

**MATERIAL HANDLING SYSTEM CHOICES: PRIORITIES AND PARTNER
APPROACHES OF PURCHASE DECISION-MAKERS**

ESTABLISHING EFFECTIVE MATERIAL HANDLING SYSTEMS for distribution centers (DCs) can be a complex challenge filled with variables around budgets, operational goals, and the skills and expertise of various suppliers—including original equipment manufacturers (OEMs), integrators and engineering consultants. You don't have to sort through all these variables alone: This latest research provides critical information by your peers about key considerations involved in evaluating and implementing material handling solutions.

The last few years have been a time of growth. However, with expanding business comes added pressure to perform. These pressures come in the form of more orders to fulfill, more each picking to meet e-commerce orders, and more stock-keeping units (SKUs) to manage.

To meet these pressures, DCs have gotten bigger, and DC operators have expanded their labor forces, according to an annual study of DC operations by Peerless Research Group.¹ The U.S. Bureau of Labor Statistics (BLS) also tracks warehouse labor, with its data showing that in December 2015 warehouse jobs reached 840,700, up from 620,500 jobs back in December of 2009, when sector employment hit a low point coming out of recession, an increase of 220,200 jobs, or 35%.²

With these macro trends at play, it's no wonder that respondents to this survey agree that factors like coping with "relentless competition" and a "changing workforce" influence the material handling system investments they will be making.

Automated material handling equipment such as sortation systems, conveyors and automated storage & retrieval systems (AS/RS) allow DCs to fulfill more orders with less labor—and may also save storage space. With an economy in growth mode, investment in automated material handling has made a comeback. While there is a slight decrease in material handling equipment growth forecast for 2016, in part due to the strong U.S. dollar and its impact on exports, the fact is that you can't always meet business

growth and omni-channel complexity simply by adding labor—at least not efficiently. At some point, companies that manage DCs need to look at automated material handling solutions and new or expanded processes to reap efficiencies while gaining speed and capacity.

To better understand how companies are currently approaching decisions regarding the evaluation, purchase and installation for material handling systems, and to trend any changes that have occurred with these processes during 2015 and 2016, viastore systems, Inc., along with *Modern Materials Handling* magazine conducted a benchmark as well as a follow-up study among top material handling managers to investigate and trend critical topics to include:

- automated material handling services and solutions that user organizations most commonly look for from an original equipment manufacturer (OEM);
- types of providers (e.g., OEMs, system integrators, consultants) organizations are turning to for design, implementation, and maintenance services for their automated material handling systems;
- provider characteristics considered most important when evaluating automated material handling systems and solutions providers;
- material handling systems and technologies currently in use and planned for adoption during the next five years;
- an organization's primary objectives in employing and the benefits produced from material handling deployments.

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Results to this survey as well as the findings with the 2015 study will help point out the necessary steps involved in pragmatic material handling implementations.

The best, most practical way forward when contemplating material handling systems choices is to learn from your peers. This benchmark study is a chance to see what type of automated systems companies are choosing, which warehouse or order fulfillment processes those systems address, and what mix of partners—OEMs, integrators and consultants—companies are tapping to help design, deploy and maintain effective material handling solutions.

Background

Both studies possess similar profiles for those involved in material handling systems as well as software application purchase and design decisions.

- Respondents across both studies have comparable primary job functions with the majority working in engineering, operations, warehouse management and executive management. (See Figure 1.)
- The 2016 study, though, does show that slightly fewer respondents work at businesses running a manufacturing facility.

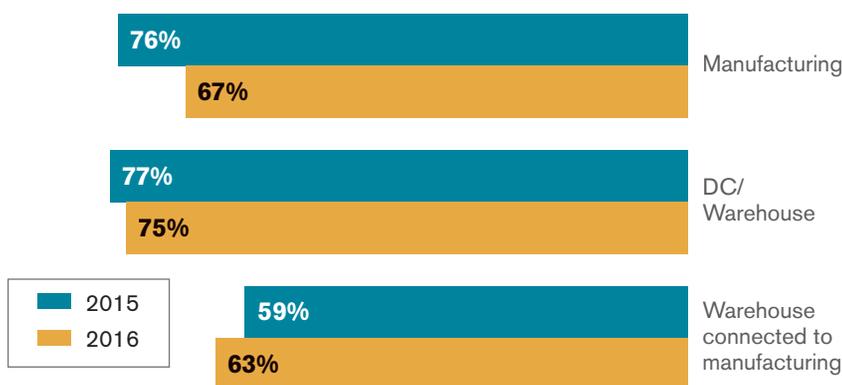
FIGURE 1

Primary job function



FIGURE 2

Types of facilities operated



Responding organizations in both studies are running multiple facilities; one out of four (25%) operate at least five manufacturing plants, one-third (32%) maintain over five warehouses and distribution centers, and one out of six run five or more warehousing facilities connected to their manufacturing operations. (See Figure 2.)

