

2024 SOFTWARE/AUTOMATION OUTLOOK





Introduction

- *Modern Materials Handling* magazine conducted its annual Materials Handling Technology Study to better understand the usage and adoption of technology applications being used and planned for use in materials handling environments. Where applicable, results are tracked back to prior studies to gauge any changes that may have occurred over time.
- Specific areas investigated include:
 - Company's adoption of technology
 - Impact of the current state of the economy on technology purchases
 - Annual spending on technology solutions and circumstances driving technology investments
 - Usage and plans to evaluate materials handling technology solutions
 - Reasons for implementing materials handling technology applications: What challenges looking to address
 - Types of materials handling software solutions currently in use/planned for purchase or upgrade:
 - Warehouse Management Software (WMS)
 - Transportation Management Software (TMS)
 - Supply Chain Management Software (SCM)
 - Adoption of cloud-based applications
 - Respondent Demographics



Methodology

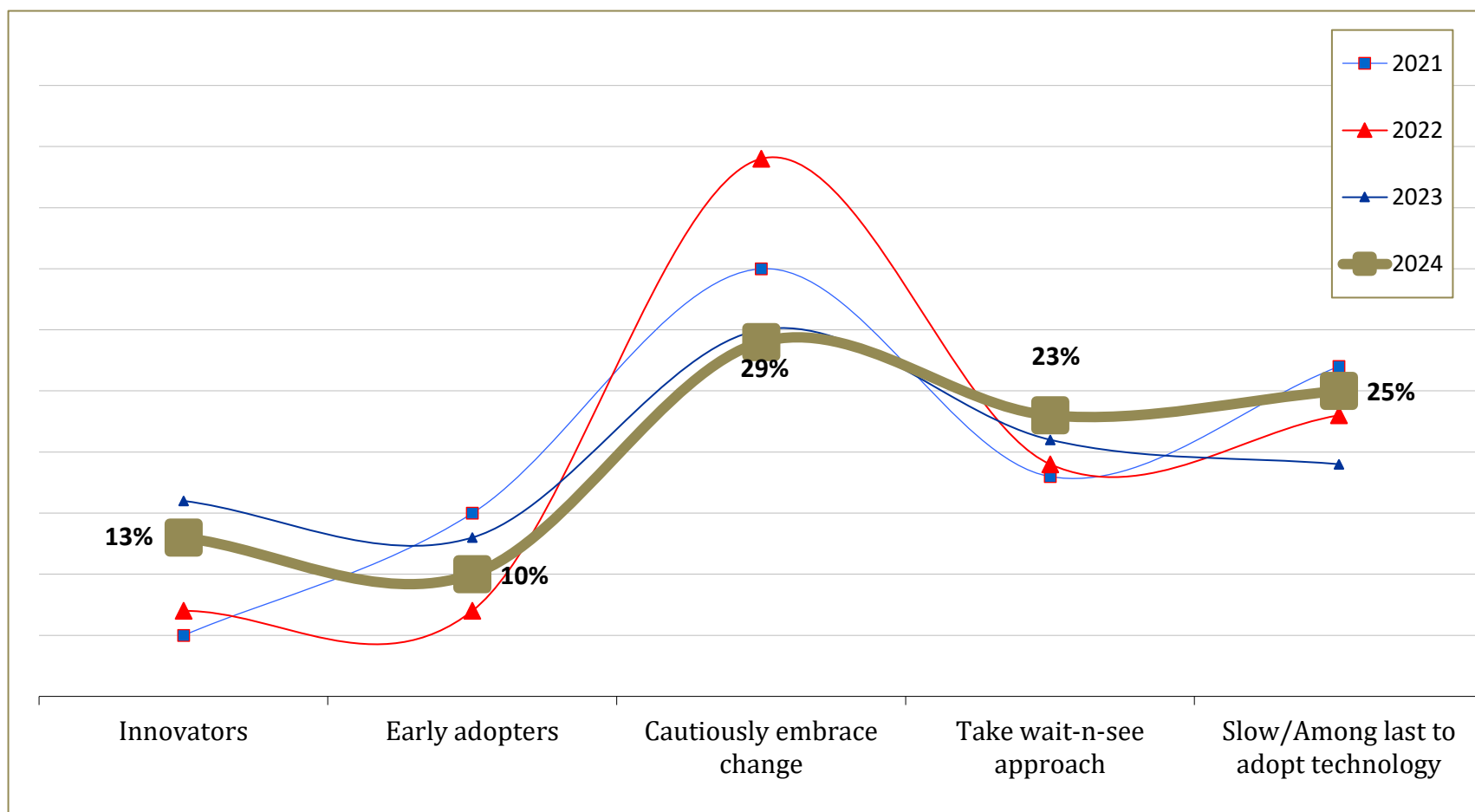
Methodology:

- Field: April , 2024
- Method: Internet by email invitation
- Sample: Subscribers to *Modern Materials Handling* magazine
- Qualifications: Personally involved in using, evaluating, or purchasing software for their company's materials handling operations
- Incentive: Raffle for a \$100 Amazon card
- Response: Response to waves 2021 through 2024 follows:

Field Dates	2024	2023	2022	2021
# of completes	92	101	102	100
Margin of error at @ 90% confidence level	+/-9%	+/-10%	+/-10%	+/-10%

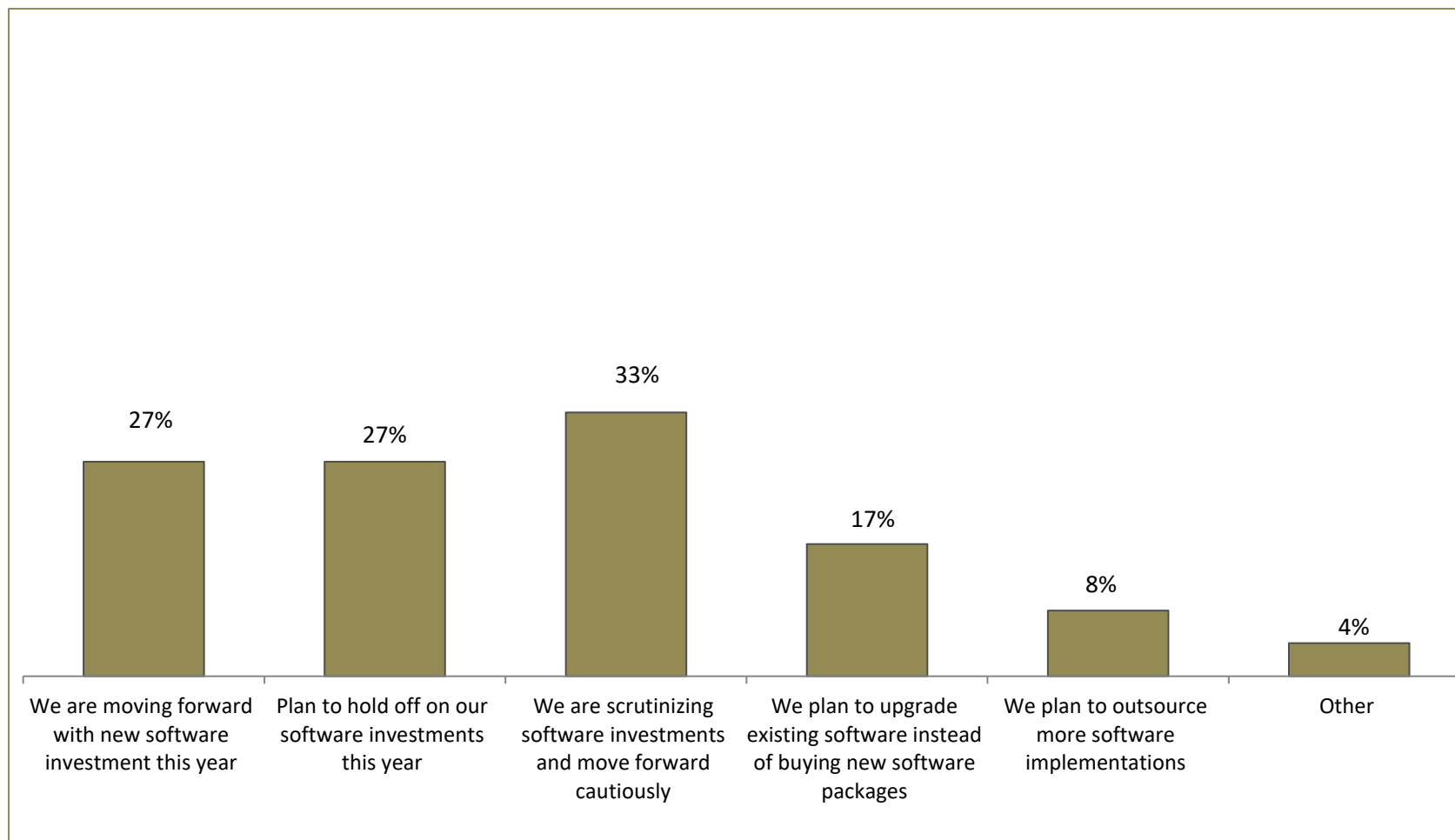


How would you best describe your company's adoption of technology for your materials handling procedures?





How has the current economic climate changed your company's approach to adopting materials handling management software?*



Note: Multiple answers accepted



During the last two years what issue have you looked to solve through the implementation of a materials handling management software application in your warehouse or distribution operation?

Ability of a solution to handle both full case (B2B) and single unit shipping (D2C) from the same warehouse. Ability to retain historical data on inbound and outbound movements for record-keeping. Ability to integrate to multiple selling platforms.

AMR robotic implementation mobile device pick tickets versus old school printouts

Automated inventory updates vs manual Track materials through processing QC control Automating scale operations

Blending software together with other computers in house!

Budget, finding suitable software

Chain of processing from production to quality to shipping delays or missed events

Controlled Stock Monitoring

Cost, damage and reliable delivery time

Damage to product

E-commerce order consolidation - parcel DIM rates are getting more customer unfriendly

Human labor cost reduction

Increase the data validity of item information and track the movement of items through manufacturing departments

Inventory control, order accuracy, efficiencies

Issues running into us getting packaging on time because ever since COVID stuff is on back ordered.

Lack of any automation in the organization

Material allocation is difficult with our current system, specifically when multiple projects simultaneously consume the same resource.

Material handling technology has had a furlough at our company

More accurate counts on expensive materials

Need continues feature updates

New Food Safety Technologies

Over the past two years, I tackled the challenge of handling a high volume of packages in a growing and diverse distribution center. Solution: I implemented retrofits to a fulfillment automation system to increase capacity, speed, and flexibility to adapt to different types of packages and processes. This solution optimized operations, reducing processing times, and enhancing package delivery accuracy.



During the last two years what issue have you looked to solve through the implementation of a materials handling management software application in your warehouse or distribution operation? [Continued]

Pedestrian safety

Picking efficiency and packing efficiency

Production automation without glitch issues going on daily!

