpatient inventory management. Additionally, Tecsys collaborates with industry partners to help health systems address their complete supply chain needs. Tecsys' complex distribution plans include partnering with leading automation providers, supporting advanced analytics for visibility and control, along with the use of AI driven optimization algorithms and intelligent decision-making support.

Vinculum

URL: https://www.vinculumgroup.com/

Founded in 2007 and headquartered in Noida, India, Vinculum is a provider of unified, mobile-native, and cloud-based supply chain solutions focusing on warehouse operations. Vinculum, through Vin eRetail, Vin Lister, and Vin Reco, offers supply chain warehousing, supply chain execution, and warehouse shipping solutions, majorly catering to large market segments. Vinculum supports all B2B, B2C, and D2C operations in both online & offline marketplaces, from warehouses to micro-fulfillment centers.

The company's Vin eRetail offers warehouse management, order management, and product information management capabilities. Some key features and functionalities of Vinculum's warehouse management system are master data management, inbound & outbound processing, inventory management, serial number tracking, mobile-device support, multi-language support, and integration capabilities. The company's Warehouse Management System (WMS) extended capabilities include BOM / kitting, repacking, grading, stock transfer orders (STO), transhipment, USN management, and IMEI management. Furthermore, for quick commerce support (dark stores), the company offers functions and features related to auto picklist, assignment of hyperlocal 3PL, end-to-end mobile ops, picker assignment, and integration with 3rd party mobile apps.

Analyst Perspective

Following is the analysis of Vinculum's capabilities in the Warehouse Management System (WMS) market:

- Vinculum is one of the few vendors to address multichannel/omnichannel commerce & fulfilment on a single platform, with strong offerings in logistics, DOM, store operations, and high-volume & high-velocity eCommerce fulfilment. Vinculum's integrated core WMS functionalities enable brands & retailers to design & optimize their omnichannel fulfilment strategy and accommodate evolving business & customer needs.

- Vinculum offers a WMS mobile application that allows users to manage warehouse operations remotely. This mobile application enables associates to remotely access control to track & view inventory status and efficiently address any issues throughout the warehouse operation.

- Integrated inventory serialization capability provides the inventory with a unique serial code to help organizations track the inventory. The capability helps an organization to manage and optimize warehouse operations at each stage seamlessly. Inventory management also helps to scan and record each transaction. Additionally, it automates the cycle count process to track and identify inventory differences.

- Analytics and visualization capability provide real-time inventory view across the entire supply chain. It enables organizations to set custom alerts & updates and offers various standard & MIS reports regularly.

- Vinculum Vin eRetail differentiates itself by offering WMS with pre-integrated marketplaces, social media channels, frontend solutions, and third-party logistics (3PLs) globally, helping customers expand onto eCommerce channels. Vin eRetail is an open platform deployed on the AWS cloud, ensuring scalability and availability. Vinculum leverages AI to maintain inventory accuracy, routing orders to the best location/warehouse, and 3PL identification.

- Vinculum leverages emerging technologies such as AI/ML in areas including inventory management, 3PL identification, predictive analytics, dynamic slotting, and demand forecasting.

- The company has partnered with various technology partners for enhanced pick list optimization, e-invoicing, e-WayBilling, labor management, slot optimization, compliance, last mile logistics, transportation management systems, and robotics & automation. Additionally, it offers out-of-the-box integration with various e-commerce platforms, marketplaces, 3PL providers, ERPs, accounting software, and store POS.

- Some of the use cases of Vinculum's warehouse management include in areas such as e-commerce fulfilment, 3PL warehousing, multi-channel retailing, order fulfilment, returns processing, inventory management, MIS reports, and marketplace fulfilment. It also supports omnichannel enablement and hyperlocal fulfilment use cases.

- Geographically, Vinculum has a significantly major presence in India, followed by the Middle East, and Southeast Asia. Vinculum's major industry verticals include retail & eCommerce, 3PL, household & CPG, electronics & electricals, food & beverage, healthcare & life science, automotive, and manufacturing. Some major sub-categories catered by Vinculum's customers are fashion, healthcare & beauty, baby products, FMCG, and footwear.