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The Decision Process for Material Handling Systems: Who's Involved

Designing material handling systems

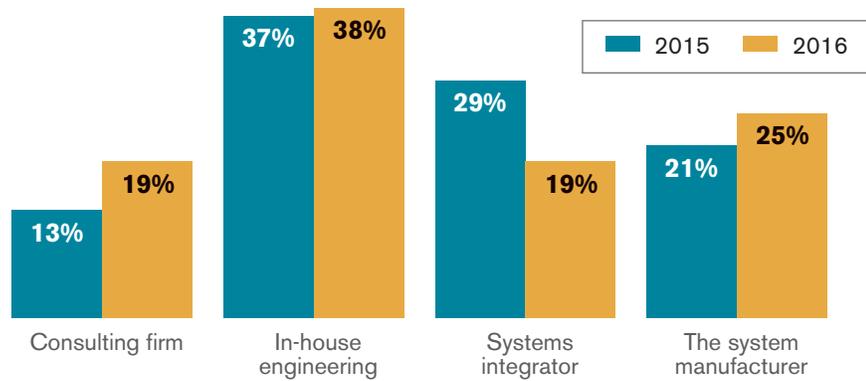
Just like in 2015, organizations believe that their internal engineering group is best equipped to handle the design phase for their material handling systems platform.

While in-house engineering teams remain the primary choice for systems designs, the managers surveyed in 2016 are also turning

more to consulting firms and OEMs/system manufacturers to architect their material handling systems. (See Figure 3.) This may indicate that many projects are further along in the evaluate/design/build/install cycle, so OEMs are taking a more prominent role. The shift toward OEMs may further reveal that material handling operations are becoming more focused on results, and that OEMs are going to be best able to install and maintain their equipment as part of an effective whole.

FIGURE 3

Organizations best qualified to design material handling systems



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Installing material handling systems

Decisions regarding the installation of material handling systems are largely established by committee. While corporate executives and operations managers are regularly involved, organizations in the 2016 study appear to be less reliant on IT and warehouse management. (See Figure 4.)

The implementation of manufacturing or storage software applications also involve a committee that is largely comprised of executive management, operations, IT, and engineering. Interestingly, the 2016 research shows that companies are less likely to involve operations and IT for their current applications and software decisions. (See Figure 5.)

FIGURE 4

Functions involved in decisions for the installation of material handling systems

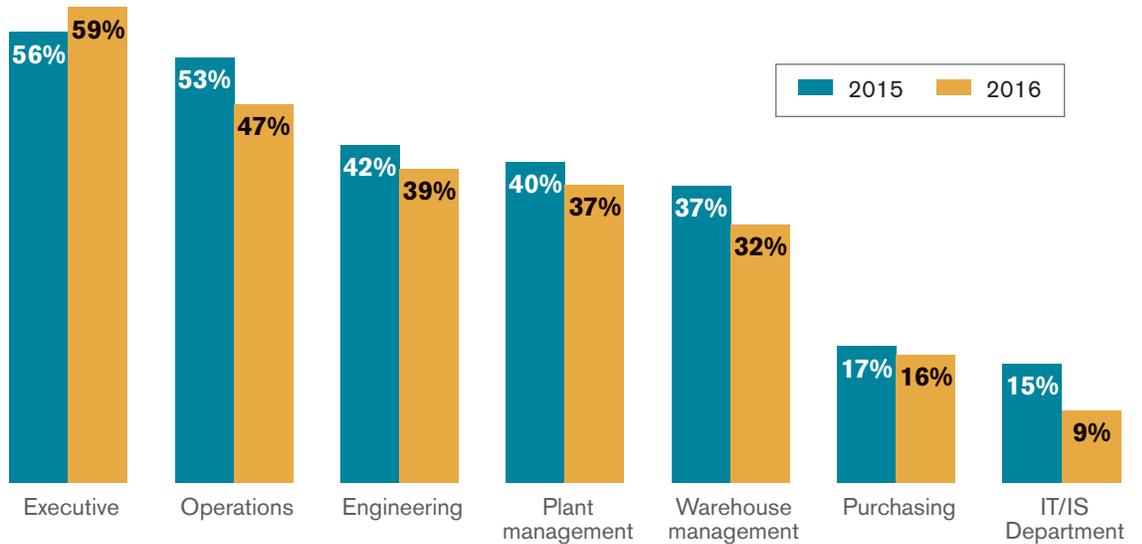
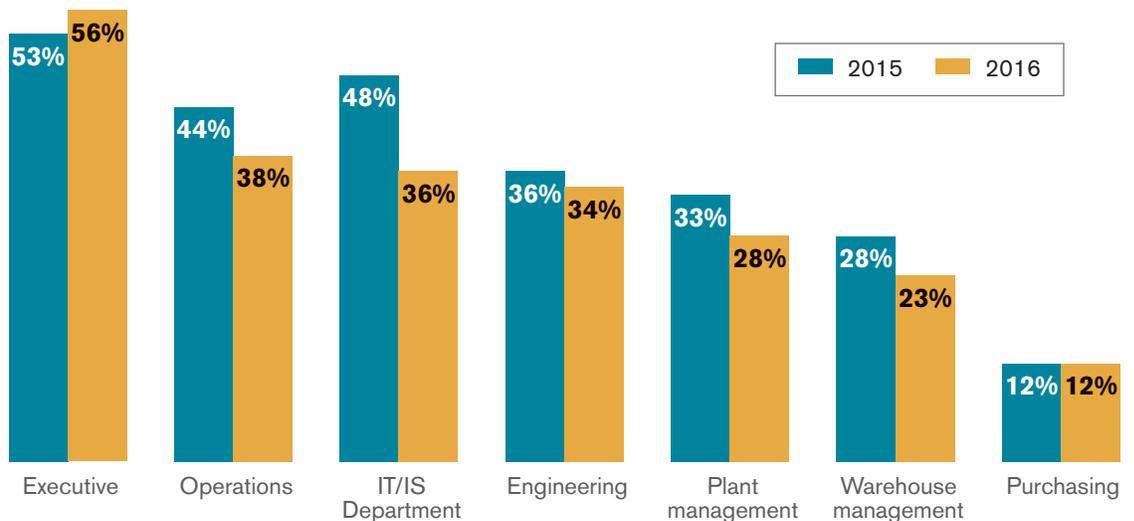


FIGURE 5

Functions involved in decisions for manufacturing or storage applications/software



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Executive management, engineering and operations are recognized as the most qualified for evaluating, purchasing and installing material handling systems for their company. The current study, however, shows a growing level of trust with those involved in purchasing and plant management job functions. (See Figure 6.)