Productivity, Labor Management,

Reduction in personnel who are involved in material movement tasks in order to reduced overhead cost in order to remain competitive in the global market

Scanning software does not tie-in with Visual Manufacturing software

Software support

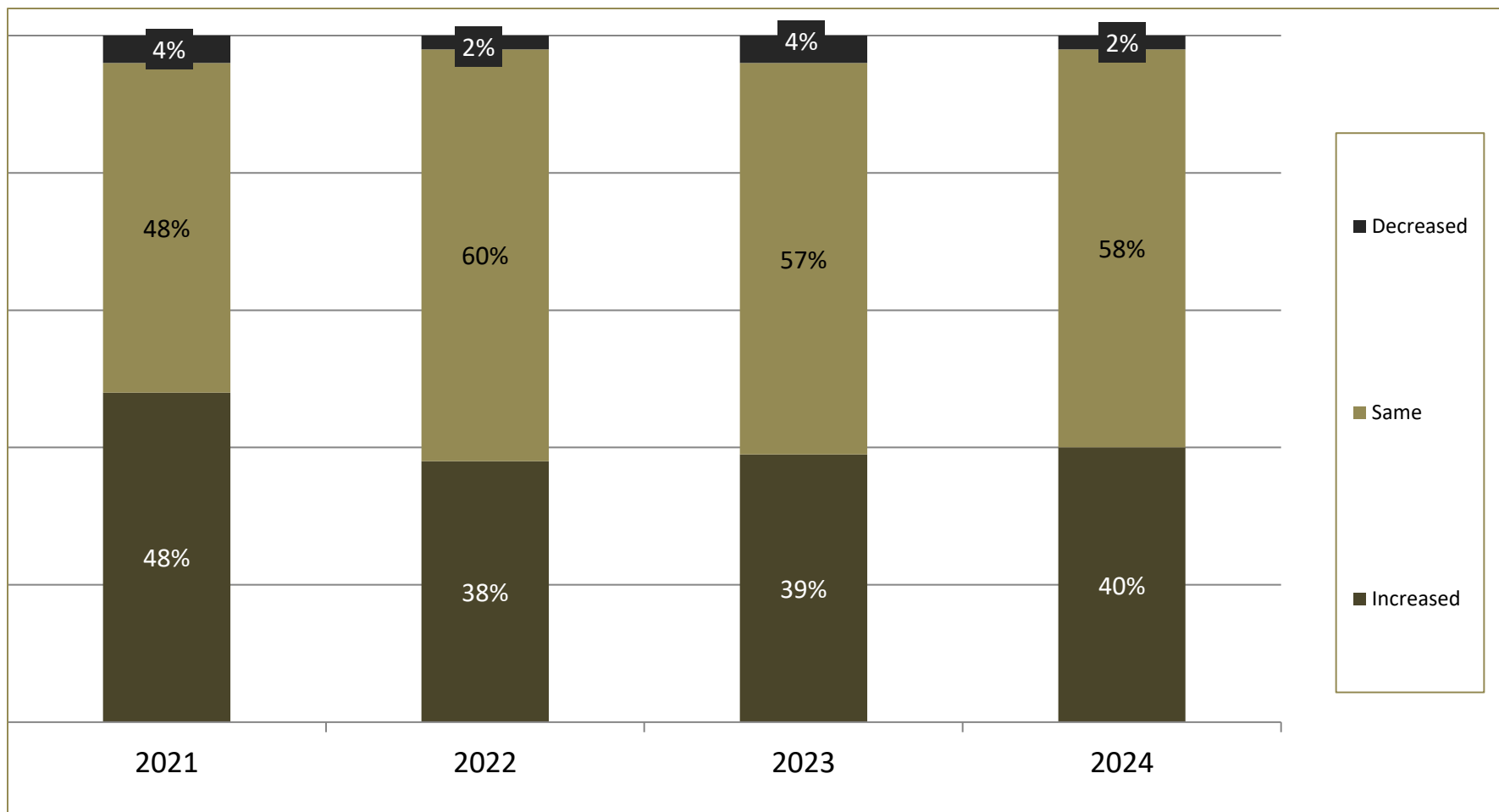
Switching costs are high. With us being so busy it is hard to find time for training if we were to switch and downtime would be costly. Lots of risk, even though we know the reward, but getting through the implementation is daunting

Training of new hires as some do not grasp the system or forget to use it properly

Visibility, reporting, predictive analytics

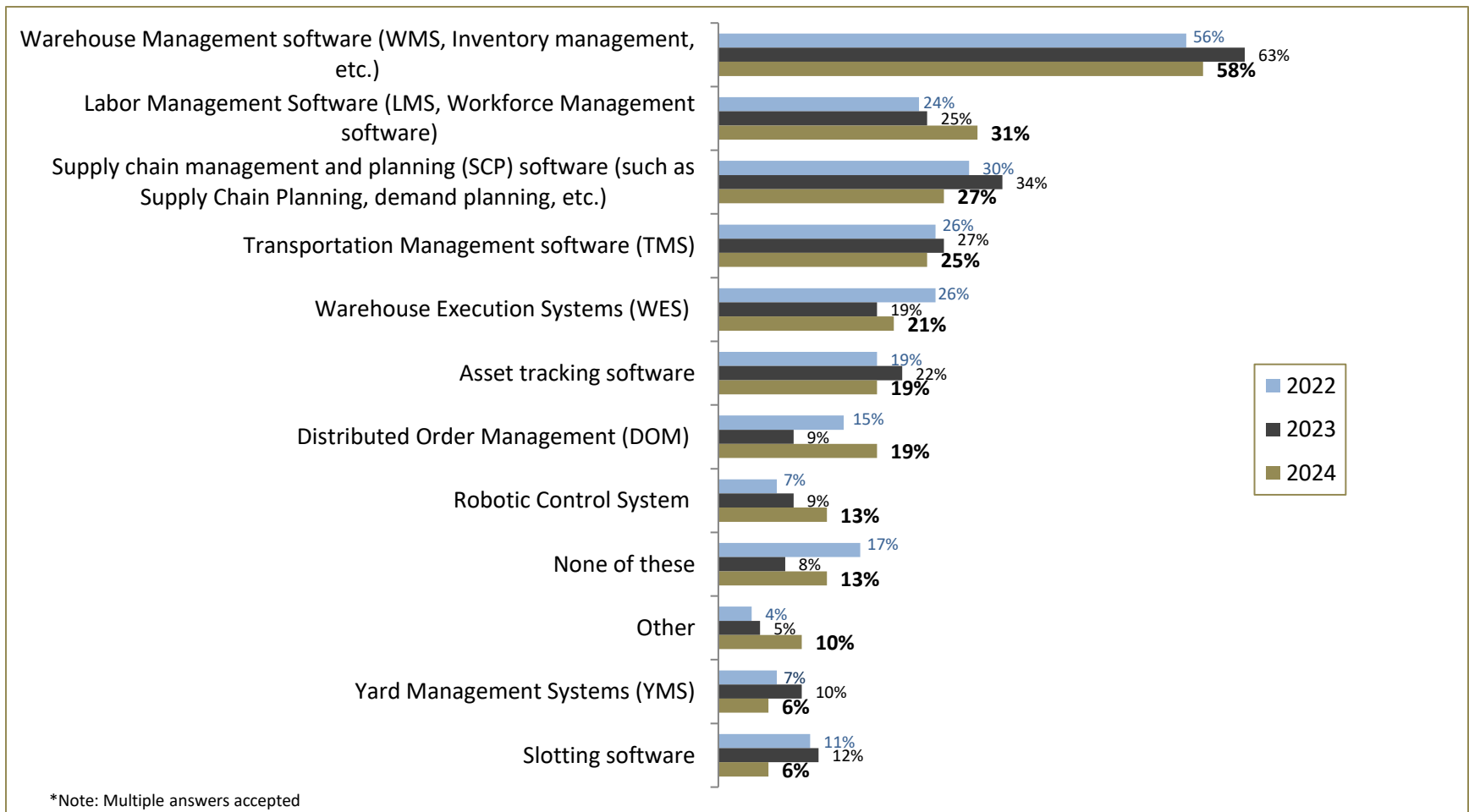


How has your company's use of materials handling software changed over the past 2 years?



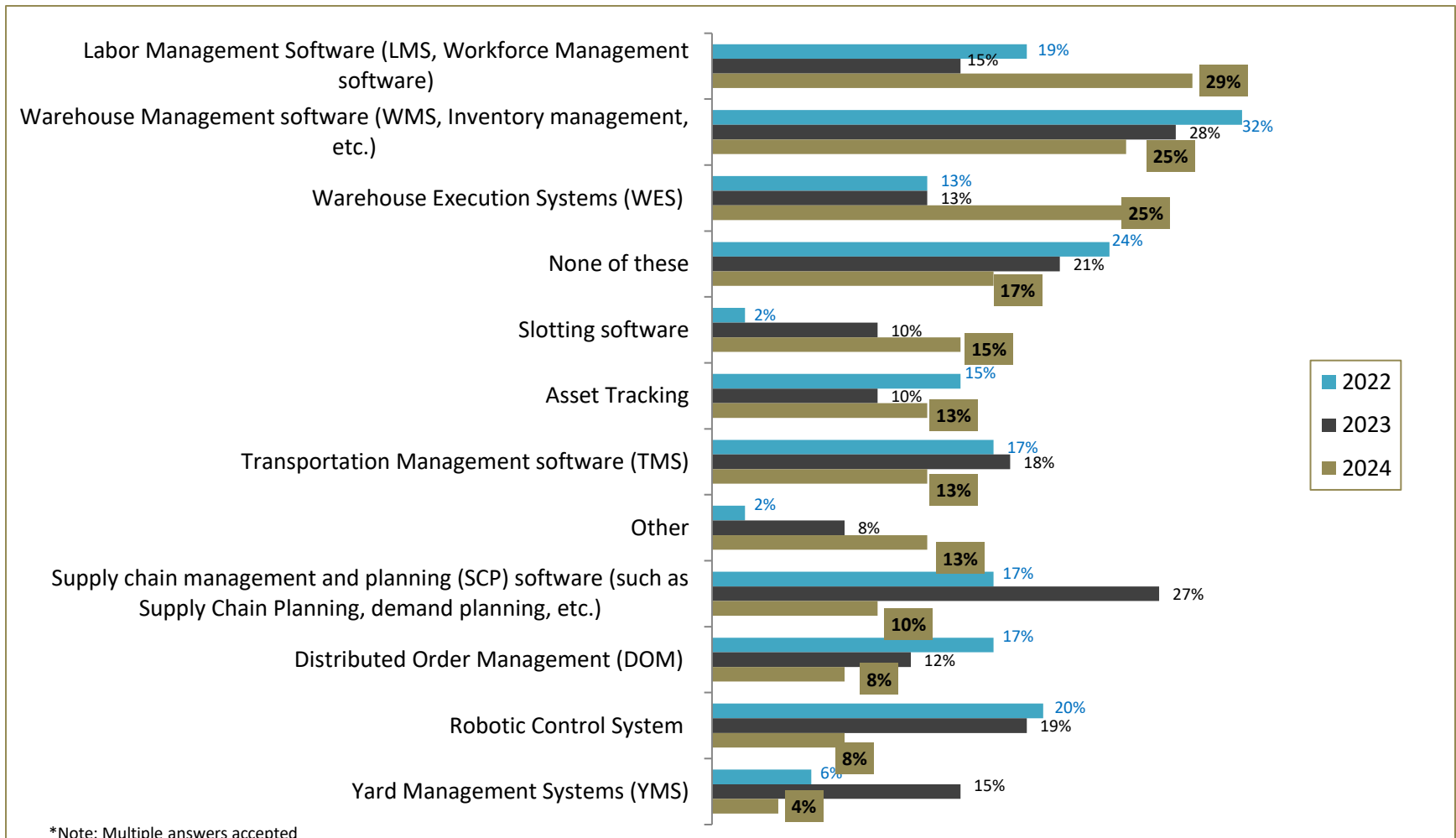


Which of the following software applications are currently in use in your warehousing and distribution environment?*