- Some of the key areas of improvement suggested by referred customers include enhancements in UI/UX, incorporating quick response & resolution time, and support for industry-specific customizations such as support for multiple batch billing.

- Some of the key challenges Vinculum faces are competition from relatively well-established as well as emerging WMS vendors. The company faces challenges in expanding to rapidly growing markets of North America and Europe. However, with the company's comprehensive functional capabilities, comprehensive roadmap & vision, cloud-native, mobile-native, multitenant platform, and extensive company offerings with high scalability, Vinculum is well-positioned to expand its market share and customer base in the global WMS market.

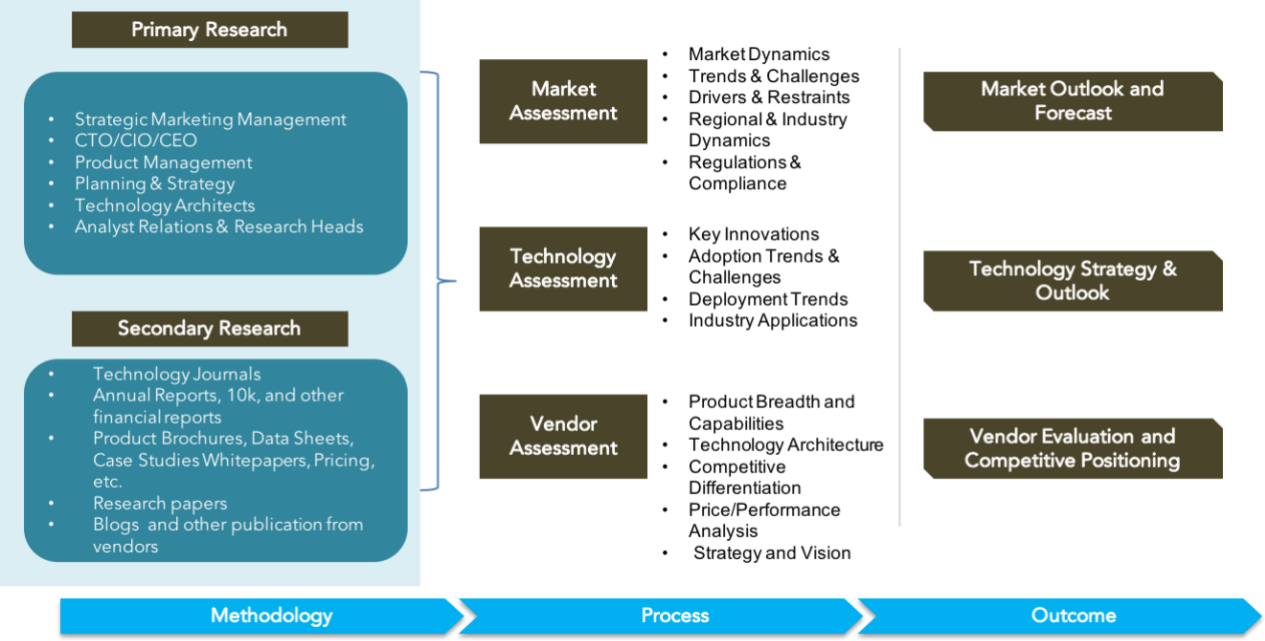
- Vinculum's technology roadmap includes focusing on its recent enhancements in areas of B2B, D2C, quick commerce, integrations, and reporting capabilities. Vinculum's strategic roadmap includes integration with WCS & WES, catering to B2B marketplace operations. Additionally, the company roadmap includes automation & rules engine, management of Non-Delivered Shipments (NDS), WMS (reallocation at picking, cycle count task automation, and video tracking).

- Referenced customers preferred Vinculum due to its flexible pricing structure, comprehensive technology features, and pricing strategies, followed by existing vendor relationships and a strong partnership ecosystem.