Spend on Material Handling Solutions

For many organizations purchase decisions for material handling systems in 2016 are shifting to a more centralized approach showing that the process is being taken from the facility-level and is now apt to occur at corporate headquarters. (See Figure 7.)

FIGURE 6

Departments considered most qualified to make material handling systems purchase and installation decisions

(Average score based on 5-point rating: 5 = Most/1 = Least)



FIGURE 7

Centralization vs. decentralization of purchase decisions

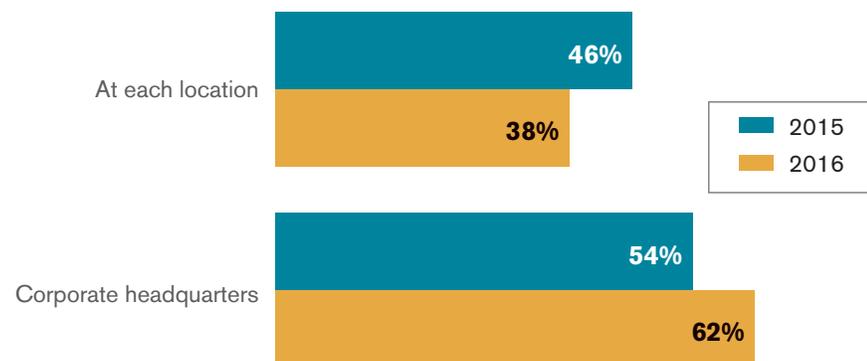
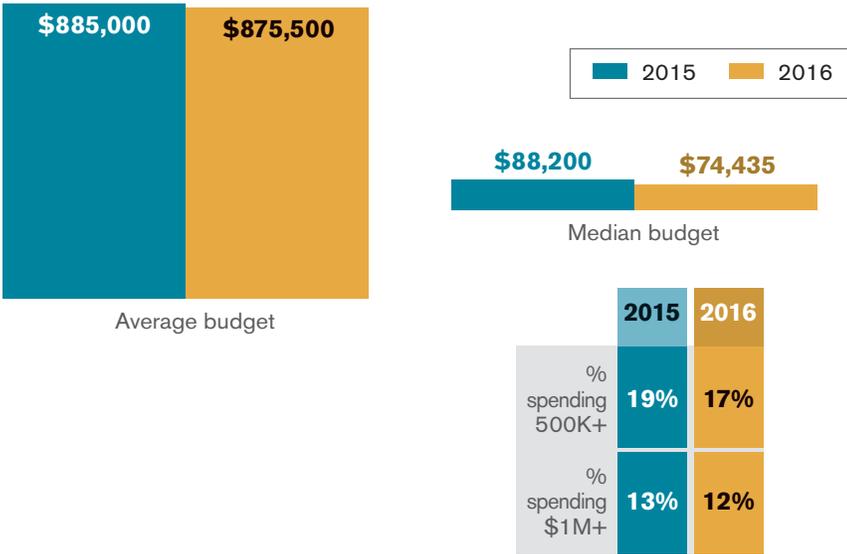


FIGURE 8

Annual budget for installing new, or upgrading existing material handling systems



Company spending, whether it's purchasing, installing or upgrading material handling equipment, is down slightly from 2015. (See Figure 8.)

On average, businesses are investing slightly more on material handling software and applications in 2016 than they did in 2015. This is mostly attributed to some companies posting a healthy increase in their spend levels on storage software and applications. (See Figure 9.)

Those planning to expand or modernize their current facilities fell slightly in 2016. Yet, among those planning expansion or updates to existing DCs and warehouses, about one in six (16% in each study) expect these efforts to occur in three or more of their facilities.

FIGURE 9

Annual budget for installing new, or upgrading existing manufacturing or storage software and applications