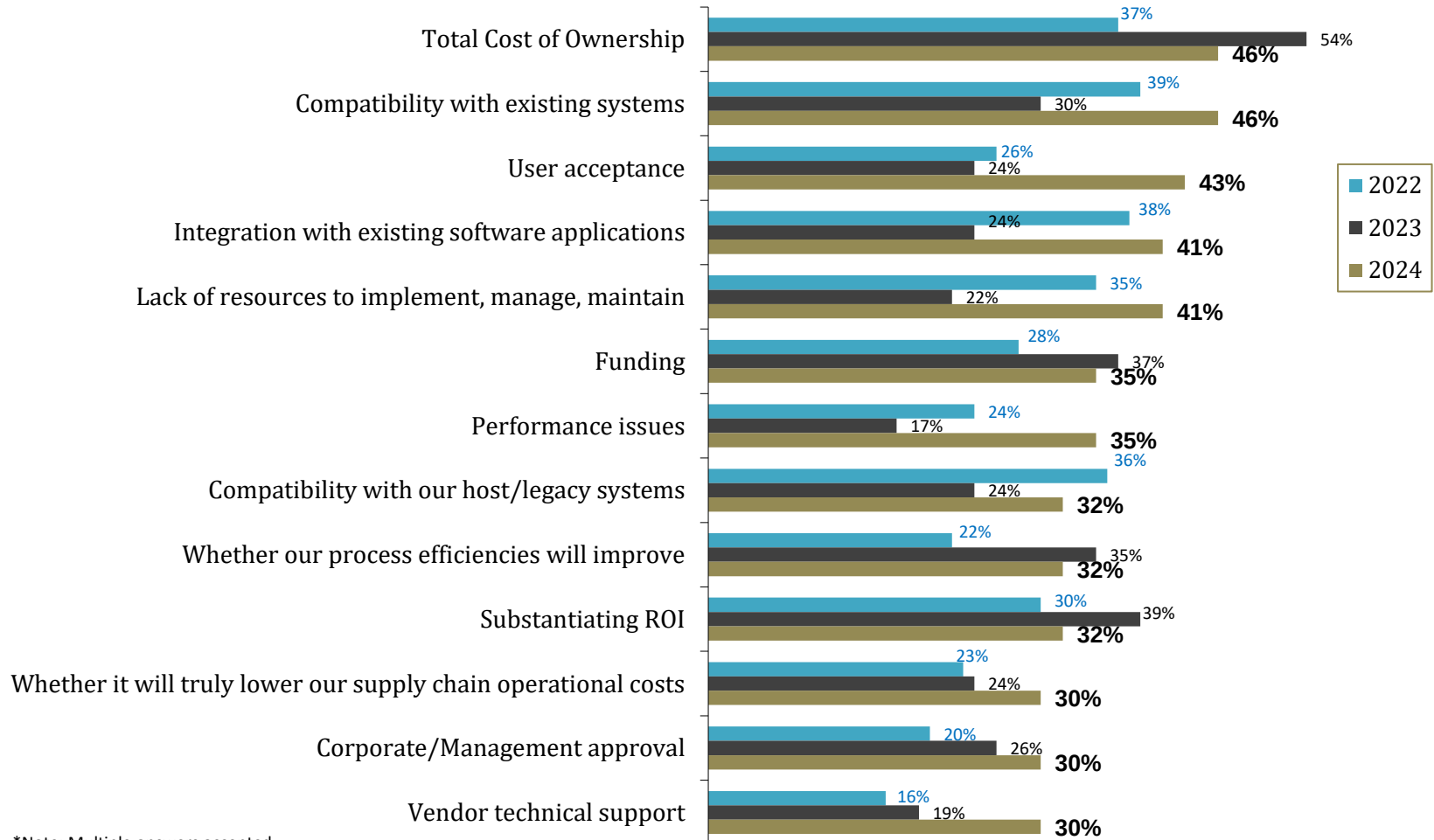
Which are you planning to evaluate, purchase or upgrade within the next 24 months?*



*Note: Multiple answers accepted



What challenges have you experienced or would you anticipate when adopting or implementing materials handling software applications?*

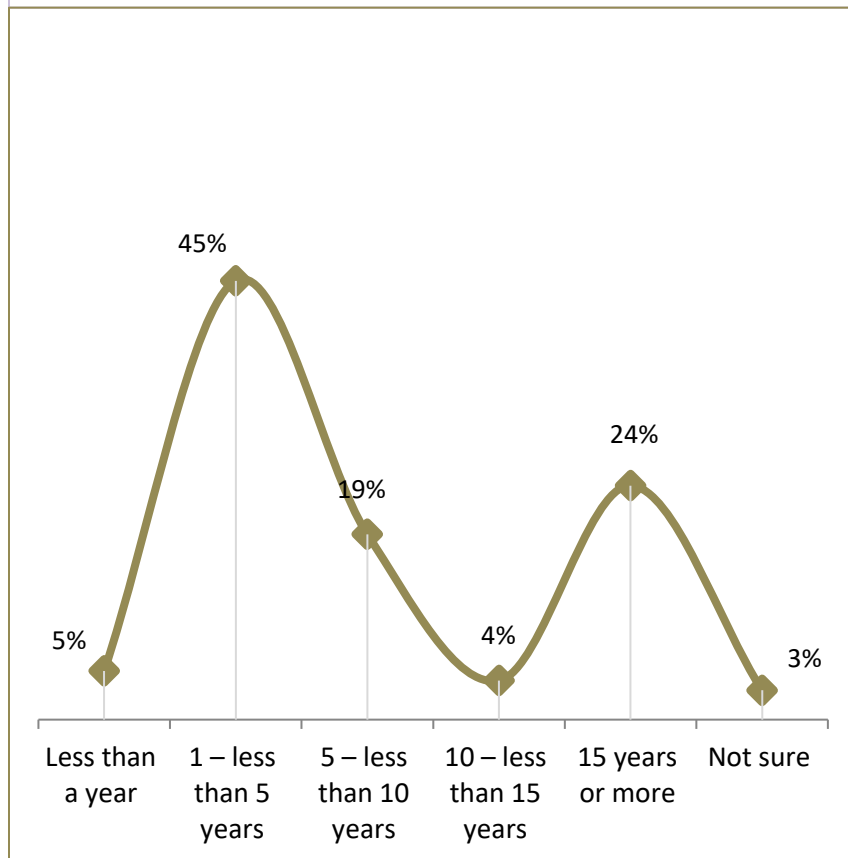


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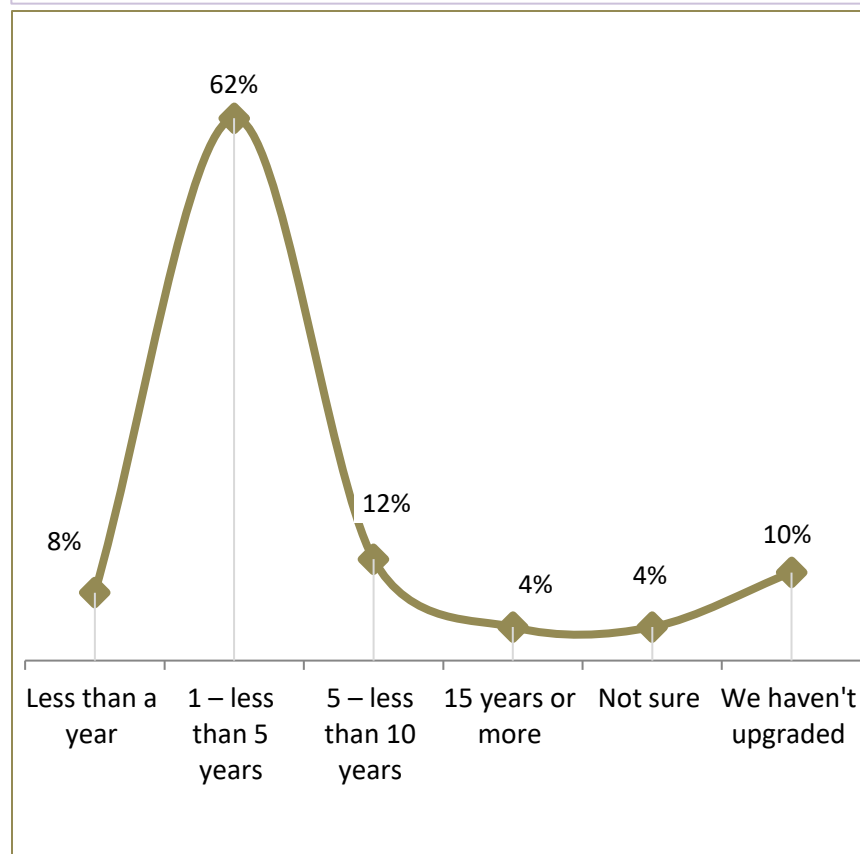


About organizations' WMS

How long have you had your current WMS application in place?



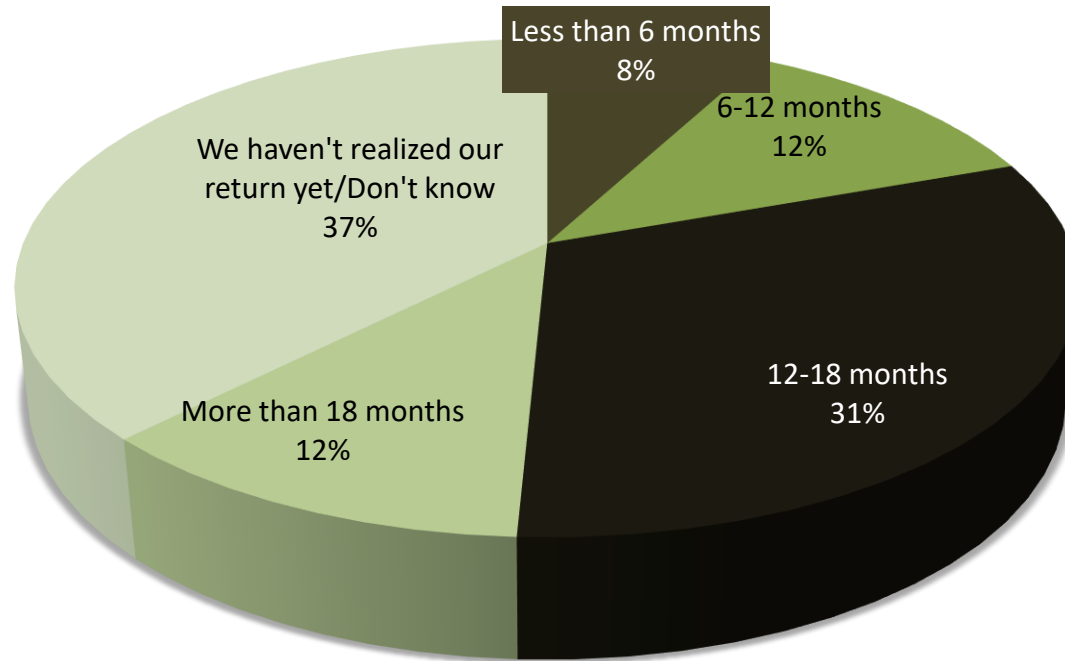
And, when did you last upgrade this application?



Due to the small number of cases for WMS, data are unstable and any projections based on this information may be unreliable. Figures should be used with caution.



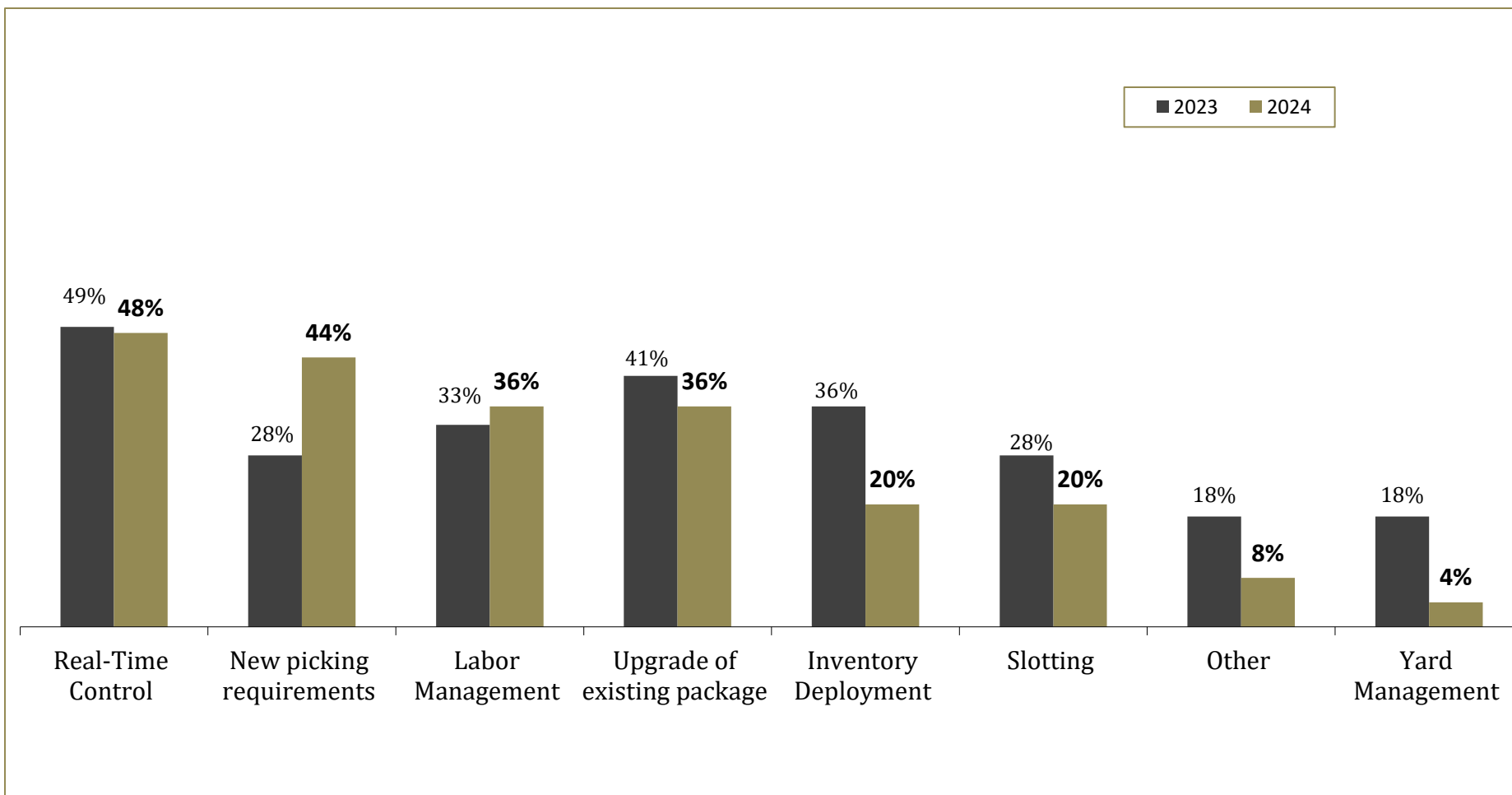
How long did it take for you to realize your return on your WMS investment?



