DATA OVERVIEW REPORT

Trends In Warehouse Management Solutions, 2024

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Summary

Firms use a warehouse management solution (WMS) to improve their efficiency, sustainability, and operational excellence. A WMS helps to optimize inventory management, streamline processes, and enhance overall efficiency. Vendors are increasingly integrating new tech like IoT and edge computing into their WMS solutions to provide real-time visibility into inventory levels, automate tasks, and enable predictive analytics for demand forecasting. The inclusion of generative AI (genAI) in WMS gives businesses intelligent decision-making, process automation, and predictive maintenance capabilities. This report describes how advanced tech is revolutionizing the WMS landscape.

Invest In Warehouse Management Systems For Efficiency And Sustainability

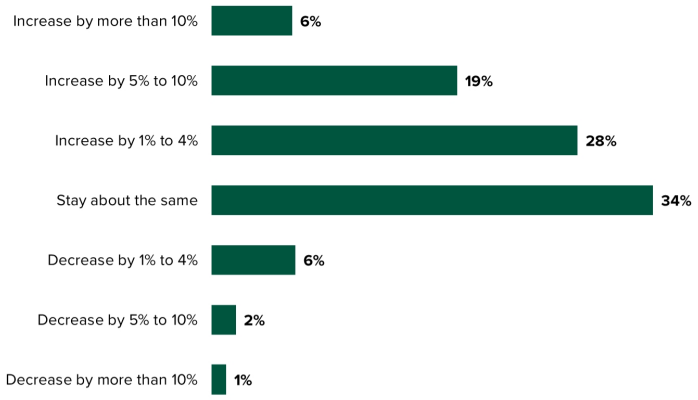
In 2023, 25% of software decision-makers said that their firm's spending on manufacturing and supply chain solutions would increase by 5% or more in the coming year (see Figure 1). That's good news even in a market where WMS adoption was already high (see Figure 2). Harnessing the power of a WMS to unlock real-time inventory visibility, process automation, and enhanced customer service can revolutionize your company's operations and help it gain a competitive edge. WMSes use real-time inventory visibility, streamlined processes, and improved order accuracy to enable businesses to optimize labor productivity, enhance planning and forecasting, ensure warehouse safety, elevate customer service, and gain a competitive edge in the market. Don't use a WMS just as a system for recording the movement of goods — use it to:

- **Achieve sustainability goals.** A WMS actively contributes to the achievement of sustainability goals by optimizing inventory, reducing waste, and promoting efficient use of resources; real-time visibility enables better planning, minimizing unnecessary transportation and packaging. It actively optimizes routes, reducing fuel consumption and carbon emissions. A WMS also promotes sustainable practices like minimizing packaging waste and ensuring compliance with environmental regulations, enabling companies to reduce their environmental impact and work toward a greener, more sustainable future.
- **Improve operational efficiency.** WMSes play a key role in improving efficiency by streamlining operations, automating processes, and optimizing resource utilization. With a WMS, firms can automate warehouse tasks, minimize errors, and increase productivity. Real-time visibility into inventory levels and demand patterns improves planning and forecasting to optimize inventory management. WMS also helps to optimize labor allocation, balance workloads, and improve overall workforce productivity. By reducing operational inefficiencies and maximizing resource utilization, WMSes enable companies to improve the efficiency of their warehouse operations.

Figure 1

More Than Half Of Firms Will Invest More In Manufacturing And Supply Chain Solutions

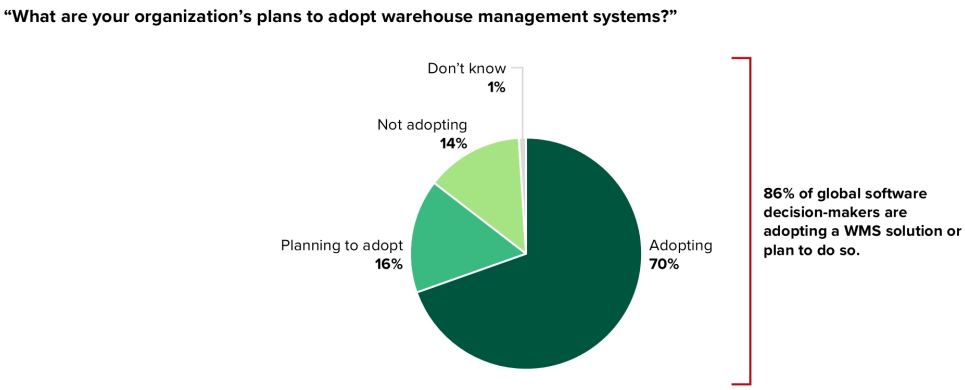
"How do you expect your organization's spending on manufacturing and supply chain software to change over the next 12 months?"



Note: "Don't know" responses have been omitted.
Base: 3,856 global software decision-makers with seniority level of manager or above
Source: Forrester's Software 1 Survey, 2023

Figure 2

The Majority Of Companies Have Adopted A WMS Or Are Doing So



Base: 1,556 global software decision-makers who are significantly involved in their organization's decision-making for manufacturing and supply chain software