- Vinculum with its agile platform, extensive integration capabilities, caters majorly to mid and large business segments having strong hold on retail & e-commerce, CPG, and 3PL sectors. Vinculum has shown significant improvement in customer growth as well as steady year-on-year revenue growth. Furthermore, it has dedicated a considerable percentage of revenue to R&D. Vinculum through its unique combination of offerings and proven market expansion (Middle East) continues to be competitive in global WMS market.

Research Methodologies

Quadrant Knowledge Solutions uses a comprehensive approach to conduct global market outlook research for various technologies. Quadrant's research approach provides our analysts with the most effective framework to identify market and technology trends and helps in formulating meaningful growth strategies for our clients. All the sections of our research report are prepared with a considerable amount of time and thought process before moving on to the next step. Following is a brief description of the major sections of our research methodologies.



Secondary Research

Following are the major sources of information for conducting secondary research:

Quadrant's Internal Database

Quadrant Knowledge Solutions maintains a proprietary database in several technology marketplaces. This database provides our analysts with an adequate foundation to kick-start the research project. This database includes information from the following sources:

- Annual reports and other financial reports
- Industry participant lists
- Published secondary data on companies and their products

- Database of market sizes and forecast data for different market segments
- Major market and technology trends

Literature Research

Quadrant Knowledge Solutions leverages several magazine subscriptions and other publications that cover a wide range of subjects related to technology research. We also use the extensive library of directories and Journals on various technology domains. Our analysts use blog posts, whitepapers, case studies, and other literature published by major technology vendors, online experts, and industry news publications.

Inputs from Industry Participants

Quadrant analysts collect relevant documents such as whitepapers, brochures, case studies, price lists, datasheets, and other reports from all major industry participants.

Primary Research

Quadrant analysts use a two-step process for conducting primary research that helps us in capturing meaningful and accurate market information. Below is the two-step process of our primary research:

Market Estimation: Based on the top-down and bottom-up approach, our analyst analyses all industry participants to estimate their business in the technology market for various market segments. We also seek information and verification of client business performance as part of our primary research interviews or through a detailed market questionnaire. The Quadrant research team conducts a detailed analysis of the comments and inputs provided by the industry participants.

Client Interview: The Quadrant analyst team conducts a detailed telephonic interview of all major industry participants to get their perspectives on the current and future market dynamics. Our analyst also gets their first-hand experience with the vendor's product demo to understand their technology capabilities, user experience, product features, and other aspects. Based on the requirements, Quadrant analysts interview more than one person from each of the market participants to verify the accuracy of the information provided. We typically engage with client personnel in one of the following functions:

- Strategic Marketing Management
- Product Management
- Product Planning
- Planning & Strategy

Feedback from Channel Partners and End Users

Quadrant research team research with various sales channel partners, including distributors, system integrators, and consultants, to understand the detailed perspective of the market. Our analysts also get feedback from end-users from multiple industries and geographical regions to understand key issues, technology trends, and supplier capabilities in the technology market.

Data Analysis: Market Forecast & Competition Analysis

Quadrant's analysts' team gathers all the necessary information from secondary research and primary research into a computer database. These databases are then analyzed, verified, and cross-tabulated in numerous ways to get the right picture of the overall market and its segments. After analyzing all the market data, industry trends, market trends, technology trends, and key issues, we prepare preliminary market forecasts. This preliminary market forecast is tested against several market scenarios and the economically most accurate forecast scenario for the overall market and its segments.

In addition to market forecasts, our team conducts a detailed review of industry participants to prepare a competitive landscape and market positioning analysis for the overall market as well as for various market segments.

SPARK Matrix:
Strategic Performance Assessment and Ranking

Quadrant Knowledge Solutions' SPARK Matrix provides a snapshot of the market positioning of the key market participants. SPARK Matrix representation provides a visual representation of market participants and provides strategic insights on how each supplier ranks in comparison to their competitors, concerning various performance parameters based on the category of technology excellence and customer impact.

Final Report Preparation

After the finalization of market analysis and forecasts, our analyst prepares the necessary graphs, charts, and tables to get further insights and preparation of the final research report. Our final research report includes information including market forecast, competitive analysis, major market & technology trends, market drivers, vendor profiles, and others.