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What are the main reasons your company is planning to consider or buy warehousing management software (WMS) during the next 2 years?*



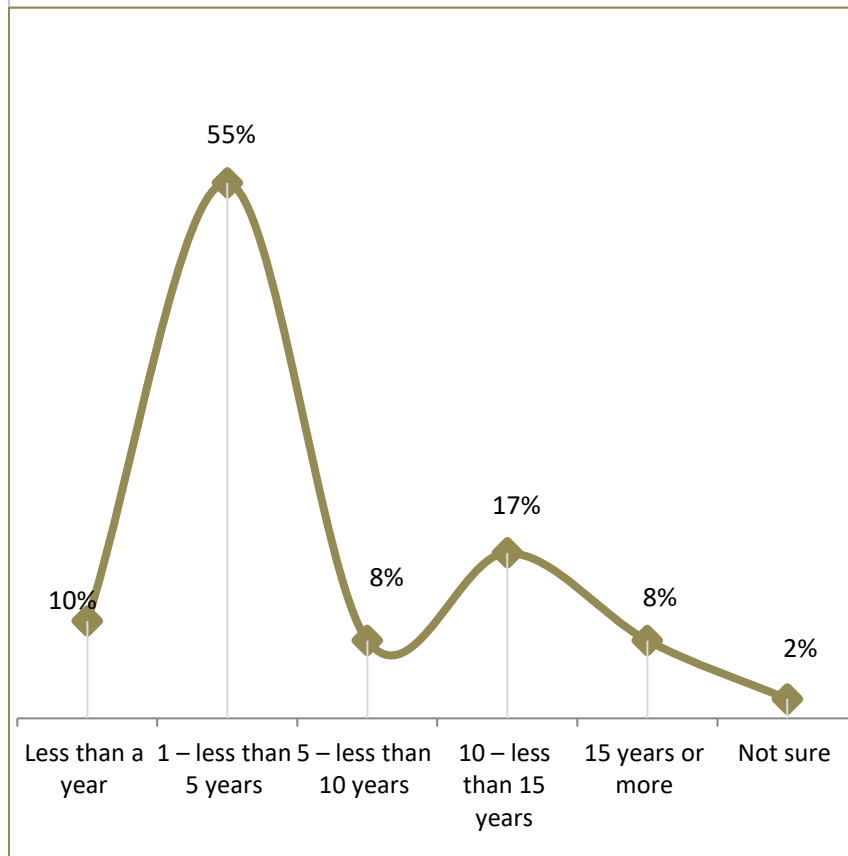
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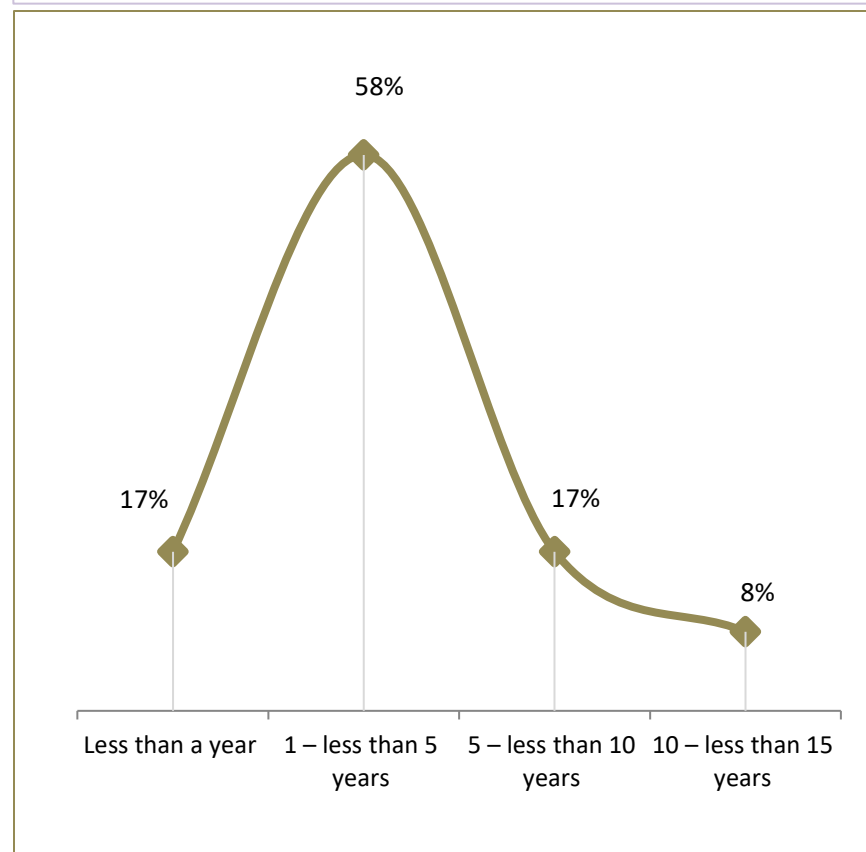


About organizations' TMS

How long have you had your current TMS application in place?



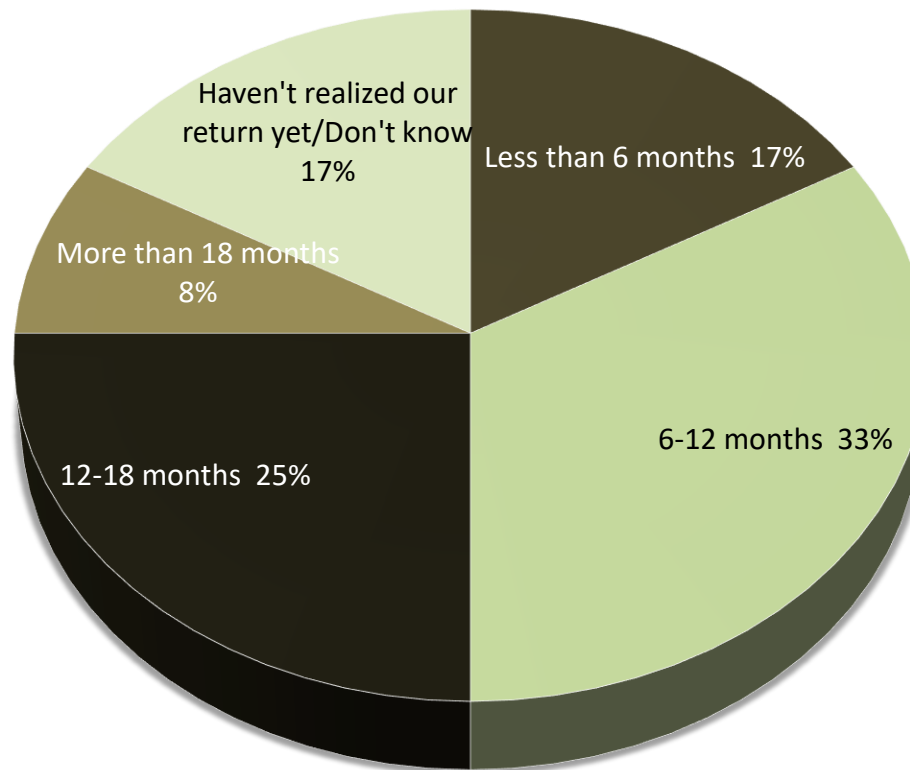
And, when did you last upgrade this application?



Due to the small number of cases for TMS, data are unstable and any projections based on this information may be unreliable. Figures should be used with caution.



How long did it take for you to realize your return on your TMS investment?