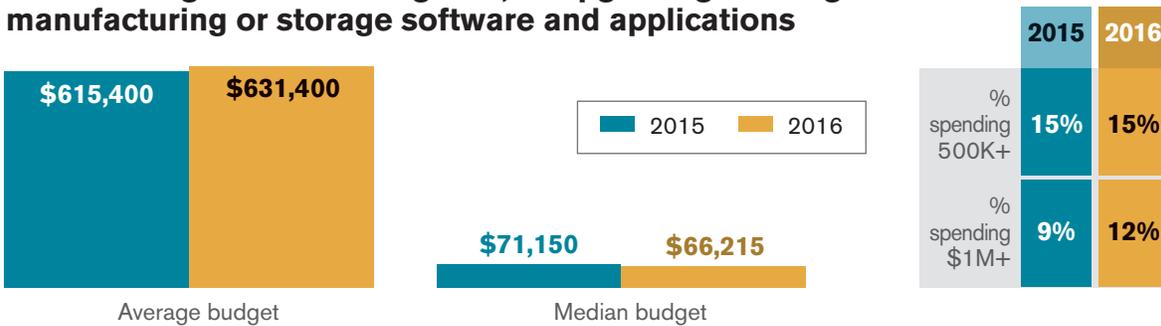
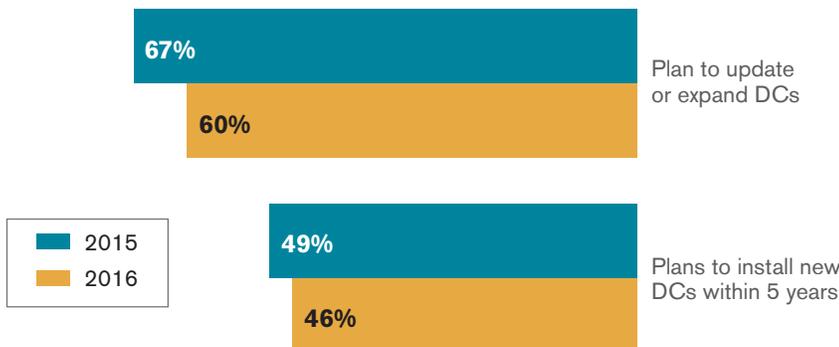


FIGURE 10

Plans for installing new warehousing and distribution systems/facilities within the next five years



As in 2015, slightly less than one half claims their company will be installing new warehousing and distribution centers during the next five years. Of these companies, more than one out of 10 in each wave anticipates they will build three or more DCs or warehousing facilities over the next five-year period. (See Figure 10.)



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“Our material handling equipment manufacturer should have the most knowledge of their solutions and how to best make them work for our needs.”

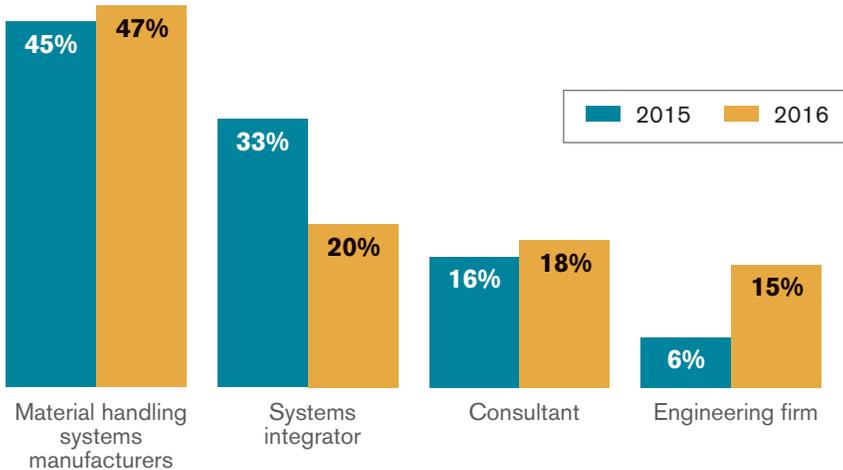
Organizations Used to Implement Material Handling Systems

When asked who would be considered for material handling systems implementations, systems manufacturers remain the top choice. Engineering firms are growing as a more acceptable choice while systems integrators are less likely to be hired for these implementations. (See Figure 11.)

Those choosing an equipment manufacturer for their next material handling project are likely to make this choice, in part because decision-makers expect manufacturers to be the most knowledgeable about the system, its inner workings, and its capabilities as well as its applications. Using the manufacturer would also minimize any finger-pointing in the event of a system failure.

FIGURE 11

Organizations to be used for next material handling systems project



Reasons for hiring a systems integrator to implement and manage a material handling solution is, from a practical viewpoint, based on an SI's knowledge and experience across a range of systems. Logically, an SI would be best at integrating disparate systems.

Usage of consultants for material handling system needs is consistent across the two-year period. Regarding these partnerships, about one-half always or sometimes rely on consultants while others rarely or never use this channel. (See Figure 12.)

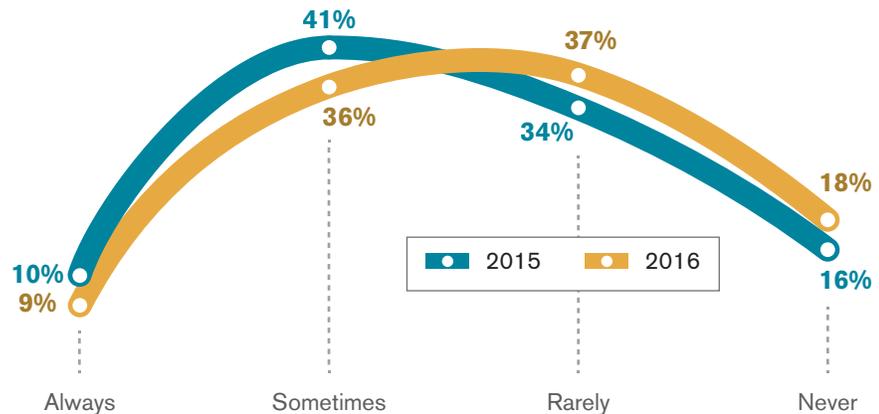
Advantages in using consultants for material handling systems management are attributed to their experience with a diversity of systems designs and are often best informed about available options and costs.

“They would have the most real world experience with companies like us. So, they can help us make the right decisions for our specific needs.”

“Integrators are not usually tied to one product line and can create a total system using the best that many manufacturers have to offer.”