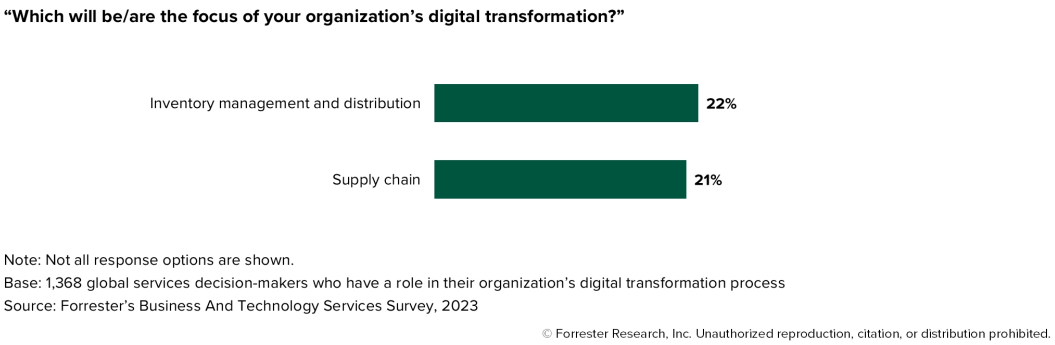
Source: Forrester's Software 1 Survey, 2023

Optimize Your Supply Chain Through Warehouse Transformation

Warehouse management digital transformation actively enhances overall supply chain and inventory distribution, streamlines supply chain processes, and enhances customer satisfaction. By implementing digital technologies and WMSes, companies achieve real-time visibility into inventory levels, optimize inventory management, and boost demand forecast accuracy. This improves supply chain planning and coordination, reducing stockouts and excess inventory. Integration with suppliers, distributors, and transportation partners facilitates efficient inventory distribution and order fulfillment. Forrester's 2023 data shows that 22% of services decision-makers say that their firm's digital transformation will focus on inventory management and distribution; 21% say it will focus on the supply chain (see Figure 3).

Figure 3

Inventory Management And Supply Chain Are In The Digital Transformation Mix



Note: Not all response options are shown.
Base: 1,368 global services decision-makers who have a role in their organization's digital transformation process
Source: Forrester's Business And Technology Services Survey, 2023

Deploy Innovative Technologies To Transform Your WMS

IoT, edge computing, and AI/ML actively drive WMS innovation. IoT devices like sensors and RFID tags actively collect real-time data on inventory levels, location, and environmental conditions within the warehouse. AI/ML algorithms actively process and analyze this data at the edge, close to the source. This integration enhances visibility, automation, and optimization in the WMS. It enables real-time tracking, predictive maintenance, intelligent demand forecasting, and efficient resource allocation, improving operational efficiency and streamlining warehouse management processes.

Deploy IoT For Real-Time Tracking And Management

IoT enhances real-time tracking and management in a WMS by providing instant visibility into inventory, assets, and environmental conditions via interconnected sensors. It automates processes like updating inventory, replenishing stock, and monitoring equipment, ensuring accuracy and efficiency. Workers use IoT-enabled devices such as RFID tags, smart shelves, and wearables to optimize productivity and streamline operations. By collecting real-time data and using edge computing, managers make faster decisions; predictive maintenance minimizes downtime. These innovations boost operational efficiency, cut costs, and enhance end-to-end supply chain visibility. Forrester's 2024 data shows that 38% of edge and IoT decision-makers say their organization is either using IoT in its supply chain management or plans to; 36% say the same about inventory or warehouse management (see Figure 4).

Figure 4

IoT Has Found A Place In Warehouse And Supply Chain Management

Note: Not all response options are shown.
Base: 447 global edge computing, edge technology, and IoT decision-makers at organizations with at least 20 employees that use or plan to adopt IoT-enabled devices or IoT gateways
Source: Forrester's Networks, Wireless, Edge, And IoT Survey, 2024

Apply Edge Computing To Boost Efficiency And Agility

Edge computing helps warehouse management by processing data locally, reducing latency, and speeding decision-making. Analyzing data from IoT sensors and devices directly at the warehouse enables managers to quickly adjust operations, such as optimizing inventory placement or rerouting pick paths in real time. Edge computing also enhances equipment monitoring by detecting issues immediately and triggering predictive maintenance, minimizing downtime. It reduces reliance on cloud servers, cutting bandwidth costs and ensuring uninterrupted performance even with limited internet connectivity. Edge computing boosts efficiency, speeds workflows, and improves warehouse agility. Forrester's 2024 data shows that 44% of edge and IoT decision-makers say that their firm runs supply chain management at the enterprise edge; 38% say the same about inventory management (see Figure 5).

Figure 5

Firms Prefer To Deploy Edge Computing In Fleet And Inventory Management

Note: Not all response categories are shown.
Base: 80 to 402 global edge computing, edge technology, and IoT decision-makers who selected fleet management as a primary use case for edge technologies in their organization
Source: Forrester's Networks, Wireless, Edge, And IoT Survey, 2024

Leverage GenAI To Help Improve Efficiency And Reduce Costs

GenAI actively enhances WMS and supply chain operations by enabling intelligent decision-making, process automation, predictive maintenance, supply chain optimization, and enhanced customer service. GenAI uses advanced AI algorithms and ML to analyze real-time data and inform accurate decision-making in areas like demand forecasting and routing optimization. It automates repetitive tasks in warehouses, improving efficiency and freeing up human workers for more strategic responsibilities. GenAI predicts equipment failures and maintenance needs, enabling proactive planning and minimizing downtime. By optimizing the supply chain through data analysis, genAI improves demand planning, inventory management, and route optimization. Additionally, it uses customer data to personalize the customer experience, boosting satisfaction and loyalty. Forrester's 2024 data shows that 29% of AI decision-makers are involved in planning genAI implementation in the supply chain; 28% are involved in planning predictive AI implementation there (see Figure 6).

Figure 6

Generative And Predictive AI Are Making Inroads Into Supply Chain Management

"For which of the following functions are you involved in the use case definition, design, training, development, implementation, or ongoing management of AI applications, programs, or projects?"
(Supply chain)

Base: 2,263 global AI decision-makers
Source: Forrester's State Of AI Survey, 2024

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