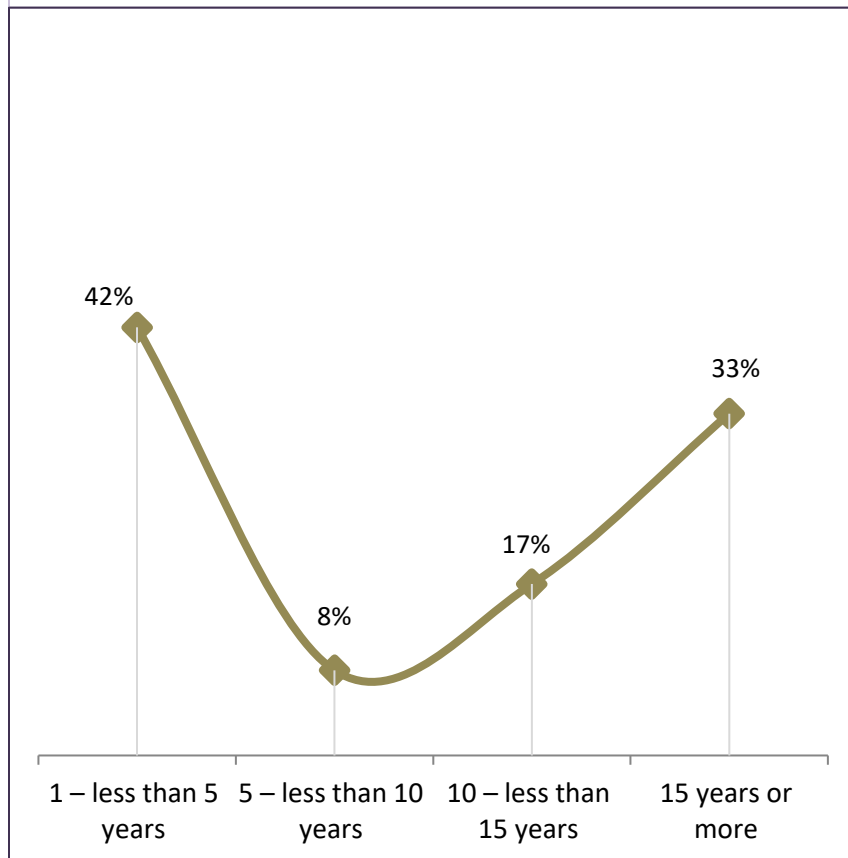


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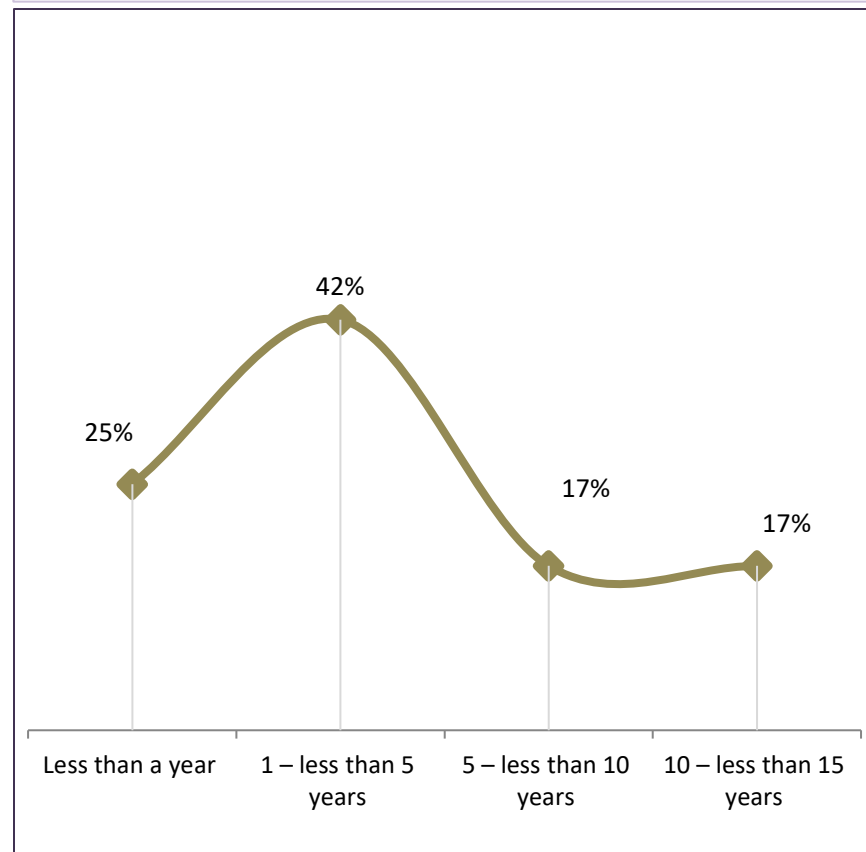


About organizations' supply chain management and planning solution

How long have you had your current supply chain management and planning application in place?



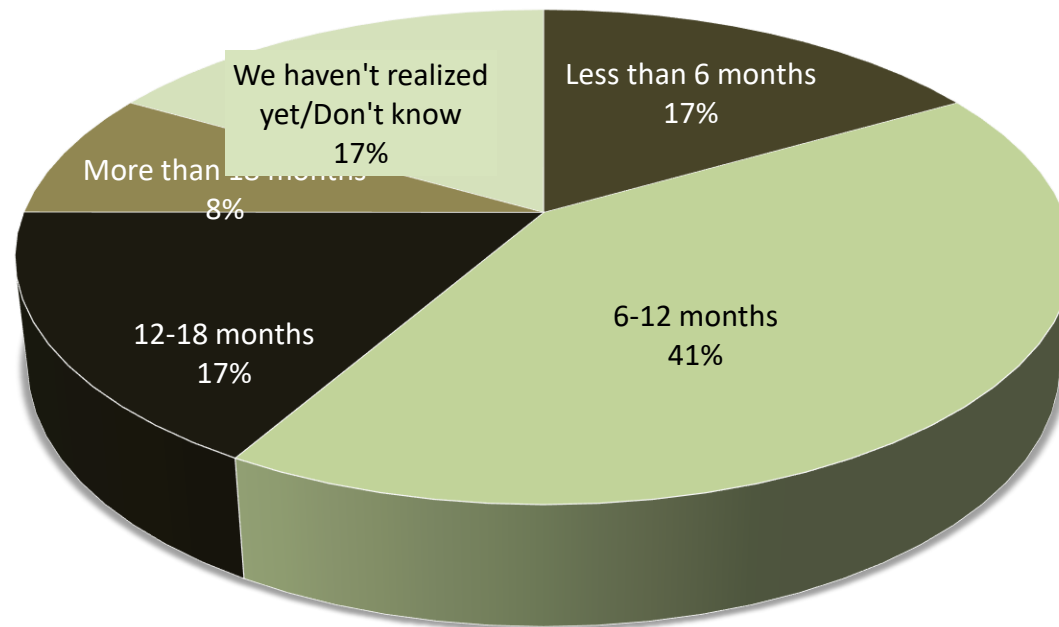
And, when did you last upgrade this application?



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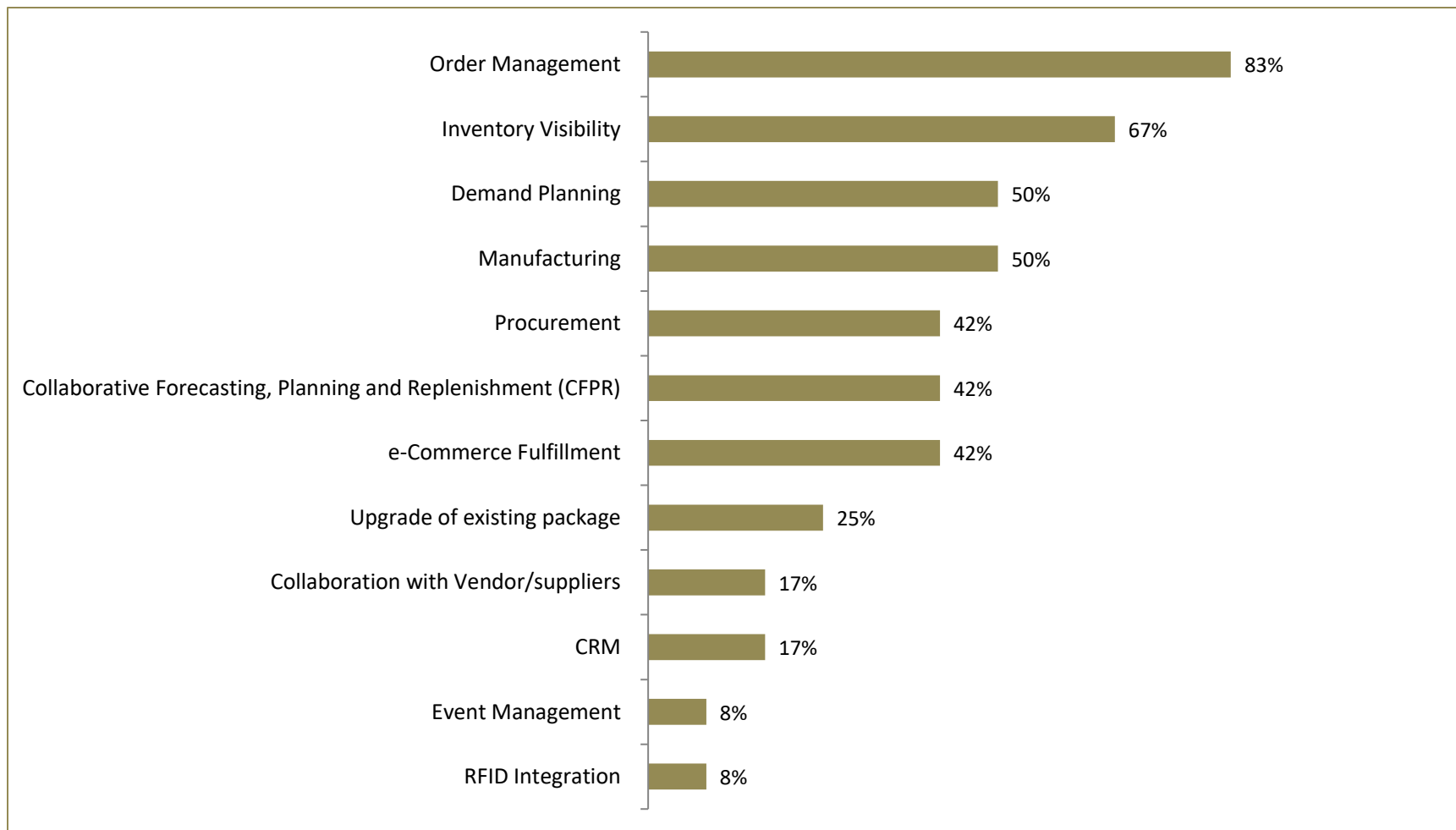
How long did it take for you to realize your return on your supply chain management and planning solution investment?



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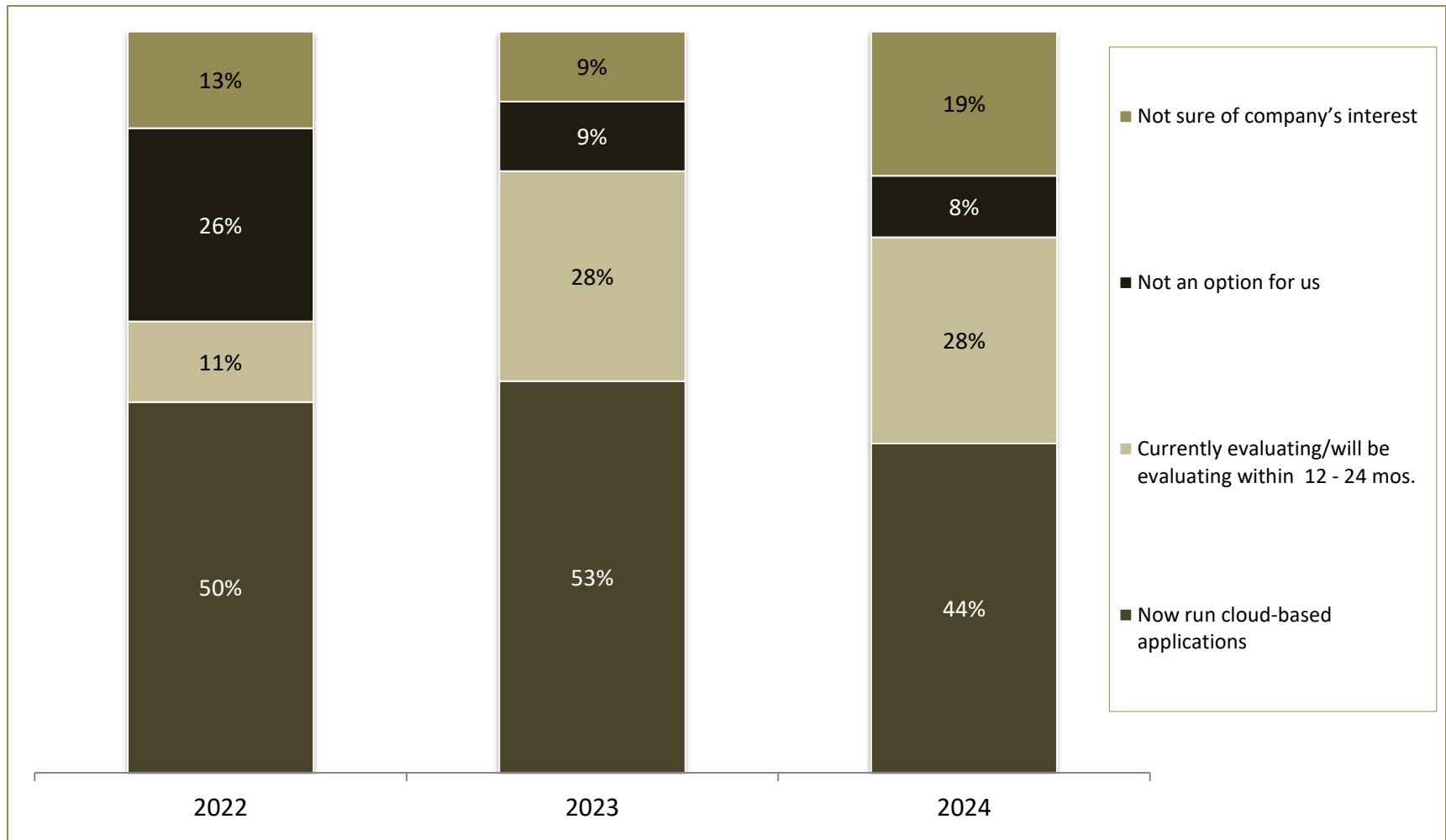
For which initiatives is your company using your supply chain management software application?*