FIGURE 12

Usage of consultants for material handling systems



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Material Handling Systems Usage and Purchase Intent

Material handling systems and equipment range from static, structural systems such as rack systems, to highly automated, software-driven solutions such as automated storage

& retrieval systems (AS/RS), inventory management solutions, and robotics. While North American warehouses are perceived as being less automated than those in places such as Northern Europe or Japan with high labor costs, some level of automation is not uncommon, as seen by the fact that roughly one-fifth of companies surveyed employ some form of automated system for order selection/order fulfillment (see Figure 14), and nearly one-half use conveyors and automated sortation (see Figure 13.)

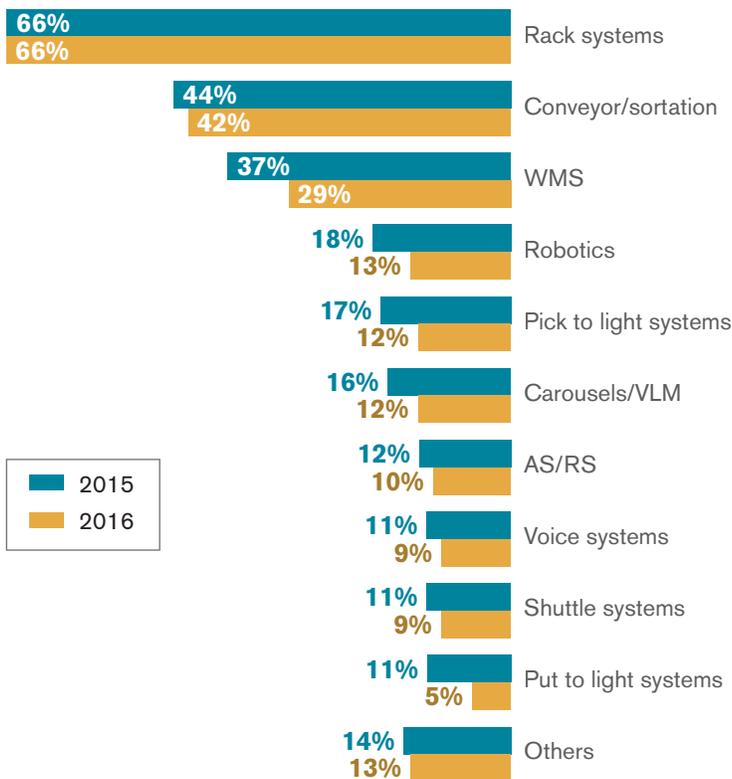
In particular, those using robotics are employing them for applications such as pallet building (40%), case picking (29%) and each picking (22%).

So while one out of five respondents in 2015 indicated they use an automated order fulfillment processing system, usage of these systems shows slight growth over the last 12 months. (See Figure 14.)

Looking five years out, rack and sortation systems are thought to be the solutions most likely to be adopted. Curiously, the 2016 study projects that technology necessary for efficient inventory management and order processing such as WMS, robotics and AS/RS will drop.

FIGURE 13

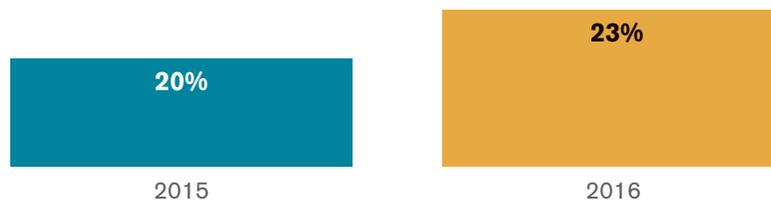
Material handling systems currently in use



“We would look for a partner who understands and is actively involved in the end-to-end design and performance of the system.”

FIGURE 14

Organizations having mechanized/automated order selection equipment



“They have knowledge of new systems along with costs and benefits.”

“They offer us the potential to learn new ideas.”

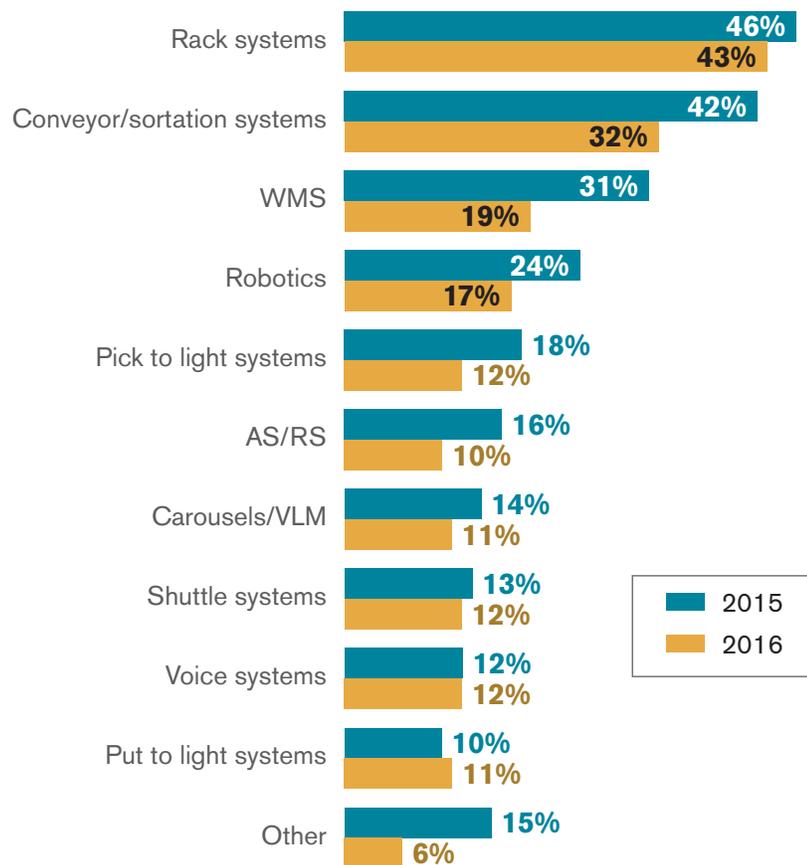
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(See Figure 15.) While it’s difficult to pinpoint why this modest drop is seen for certain categories, it may be that economic volatility in recent months has caused some organizations to be more conservative when it comes to

their five-year planning for more advanced material handling equipment such as robotics or AS/RS systems, and are only confident in considering the more basic equipment such as rack systems.

FIGURE 15

Material handling systems planning to install during the next five years



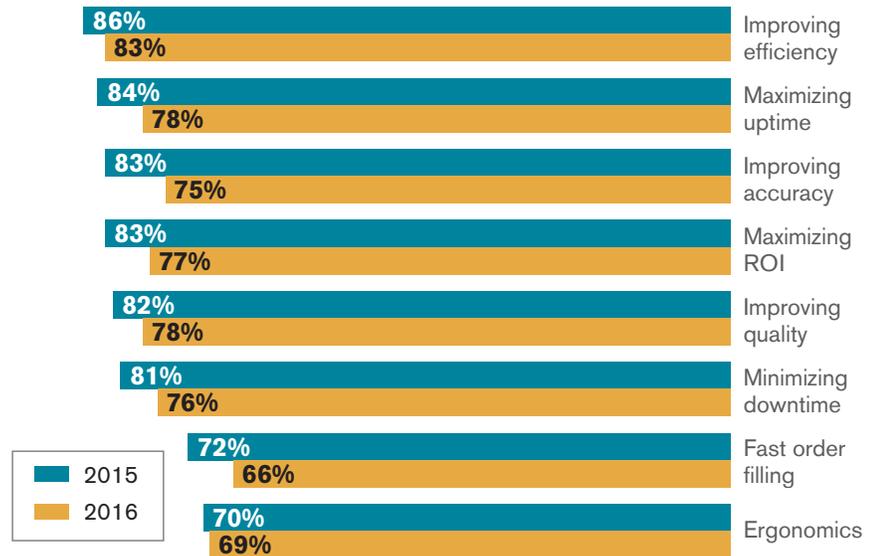
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Material handling systems implementations and upgrades are transforming operations and leading to significant benefits. Efficient and precise material handling processes,

improved uptime and optimal ROI are among the improvements that operations are realizing from highly proficient systems (see Figure 16.)

FIGURE 16

Benefits from operating material handling systems



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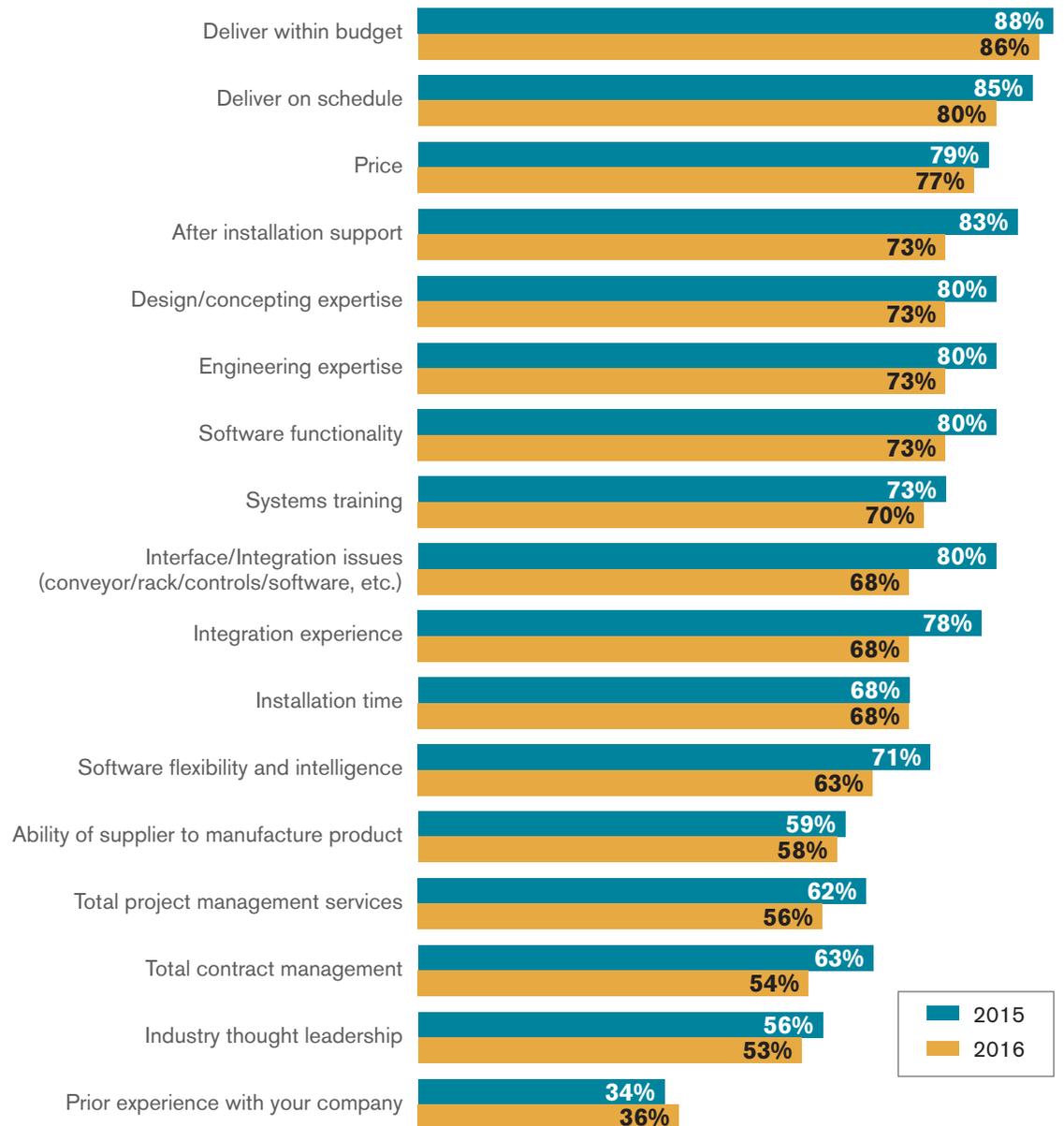
Characteristics Considered Important When Evaluating Material Handling Providers and Systems for Possible Purchase