*Note: Multiple answers accepted



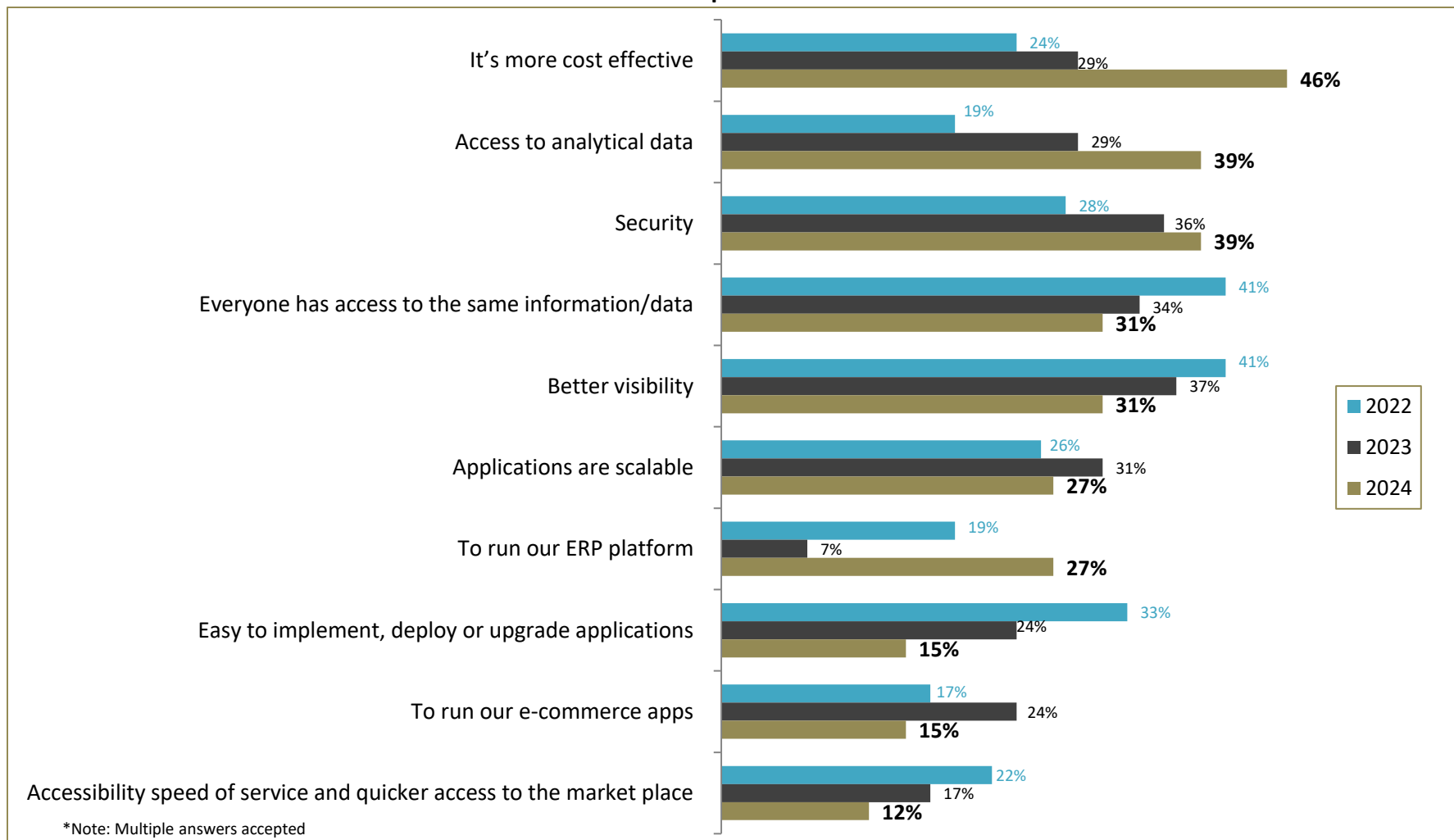
What is your company's status regarding the adoption of cloud computing?





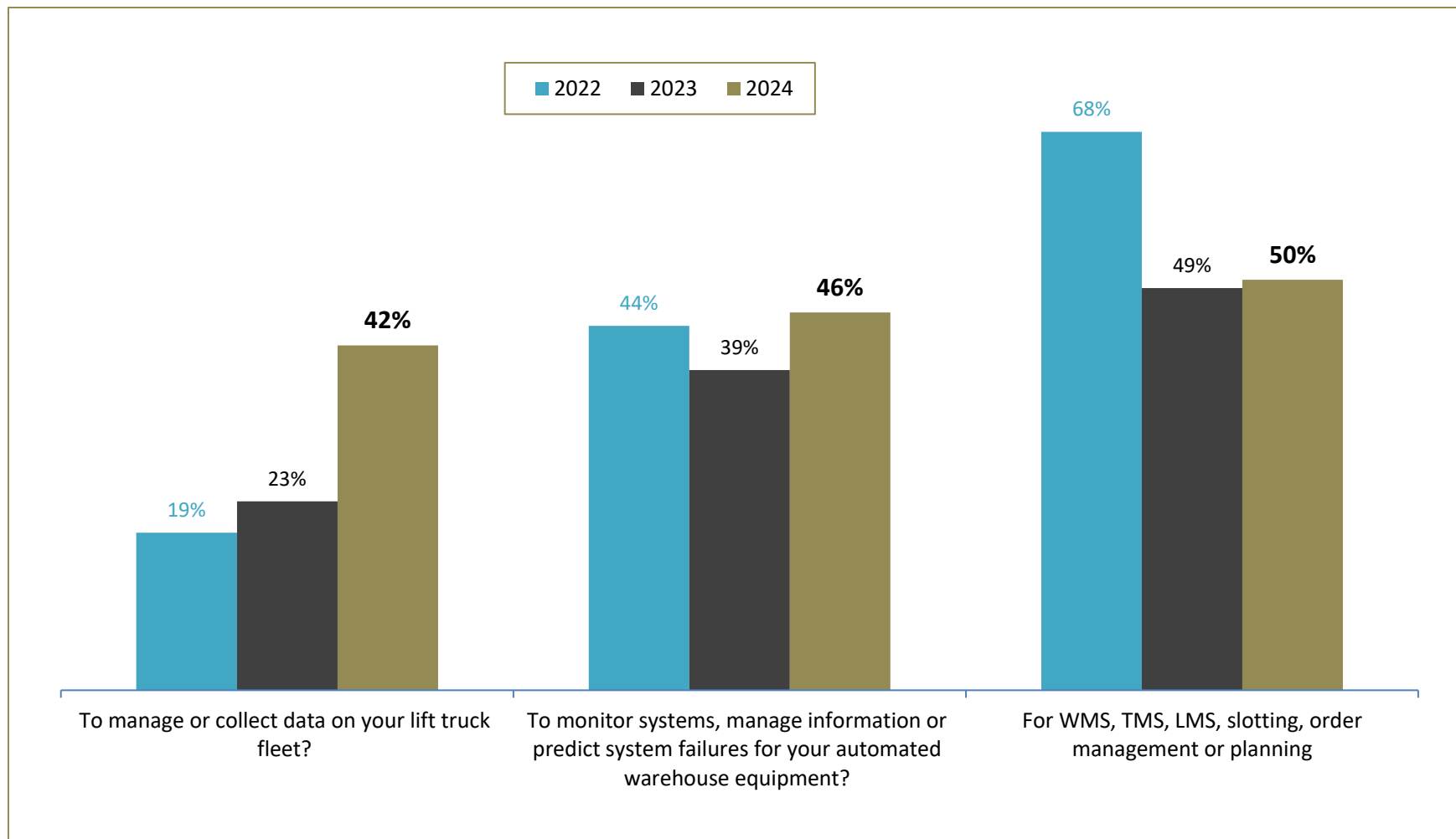
Why are you or will you be using cloud-based applications? What do you see as the benefits?

Top 10



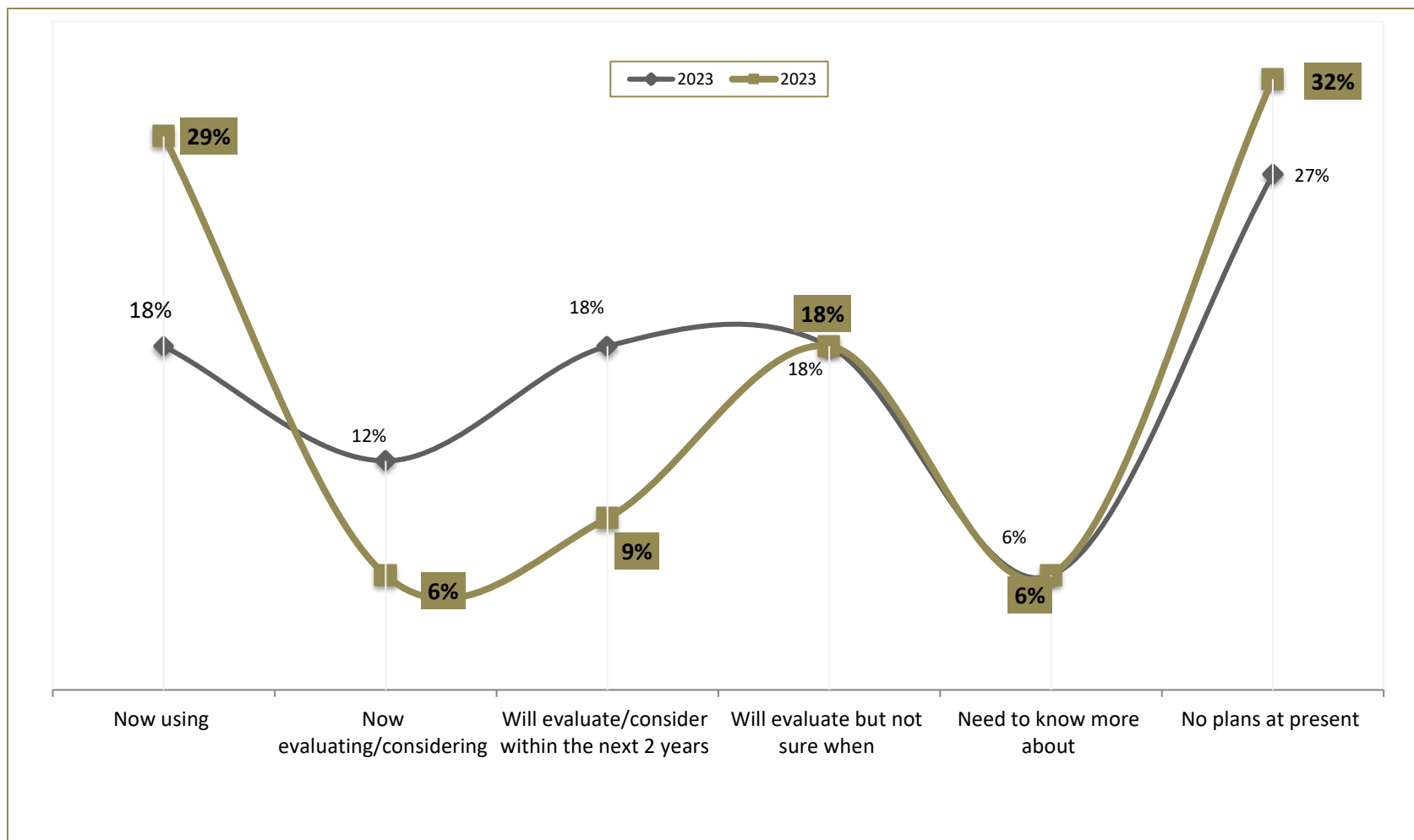


Are you using or planning to evaluate cloud-based applications . . .