Delivering systems on budget and on time continues to be a prerequisite when

evaluating material handling providers and their solutions. Qualities also rating highly important are after-sales support, design and engineering most important. (See Figure 17.)

FIGURE 17

Issues considered important when evaluating material handling providers



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Evaluating Current Suppliers on Key Attributes

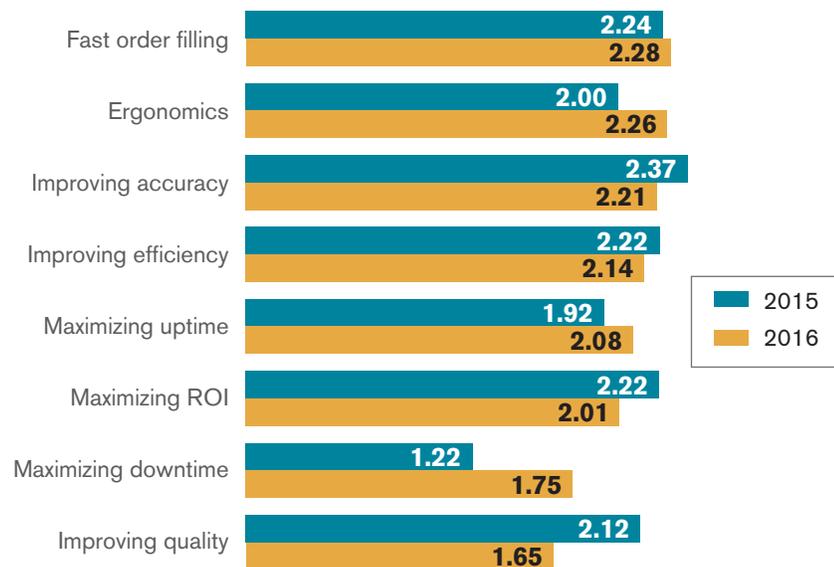
Interestingly, the managers in both waves of our research feel their current suppliers of material handling systems could improve on the quality of their service and support. In fact, ratings on key attributes were all sub-par.

However, improvements over the past year have been accomplished in areas related to rapidity of order fulfillment, ergonomics, maximizing uptime and reducing downtime. Conversely, suppliers have slid on decisive operational areas such as order accuracy and efficiency, ROI, and overall performance quality. (See Figure 18.)

FIGURE 18

Rating material handling suppliers on...

(Average score based on 5=Excellent/1=Poor)



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The Future of Material Handling Automation

Looking to the future, operations will focus on and invest in areas related to software integration, wireless technology, automation, and programs aimed at staying competitive in their respective marketplaces. In particular, during the next five years the greatest concentrations are expected to target sustainability, labor management, IoT, and urbanization. (See Figure 19.)

Conclusion: It's All about Results

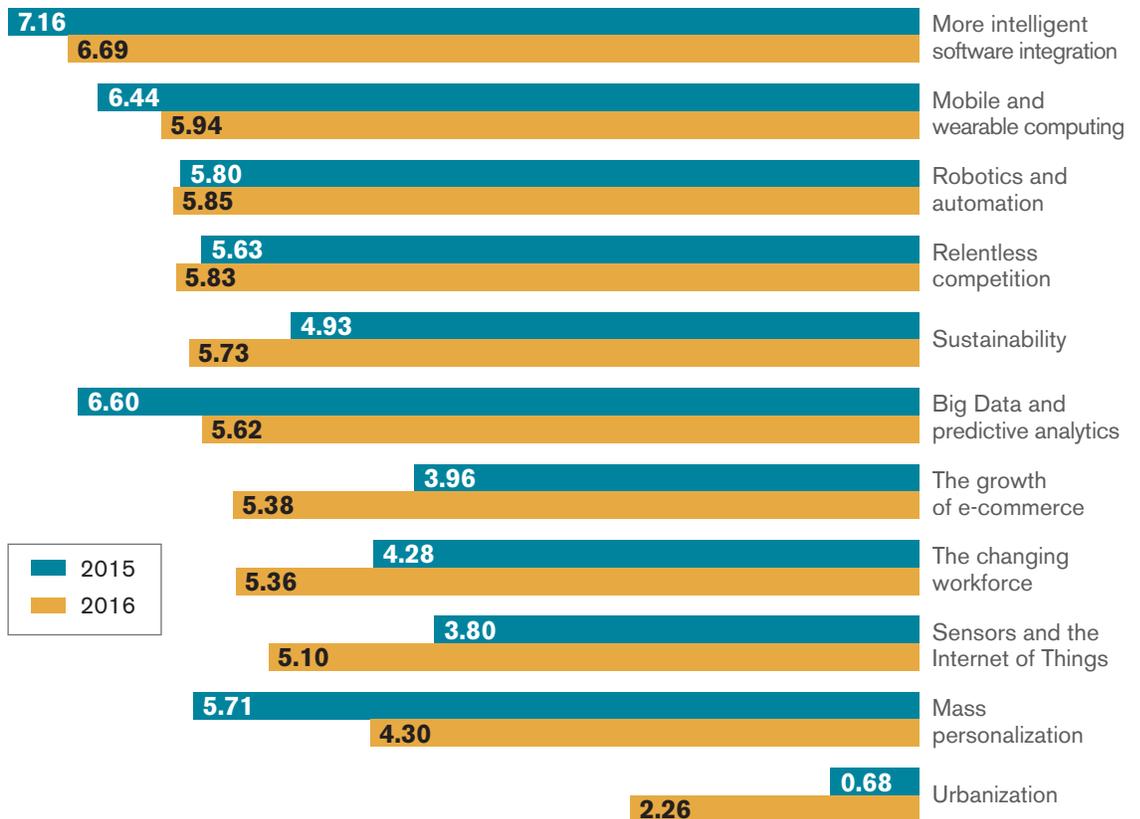
This most recent wave of our research shows a market that is fully cognizant of needs such as material handling equipment with greater

software functionality and integration, but is focused on results and system effectiveness. This pragmatic approach can be seen in the fact that respondents continue to see issues such as delivering material handling projects within a budget and on schedule as a top evaluation criterion, as well as rating after installation support highly (see Figure 17.) At the same time, issues such as intelligent software continue to be top of mind when it comes to material handling investments, and when it comes to longer term issues and technologies influencing system investments, factors such as "relentless competition," e-commerce growth, and the changing workforce gained slightly in importance (see Figure 19.)

FIGURE 19

Trends in which companies will be investing over the next five years

(Average score based on Highly likely=11/Not at all likely = 1)



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Respondents appear to be approaching material handling system investments in a level-headed way. They know there are business trends like changes in the labor force and the IoT they need to begin to consider while pondering their system investments, but the top priority is results. Systems need to have minimal downtime and be fast at processing orders. Providers need to be able to deploy their systems on time and within the budget, while being adept at after sales service, software integration, and designing systems that work well as part of an integrated whole. They want systems that are cost effective in the short run, but can help them adapt to the changing world in the long run.

As in last year's study, there are a mix of participants and suppliers involved in material handling projects: operations managers, purchasing managers, executives, OEMs, systems integrators, and engineering consultants. It's notable that involvement by executive management is up slightly this year. That may speak to the increasing importance of omni-channel fulfillment and logistics prowess on corporate performance, and it also is consistent with the notion that system projects need to be practical and results-focused, even as they address complex issues like e-commerce fulfillment. Senior executives know the macro trends, but they insist on projects that are results focused.

Footnotes:

1. "2015 Warehouse/DC Operations Survey," Logistics Management, November, 2015.
http://www.mmh.com/article/2015_warehouse_dc_operations_survey_industry_tackles_omni_channel_and_growth

2. U.S. Bureau of Labor Statistics, employment survey data, warehousing & storage. http://data.bls.gov/timeseries/CES4349300001?data_tool=XGtable

Methodology

These research studies were conducted by viastore systems, Inc., with the 2016 survey serving as a follow up study to the benchmark wave that was established in 2015. This report was developed by Peerless Research Group on behalf of *Modern Materials Handling* and based on data provided by **viastore systems, Inc.** The benchmark study was executed in April of 2015; the follow-up study was conducted in March of 2016. Both surveys were administered over the Internet among subscribers of *Modern Materials Handling* magazine as well as among lists from **viastore systems**.

The findings in the benchmark are based on 306 material handling managers and the results to the follow up wave are based on 292 participants.

Respondents in both studies are mostly employed in manufacturing, wholesale and retail, consulting services, and third-party solutions providers. Companies of all sizes are well-represented in each the respondent base: slightly more than four out of 10 (42% in 2015/45% in 2016) are employed in companies reporting under \$50 million in annual revenues, one out of four (26% in both studies) are with mid-size companies (\$50 million - \$500 million), while roughly one-third (32% and 29%, respectively) are with organizations having \$500 million or more in annual revenues.

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About viastore systems, Inc.

viastore is a leading international provider of automated material handling software and system solutions.

System solutions include AS/RS (automated storage and retrieval systems), shuttles, vertical lifts, conveyor systems.

Software solutions include integrated SAP supply chain execution, warehouse management system, and warehouse control systems software.

Our tailor made solutions deliver ROI results and optimize a clients' total cost of ownership. Based in Stuttgart, Germany with North American headquarters in Grand Rapids, MI, the company employs over 470 people worldwide and has annual sales of over \$140 Million.