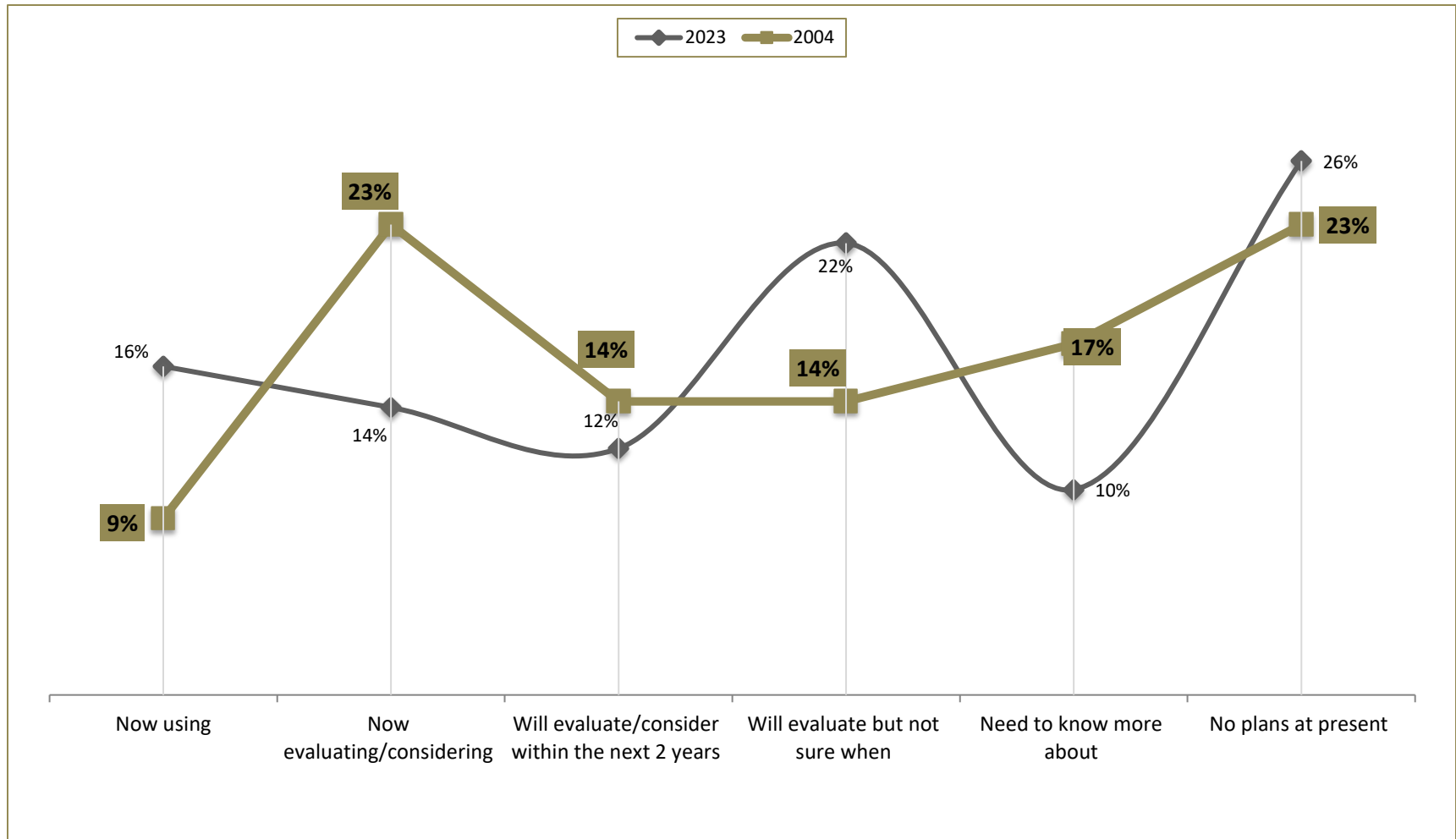


Which best describes your adoption of Big Data?



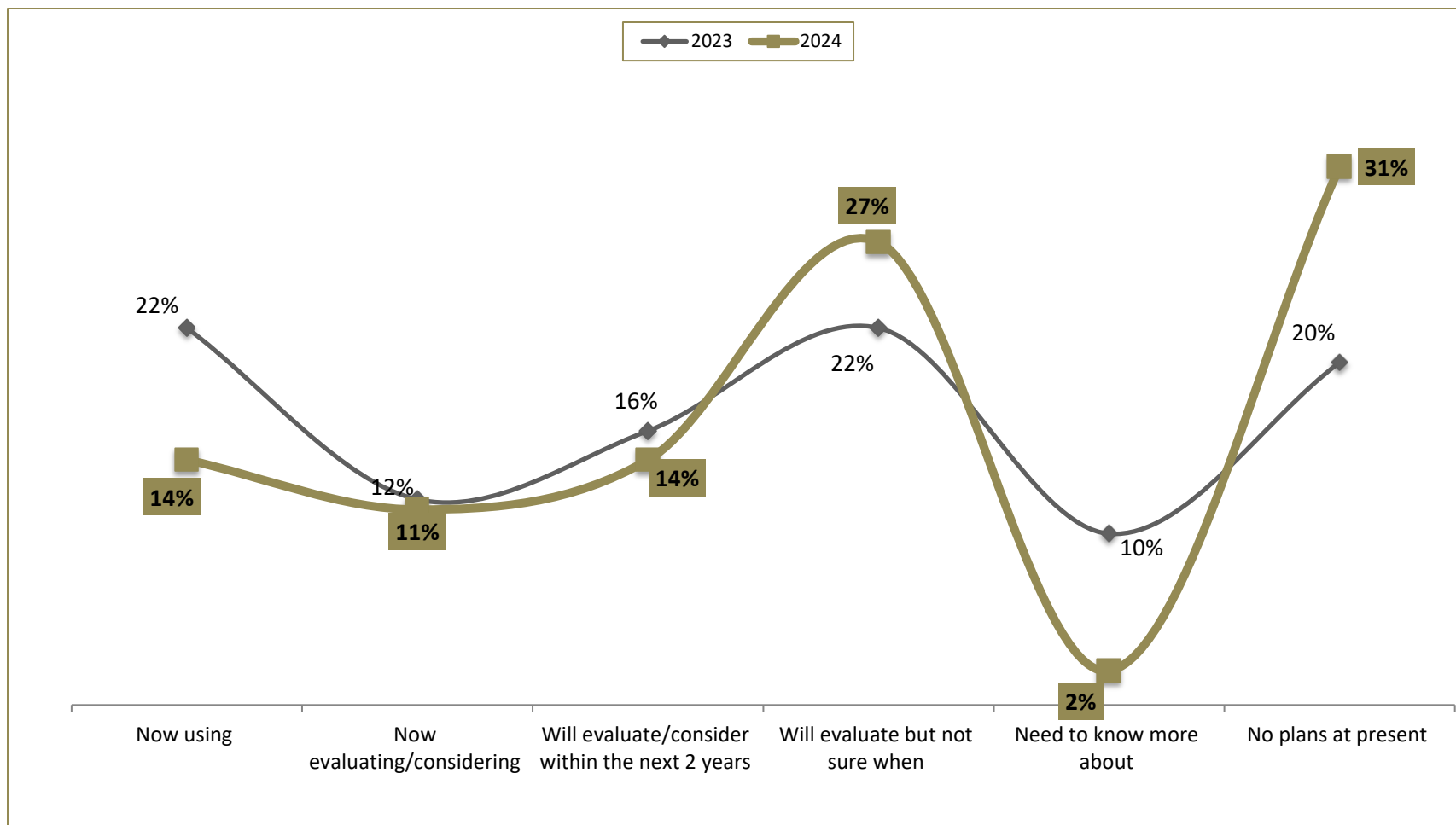


Which best describes your adoption of AI?



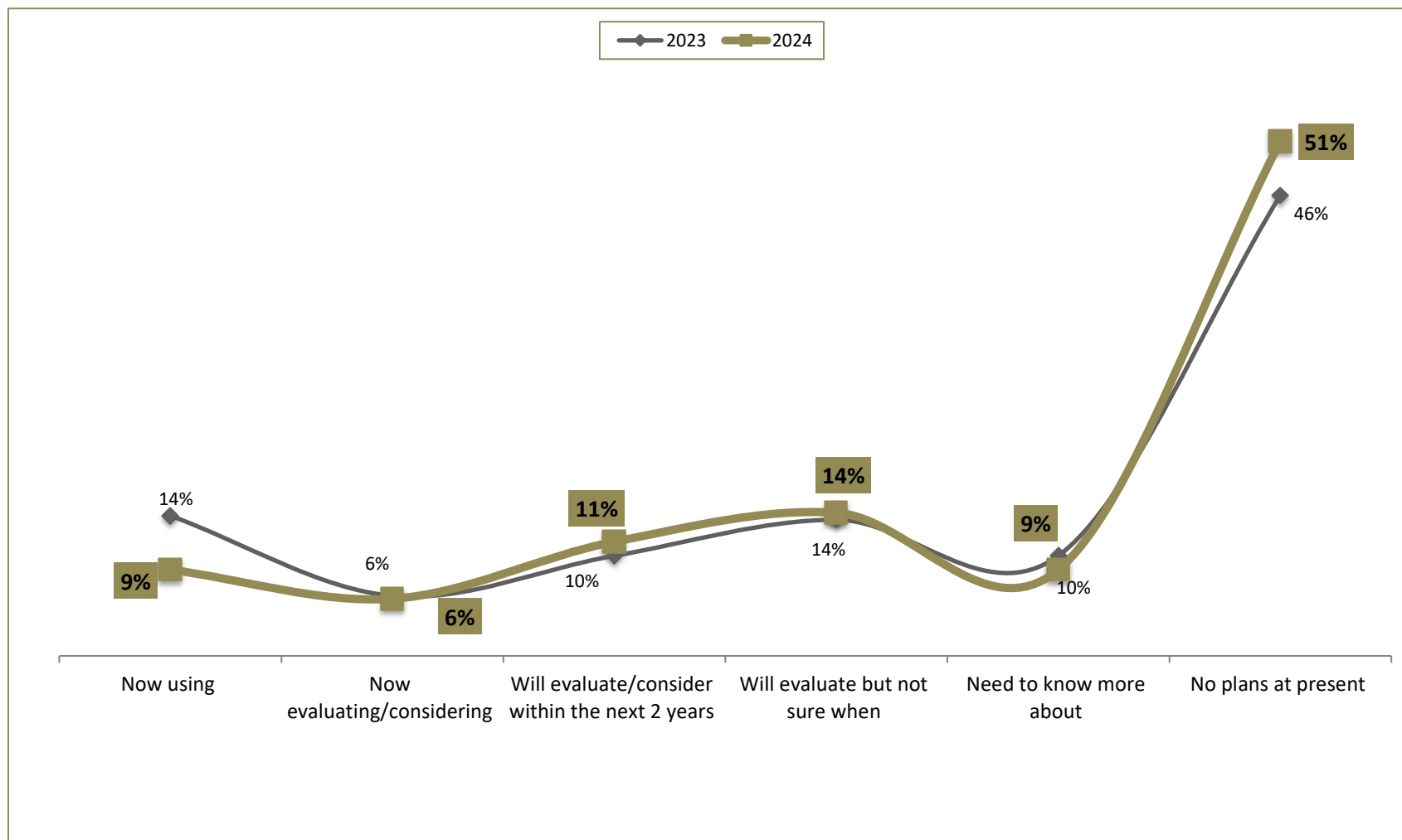


Which best describes your adoption of the Internet of Things?



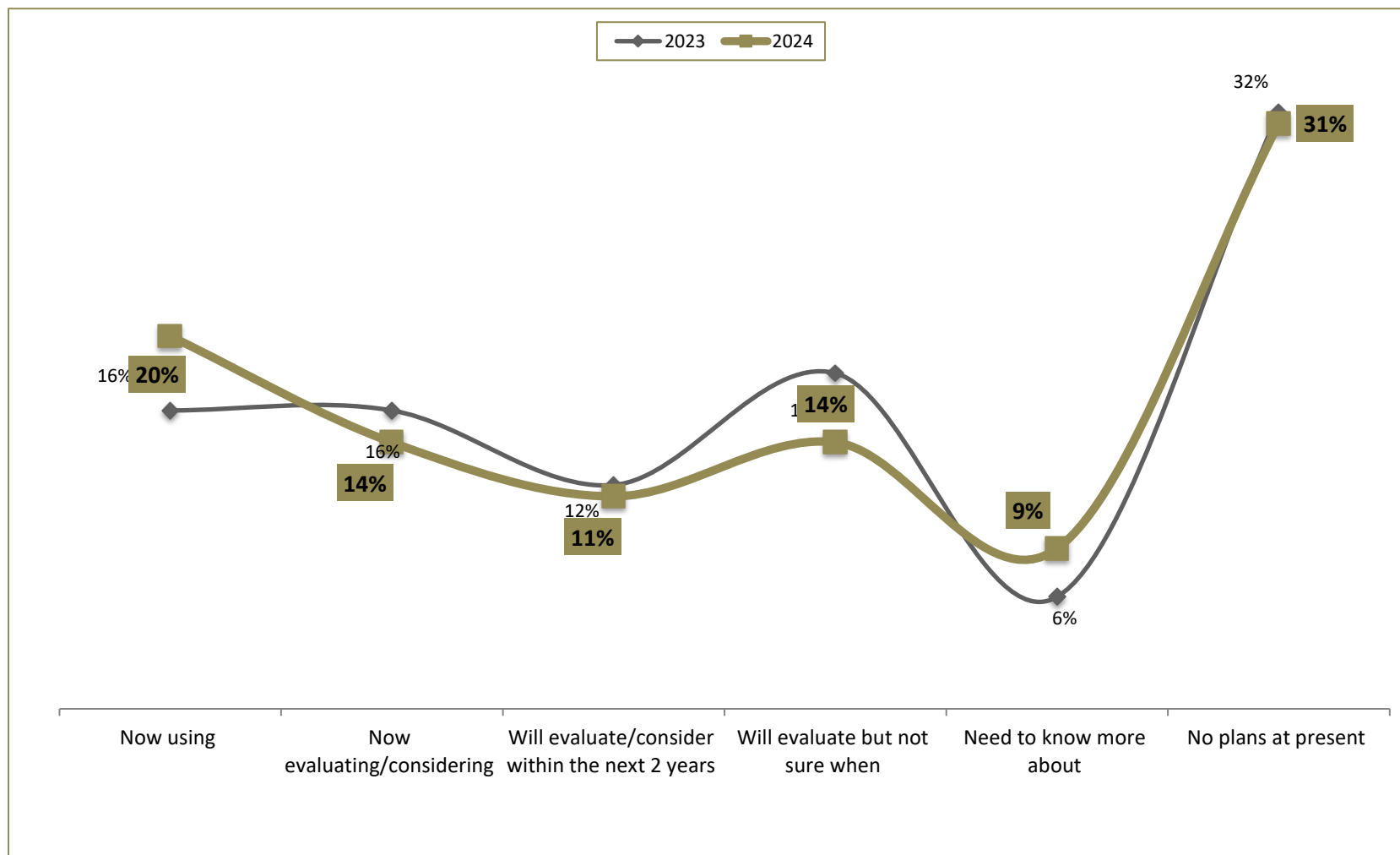


Which best describes your adoption of Block chain?



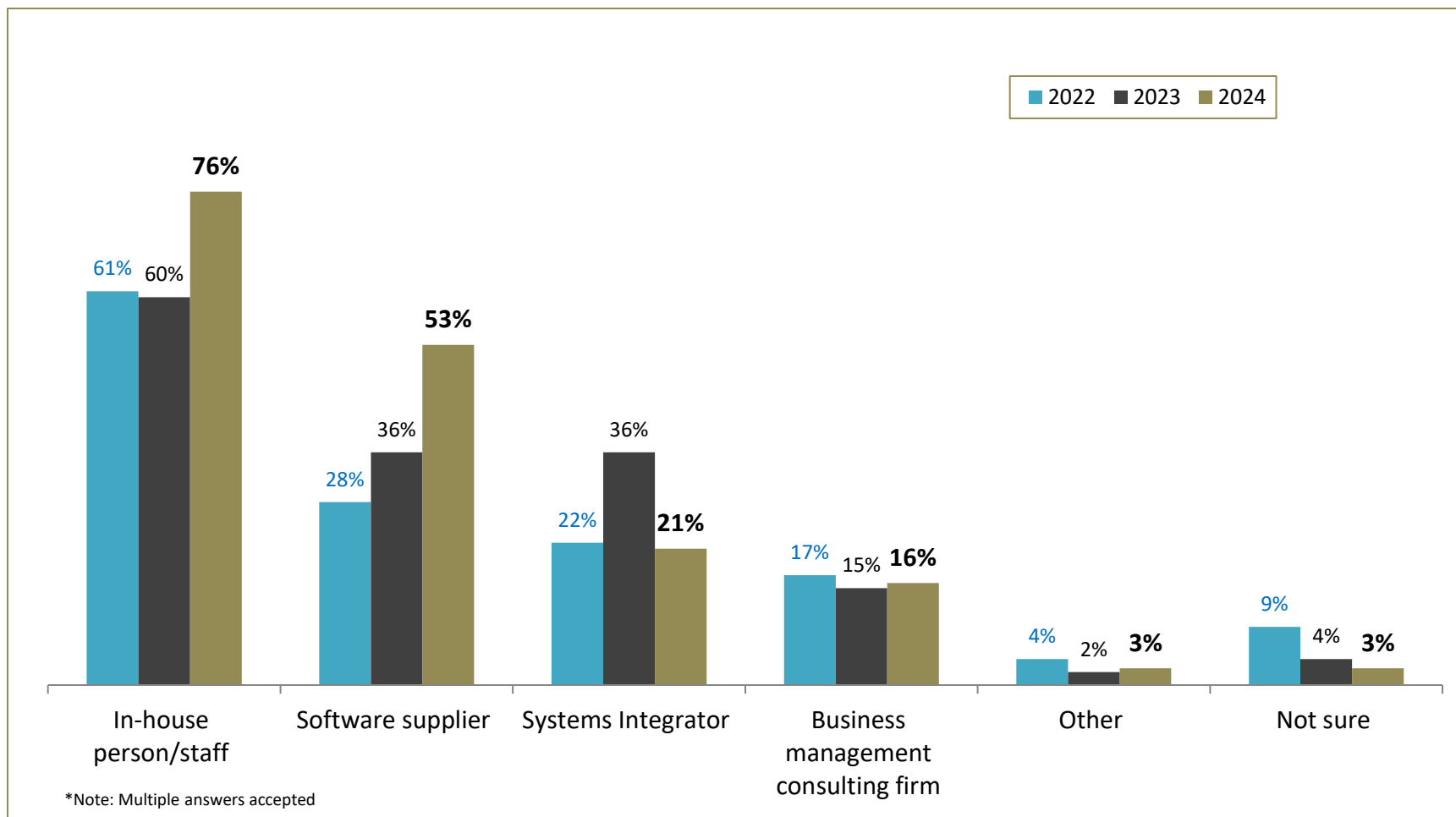


Which best describes your adoption of Machine Learning?



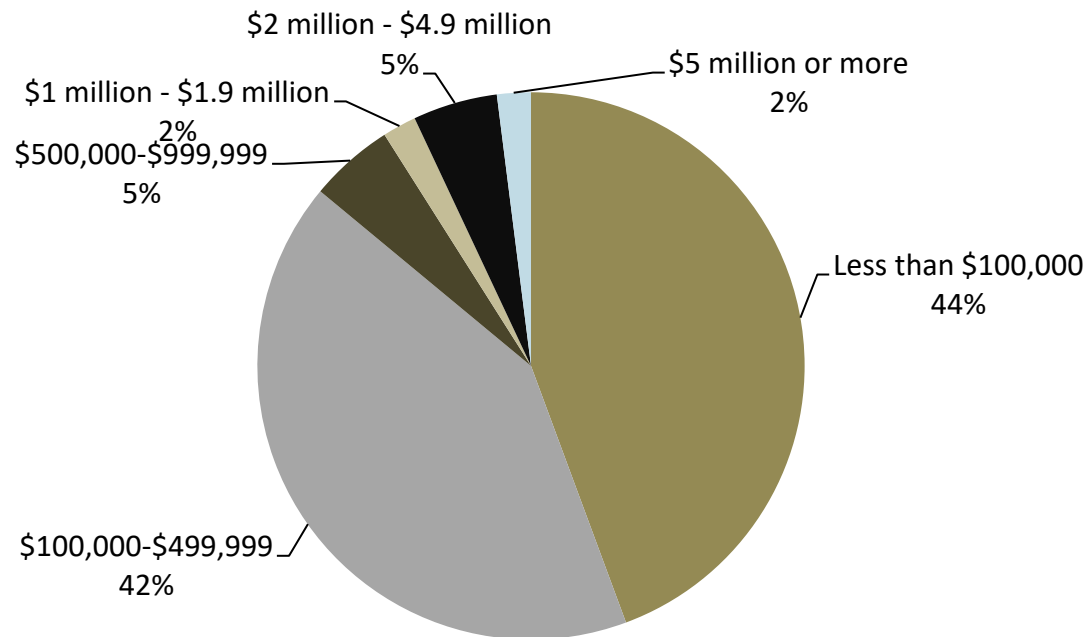


When your company purchases software, who do you typically use to integrate the software installation?*





Approximately, how much will your company spend on supply chain software for your operation including license, integration and training in the next 12 months?



	2019	2020	2021	2022	2023	2024
Average \$\$ plan to spend	\$431,160	\$309,100	\$359,260	\$436,830	\$743,137	\$544,450
Median \$\$ plan to spend	\$100,000	\$69,230	\$82,550	\$105,200	\$250,175	\$280,215



What is driving your decision to invest in new materials handling or supply chain software?

As we continue to grow manual process are not able to keep up
Automation for accuracy and timeliness
Cost reduction
Cost, damage and delivery reliability
Current business climate
Current software has reached end of life
Efficiency
If we see improvement
Improving production flow, quality and meeting customer delivery needs
Increasing operational efficiency, scalability needs, demand for real-time data analytics, improved inventory management, enhancing customer experience, cost reduction, regulatory compliance requirements
It will help bring more sells
More production and order filling
Need AI technology on the software
Need for automation
Reduce operating costs
Replace end of life systems. Increased efficiency, reduced costs
Resources (manpower) to commit to analysis and implementation
Saves times & allows efficient monitoring
Saving Time/Money
To eliminate labor shortages and costs
To stay current and maintain security
Update more functioning abilities
Vastly improving technology and need for ever improving efficiencies



If you had the opportunity to implement one software solution or application that would improve any aspect of your materials handling operation, what would it be?

Asset Tracking
Automated scale operations
Bar Code readers
Bar code scanning
Bar coding inventory
Bar Coding
Batch picking using robotics
Cartonization
Custom solution
Customization of the bar tags
Easier operation
Feature updates
Labor Management System
Material allocation and costing by product
Middleware for AMRs and ERP system to improve material deliveries
Mobile picking
More use of Food Supply Chain Planning Software
Multi identifiable
need a more robust ERP
New WMS
No-Code software backed by Google Big Query for unlimited scalability and expedited creation of apps
Pedestrian sensing with ability to stop equipment
Procurement/Moving Reorder Point
Productions



If you had the opportunity to implement one software solution or application that would improve any aspect of your materials handling operation, what would it be? [Continued]

Scanning software tie-in with Visual Manufacturing software
Scheduling from incoming raw materials to production
Stop automatic updates
Storage and recovery.
Voice Picking
WCS development
WMS (3)



Respondent Demographics

Industry

	2023	2024
Manufacturer	44%	51%
Retailer/E-tailer	8%	11%
Wholesaler	14%	9%
Consulting	6%	3%
3PL	8%	3%
Transportation/Warehousing services	6%	6%
Other	14%	17%

Company Size – 2024 Revenues

Under \$10 million	25%
\$10 million - \$49.9 million	22%
\$50 million - \$99.9 million	8%
\$100 million - \$249,999 million	12%
\$250 million – \$499,999 million	11%
\$500 million - \$999,999 million	7%
\$1 billion - \$2.49 billion	3%
\$2.5 billion or more	5%
Cannot disclose	7%

Job function

